ENABLING THE ENABLERS:

DEVELOPING U.S. ARMY SPECIAL OPERATIONS COMMAND CURRICULAR AND TRAINING SUPPORT FOR AGRICULTURAL ASSESSMENT IN CONFLICT ZONES

A Dissertation

by

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ABSTRACT

Food security is directly linked to economic, political, and social stability. In 2017, one out of every nine—nearly 821 million people—were undernourished. Of immediate concern are populations living in conflict. Food insecurity and armed conflict often exist simultaneously, which makes addressing agricultural issues a vital need for international development and national defense. U.S. military service members are uniquely positioned to reach populations in these regions because they have access to conflict zones. The purpose of my exploratory sequential mixed methods study was to identify, investigate, and develop a curricular and training framework for soldiers in the U.S. Army Special Operations Command (USASOC) to complete agricultural assessments in conflict zones. I used an integrative literature review, semi-structured interviews with soldiers (n = 19) in the U.S. Army 5th Special Forces Group (Airborne), and a Q sort with experts (n = 14) in international agricultural development. Phase one led to a conceptual model highlighting food (in)security variables found in the communication, education, and political science databases in the Web of Science Social Citation Index. Phase two led to identifying three themes USASOC soldiers need when conducting agricultural assessments in conflict zones—*basics of food production, supply chain relationships,* and *food (in)security variables related to conflict zones.* Finally, phase three led to the development of the agricultural assessment framework to address food (in)security in conflict zones. The final product was a curricular framework of FASCOPE/PMESII, which added food (in)security as a civil assessment consideration to assess among the U.S. Army's operational dimensions. Recommendations for practice

are to implement food (in)security variables into a U.S. Army field manual, disseminate FASCOPE/PMESII Framework to the U.S. Army Special Forces, and conduct a training at the U.S. Army John F. Kennedy Special Warfare Center and School (USAJFKSWCS). Recommendations for research are to conduct quasi-experimental study, factor analysis, and qualitative case study. Recommendations for theory are to adopt the FASCOPE/PMESII Framework in U.S. Army doctrine and update Maslow's hierarchy of needs using a personal security lens. In short, training agricultural assessment variables can strategically prepare U.S. soldiers to deter war abroad and ensure security at home.

DEDICATION

I dedicate this dissertation to the memory of my mother—Lori Norris—who taught me the value of persistence and love. May you dance high with the angels. I also dedicate this work to my father—David Norris—and sister—Davena Norris—who have served as my rock and constant reminder of strength and humility. Your constant reminders of "thou shall not panic" and "adapt and overcome" have been driving forces in successfully completing this research. Finally, to the men and women in the U.S. military, thank you for your service and sacrifice so we have the freedom to pursue this research in higher education.

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Contributors

This work was supervised by a dissertation committee consisting of Dr. Holli Leggette (Advisor and Committee Chair), Assistant Professor; Dr. Gary Briers, Professor; Dr. Lori Moore, Associate Professor and Associate Department Head for Undergraduate Programs; and Dr. Tobin Redwine, Instructional Assistant Professor, of the Department of Agricultural Leadership, Education, and Communications and Dr. Danny Davis, Professor of Practice of the Bush School of Government and Public Service at Texas A&M University.

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NOMENCLATURE

5th SFG(A)	5th Special Forces Group (Airborne)
A-Teams	Operational Detachment-Alpha (ODA) Teams
AFC	U.S. Army Futures Command
AFSOC	Air Force Special Operations Command
AMC	U.S. Army Materiel Command
ANC	Arlington National Cemetery
ASCOPE	Areas, Structures, Capabilities, Organizations, People, Events
ATEC	U.S. Army Test and Evaluation Command
CIA	U.S. Central Intelligence Agency
CORDS	Civil Operations and Revolutionary Development Support
COVID-19	Coronavirus Disease-2019
DIME	Diplomatic, Information, Military, and Economic
DOD	U.S. Department of Defense
EDI	Explicit Direct Instruction
FAO	Food and Agriculture Organization of the United Nations
FASCOPE	Food (In)Security, Areas, Structures, Capabilities, Organizations, People, Events
FORSCOM	U.S. Army Forces Command
FSIN	Food Security Information Network
GNAFC	Global Network Against Food Crises
HQDA	Headquarters of the U.S. Department of the Army

HRC	U.S. Army Human Resources Command
IMCOM	U.S. Army Installation Management Command
INSCOM	U.S. Army Intelligence and Security Command
JSOC	Joint Special Operations Command
LDC	Least Developed Country
MARSOC	Marine Corps Forces Special Operations Command
MDW	U.S. Army Military District of Washington
MEDCOM	U.S. Army Medical Command
MOS	Military Occupation Specialty
NAVSPECWARCOM	Naval Special Warfare Command
ODA	Operational Detachment-Alpha Teams or A-Teams
OIC	Officer-in-Charge
PCA	Principal Component Analysis
PMESII	Political, Military, Economic, Social, Information, and Infrastructure
RPAR	Research Protection Administrative Review
SDDC	Military Surface Deployment and Distribution Command
SF	Special Forces
SIGAR	Special Inspector General for Afghanistan Reconstruction
SOF	Special Operations Forces
SSCI	Social Sciences Citation Index
TRADOC	U.S. Army Training and Doctrine Command
UN	United Nations

USAASB	U.S. Army Accessions Support Brigade
USAASC	U.S. Army Acquisition Support Center
USACE	U.S. Army Corps of Engineers
USACIDC	U.S. Army Criminal Investigation Command
USAFRICOM	U.S. Africa Command
USAID	U.S. Agency for International Development
USAJFKSWCS	U.S. Army John F. Kennedy Special Warfare Center and School
USARAF	U.S. Army Africa
USARCENT	U.S. Army Central
USARCYBER	U.S. Army Cyber Command
USAREUR	U.S. Army Europe
USARNORTH	U.S. Army North
USARPAC	U.S. Army Pacific
USARSO	U.S. Army South
USASMDC	U.S. Army Space and Missile Defense Command
USASOC	U.S. Army Special Operations Command
USCENTCOM	U.S. Central Command
USCYBERCOM	U.S. Cyber Command
USEUCOM	U.S. European Command
USMA	U.S. Military Academy
USNORTHCOM	U.S. Northern Command
USPACOM	U.S. Indo-Pacific Command

USSOCOM	U.S. Special Operations Command
USSOUTHCOM	U.S. Southern Command
USSPACECOM	U.S. Space Command
USSTRATCOM	U.S. Strategic Command
USTRANSCOM	U.S. Transportation Command
WFP	World Food Programme [*sic*]

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CHAPTER I
INTRODUCTION

Food security is directly linked to economic, political, and social stability (Food and Agriculture Organization of the United Nations [FAO] & World Food Programme [WFP], 2018a; Katsos, 2017). In 2017, one out of every nine people—nearly 821 million—were undernourished in the world, which is up nearly 15 percent from 2016 (FAO & WFP, 2018a; FAO & WFP, 2018b). This increase in global food insecurity is due largely to increased conflict in impoverished regions (FAO & WFP, 2018a; The World Bank Group, 2018). One area of concern is southern and central Asia where approximately 14.5 percent of people live in extreme, undernourished conditions while also living in social conflict (FAO & WFP, 2018b). In 2017, Yemen and Afghanistan were two of the three most food insecure countries in the world (FAO & WFP, 2018a). Yemen was number one with nearly 17 million people in need of food, nutrition, and livelihood assistance, and Afghanistan was number three with 7.6 million people in need (FAO & WFP, 2018a).

Food insecurity and armed conflict often exist simultaneously (FAO & WFP, 2018a). To operationalize food (in)security, the Food and Agricultural Organization (FAO) of the United Nations (2008) defined four key dimensions: (a) *availability* of food (agricultural production, supplies, and resources to meet food demands for a community or region); (b) *access* to food and economy (physical household access to food and economic policy[ies] to meet food security objectives); (c) *utilization* of food (nutritional status of individuals for how the body uses nutrients in food); and (d)

stability over time (consistent and secure supply of the previous three food [in]security dimensions). According to the *U.S. Government Global Food Security Strategy* report, "Food security is not just an economic and humanitarian issue; it is also a matter of security, as growing concentrations of poverty and hunger leave countries and communities vulnerable to increased instability, conflict, and violence" (U.S. Agency for International Development [USAID], 2016, p. iii). One way to prevent physical security threats is to address food (in)security solutions with experts in the agricultural and food industries.

Agricultural experts (e.g., agricultural educators, extension specialists, economists, soil scientists, animal scientists, and agricultural engineers) play a critical role in aiding food insecure nations (Assessing U.S. Special Operations Command, 2006; FAO & WFP, 2018a; Katsos, 2017; USAID, 2016). McCarthy et al. (2018) suggested that, to attain global food security and determine a holistic solution, all stakeholders in the food, fiber, and natural resources industries must merge ideas and efforts. However, in many cases, agricultural experts lack access (Kuypers & Anderson, 2010) to conflict-affected regions and, as a result, cannot provide humanitarian assistance without military support.

Because of their capability to access conflict-affected regions, U.S. military service members are uniquely positioned to reach populations facing severe to extreme levels of food insecurity (Katsos, 2017). Yet, as service members work with communities facing extreme conflict, they are often required to complete agricultural assessments without having adequate agricultural training or expertise (Assessing U.S.

Special Operations Command, 2006). In fact, the need to develop more effective strategies to prepare service members to conduct agricultural assessments in conflict zones has been a national issue for several years. Max Boot reflected this need in a 2006 hearing before the Terrorism, Unconventional Threats and Capabilities Subcommittee of the Armed Services Committee of the 109th Congress (Assessing U.S. Special Operations Command, 2006):

> I think one of the real gaps that we are missing is an agency that specifically focuses on nation-building…A lot of it falls to the military because they are the guys on the spot, but they are not trained in it, and they often don't want to do it. They have to do it, but they wish there would be somebody who could come in with the skill set to do that. And the skills do exist in places like the Department of Agriculture and State and Treasury, and in the civilian sector and various other places. But there is no organization that knits those skills together so that in peace time, so we are ready when a war breaks out or when a country disintegrates to come in and run these things. And I think that is one of the big organizational gaps that we have to fill. (para. 196–201)

Connecting agricultural expertise to soldiers who conduct agricultural assessments in conflict zones is vital to addressing food (in)security in regions that need it most (FAO & WFP, 2018a; McCarthy et al., 2018). This process can be facilitated by (a) leveraging a strong network of experts and resources, (b) grounding educational opportunities in the science of agriculture, and (c) engaging social scientists to teach adult audiences. First, land-grant universities have a strong network of experts and

resources as they were established in 1862 to connect academic experts with stakeholders at the grassroots level or in the field. Designated as one of 17 universities to be a land-grant, sea-grant, and space-grant institution, Texas A&M University (2020c) is dedicated to equipping researchers and scholars with resources to tackle global needs, such as food (in)security, using a high-impact, service-oriented network. Second, as one of 17 academic colleges, the Texas A&M University's College of Agriculture and Life Sciences is comprised of 15 academic departments that use science, innovation, and critical thinking to solve problems related to the food, fiber, and natural resources industries (Texas A&M University, 2020a). Such opportunity allows for educational opportunities to be grounded in the science of agriculture. Third, effectively teaching adult audiences can be accomplished by engaging social scientists. The mission of the Department of Agricultural Leadership, Education, and Communications at Texas A&M University is to help students and faculty "discover, educate, serve, and inspire" audiences to understand scientific concepts in an engaging and relevant manner (Texas A&M University, 2020b, para. 1). Additional offices, such as the Norman Borlaug Institute for International Agriculture and the Center on Conflict and Development, further position Texas A&M as the academic hub with the network, resources, and expertise needed to connect soldiers with agricultural experts to address food (in)security in areas of conflict.

Developing a framework to equip soldiers who conduct agricultural assessments is one way to assist food insecure regions and support military initiatives (McCarthy, 2018). For example, the National Security Strategy (The White House, 2017) aimed to

make the U.S. the leading provider of humanitarian assistance in the world. Equipping soldiers who have access to regions threatened by conflict supports this strategy by targeting the baseline need teach food systems to populations who serve the most food insecure parts of the world.

Statement of the Problem

As conflict drives food insecurity and as food insecurity drives conflict, it is vital to update food security assessments (FAO & WFP, 2018a). Strengthening the evaluation frameworks for agricultural assessment and development could provide strategic insight to successful recovery and stability of communities influenced by conflict (Kuypers & Anderson, 2010; Special Inspector General for Afghanistan Reconstruction [SIGAR], 2018). In the *State of Food Security and Nutrition in the World,* members from FAO and WFP (2018b) suggested that "actions need to be accelerated and scaled up to strengthen resilience and adaptive capacity of food systems, people's livelihoods, and nutrition in response to climate variability and extremes" (p. xii). Without access to accurate and updated data, governmental agencies and humanitarian stakeholders cannot meet the needs of vulnerable people, and hunger and conflict will persist (FAO & WFP, 2018a).

Improving agricultural and food security assessments is also valuable to national defense strategies (Katsos, 2017). One of the three distinct lines of efforts highlighted in the U.S. Department of Defense's (2018) summary of the 2018 National Defense Strategy was reforming the Department for greater performance and resourcefulness. "We will continue to leverage the scale of our operations to drive greater efficiency in procurement of material and services while pursuing opportunities to consolidate and

streamline contracts in areas such as logistics, information technology, and support services" (p. 10). Improving agricultural assessments addresses the need for streamlining support services by connecting agricultural experts with soldiers conducting assessments in conflict zones.

Agricultural assessments contribute to the U.S. Department of Defense's efforts to strengthen "soft power" efforts (Hillson, 2009, p. 235), which Hartley (2017) outlined as "Diplomatic, Information, Military, and Economic (DIME) actions and their Political, Military, Economic, Social, Information, and Infrastructure (PMESII) effects" (p. 235). From operational and tactical standpoints, the U.S. Army conducts a variety of operations for joint, multi-domain, high-intensity conflict and low-intensity conflict in an effort to stop conflict before it starts (Joint Chiefs of Staff, 2017; U.S. Department of the Army, 2017b). Throughout the years, the U.S. Department of Defense labeled these efforts using several operational definitions and mission names, including nation building, peace operations, stabilization and reconstruction operations, civil military operations, and stability (Bullimore, 2006; U.S. Department of the Army, 2017b; U.S. Department of the Army, 2019c; Yates, 2006; Zoli & Armstrong, 2010). Namely, conducting effective stability operations requires an immense understanding of the conflict, nation, individuals, and culture.

Many times, stability missions are addressed by collaborating with domestic and allied powers "to help restore local political, economic, and infrastructure stability" (U.S. Department of the Army, 2017b, 1–14). Primary stability tasks "establish civil security and support civil control; facilitate reconciliation among local or regional

adversaries; support the establishment of political, legal, social, and economic institutions; facilitate the transition of responsibility to a legitimate civil authority; and build security relationships" (U.S. Department of the Army, 2019c, 2–1). Agriculture contributes to the political, economic, and infrastructure stability by providing access to food, fiber, and natural resources (Katsos, 2017). These efforts directly support the U.S. Department of State's and USAID's (2018) joint strategic objective to "counter instability, transnational crime, and violence that threaten U.S. interests by strengthening citizen-responsive governance, security, democracy, human rights, and the rule of law" (p. 27). As the U.S. Departments of Defense and State (2018) seek to establish stability, supporting agricultural systems will play a strategic role. Consequently, analyzing, investigating, and developing training support and curricular frameworks to strategically enable the U.S. Army Special Operations Command (USASOC) and intelligence community to complete agricultural assessments in conflict zones remains a vital need for global food security and national defense.

Significance of the Study

Enabling individuals conducting agricultural assessments in conflict zones supports efforts outlined in the U.S. Department of Agriculture's (2018) long-term mission to "do right and feed everyone" (para. 10). A refined assessment metric and curricular support effort will help address issues in severe- to extreme-food insecure areas plagued with conflict while targeting the U.S. Department of Agriculture's mission. The 2018 Farm Bill (U.S. Senate Committee on Agriculture, Nutrition, & Forestry, 2018) priority of Agricultural Systems and Technology further addresses the

need to develop a curricular framework designed to confront agricultural issues as a system and provides a "holistic approach that offers greater management flexibility, safer working conditions, and a more-sound economy and environment" (p. 1) for soldiers. Developing an agricultural assessment framework is a multi-faceted approach that not only supports initiatives outlined in the U.S. Department of Defense's (2018) National Defense Strategy but also supports humanitarian efforts led by the U.S. Department of Agriculture and diplomacy efforts guided by the U.S. Department of State.

Scope of the Study

The scope of my study is focused on investigating the effectiveness of USASOC's curriculum and training support for agricultural assessment in conflict zones, particularly in the Middle East and Afghanistan. Many of the guiding documents are government or international summaries of food (in)security in various regions around the world (FAO & WFP, 2018a, 2018b; USAID, 2016; U.S. Department of Defense, 2018; U.S. Department of the Army, 2017b). The final deliverable of the study is a curricular and training support framework to address the critical need of preparing USASOC soldiers to complete agricultural assessments in conflict zones.

Purpose and Objectives

The purpose of the three-phase, mixed methods study described herein was to establish a framework that advances curricular and training support for agricultural assessment in conflict zones, particularly in the Middle East and Afghanistan.

The study was guided by three research questions and eight research objectives:

RQ1: What is/are the existing curricular and training framework(s) used to study food (in)security and conduct agricultural assessments in conflict zones?

- RO1.1: Review the literature to summarize variables used to describe food (in)security.
- RO1.2: Review the literature to summarize frameworks used to conduct agricultural assessments in conflict zones.
- RO1.3: Identify variables related to food (in)security.
- RO1.4: Synthesize the findings to identify potential food (in)security research studies and to develop a conceptual model for conducting agricultural assessments in conflict zones.

RQ2: What are the current needs of USASOC soldiers who conduct agricultural assessments in conflict zones?

- RO2.1: Identify existing USASOC support/training strategies for conducting agricultural assessments in conflict zones.
- RO2.2: Determine USASOC support/training needs for conducting agricultural assessments in conflict zones.

RQ3: What perspectives of curricula and training framework elements and metrics are desired when conducting agricultural assessments in conflict zones?

- RO3.1: Identify what variables used to describe food (in)security best support the development of agricultural assessments in conflict zones.
- RO3.2: Develop a conceptual model outlining variables to develop curricular and training frameworks for agricultural assessments in conflict zones.

Statement of Positionality

My research positionality is shaped by personal experiences that support my ontological, epistemological, and methodological viewpoints (Birks & Mills, 2015). This positionality informed my research approach discussed in chapter three. Birks and Mills (2015) described ontological viewpoints as "the study of the nature of reality" (p. 52). I developed a passion for agricultural education and food security at an early age. I grew up on a beef cattle farm in rural New Mexico, and because my parents frequently discussed the science behind agricultural production, we were aware of how to maintain a stable food supply. They also taught us business principles about the supply chain, which helped us learn about the movement of a food item from a raw product to a consumer. Those early lessons guided my understanding of the value of agriculture and the need to ensure the industry can produce enough food to allow for secure households and communities, while hopefully making a profit.

Epistemology is supported by "justifiable knowledge" related to the research topic (Birks & Mills, 2015, p. 52). My love for agriculture and people guided my decision to study strategies to educate and communicate about the food, fiber, and natural resources industries. I received a Bachelor of Science degree in agricultural and extension education from New Mexico State University, a Master of Science degree in agricultural communications from Oklahoma State University, and I am studying Agricultural Leadership, Education, and Communications at Texas A&M University for my doctoral degree. I also had the opportunity to serve as a National FFA Officer from October 2010–October 2011. In this leadership position, I traveled nearly 120,000 miles

across the United States, Puerto Rico, and Japan representing the National FFA Organization, secondary agricultural education, and the agricultural industry. As a student ambassador for the organization, we represented more than 540,000 high school and junior high students at the time. From this experience, I observed the scope of the agricultural industry and learned about the steps involved in stocking grocery store shelves. I also learned about the importance of integrating multiple generations in the industry for succession planning and transitioning knowledge.

Furthermore, I traveled to Haiti in March 2018, where I served on a team of researchers from Texas A&M University, Auburn University, and Sam Houston State University. Our team spent a week in Gressier, Haiti, helping young farmers (20–35 years old) affiliated with Centre Vocationnel Et Technique (CVET), a vocational program, learn techniques to teach agricultural production strategies. This trip opened my eyes to how fortunate most people living in developed countries are to have access to safe and stable food supplies. Traveling to Haiti was the first experience I had working with individuals facing acute food insecurity, and it was also the first time I witnessed extreme levels of poverty. In many communities, social conflict exacerbated food insecurity. Our team was not allowed to enter those communities without armed transport, so I discovered that to reach the most food insecure parts of the world, agriculturists must support and learn from audiences who serve areas of conflict, such as soldiers in the U.S. Army Special Operations Command.

I adopted a constructivist approach (Charmaz, 2014) as my research paradigm as learners' experiences help shape their knowledge of a topic. Because soldiers'

experiences are vital to understanding dynamics in conflict zones, I constructed an agricultural assessment framework by using variables that emerged from the phases in the research design. However, even after soldiers receive access to this curricular framework, they will still be asked to use knowledge they gained from previous experiences to apply new agricultural knowledge. Adopting a constructivist approach provided a flexible paradigm to incorporate the learners' experiences into developed frameworks.

My personal experiences—supported by my ontological, epistemological, and methodological viewpoints—inspired me to provide agricultural expertise to audiences who have access to serving the most food insecure parts of the world. Providing a curricular framework to teach agricultural assessment strategies to the U.S. Army Special Operations Command "enables the enablers" to understand essential food (in)security elements to address, and potentially, lessen conflict. In turn, this curricular framework will also help prepare future soldiers to be aware of food (in)security variables that could help soldiers build rapport with local populations and reinforce national defense efforts.

Definition of Terms

5th Group Special Forces (Airborne): Soldiers in the U.S. Army Special Forces, or Green Berets, who operate jointly in the U.S. Army Special Operations Command and the U.S. Special Operations Command. Their area of responsibility is primarily U.S. Central Command.

ASCOPE/PMESII Framework: Used as the primary form of agricultural assessment from the U.S. Army Special Forces that evaluates the relationship(s) between civil considerations (Areas, Structures, Capabilities, Organizations, People, and Events [ASCOPE]) and operational considerations (Political, Military, Economic, Social, Information, and Infrastructure [PMESII]).

Food (in)security: Defined by four key dimensions—availability of food, access to food and economy, utilization of food, and stability over time (FAO, 2008).

Special Operation Forces (SOF): Operate in a joint setting in the U.S. Special Operations Command and as the U.S. Army Special Operations Command capability (USASOC, 2020).

U.S. Army Special Operations Command (USASOC): Operate jointly with the Headquarters of the U.S. Department of the Army and the U.S. Special Operations Command to "prepare for any conflict and arm the joint force with the world's premiere Army Special Operations Forces…through our unique capabilities—operating with and through indigenous forces, understanding and wielding influence, precision targeting, and crisis response" (USASOC, 2020, p. 1).

U.S. Military Service Member: Includes any uniformed member—male or female—of the U.S. armed forces, which includes individuals in the U.S. Army, Air Force, Navy, Marine Corps, or Coast Guard operating as a component force or as a joint force (U.S. Department of Veterans Affairs, 2016). These members also include members of the Commissioned Corps of the Public Health Services and the

Commissioned Corps of the National Oceanic and Atmospheric Administration (U.S. Department of Veterans Affairs, 2016).

U.S. Special Operations Command (USSOCOM): Unified combatant command where the authorities use a military department-type structure and perform service-type functions for missions concerning "direct action, special reconnaissance, countering weapons of mass destruction, counterterrorism, unconventional warfare, foreign internal defense, security force assistance, hostage rescue and recovery, counterinsurgency, foreign humanitarian assistance, military information support operations, and civil affairs operations" (Joint Chiefs of Staff, 2014, p. ix).

Summary

As conflict drives food insecurity and as food insecurity drives conflict, it is vital to update food (in)security assessments for USASOC soldiers who conduct agricultural assessments in conflict zones. As a result, I discuss elements found in the literature supporting the need to create a USASOC curricular and training support framework in chapter two. Because food (in)security is impacted by conflict and, in some cases, serves as a factor driving conflict, I designed the study to include a review of food (in)security variables in research question one. Guided by an integrative literature review, I sought to answer research question one by identifying food (in)security variables influencing agricultural assessments in conflict zones, which served as a foundation for the second and third research questions. Consequently, a review of the literature is a finding for "Research Objective 1.1: Review the literature to summarize variables used to describe food (in)security" and will not be included in the study's literature review in Chapter 2.

CHAPTER II
LITERATURE REVIEW

Understanding the organizational makeup of the U.S. Department of Defense as outlined by Title 10-Armed Forces (2011a) sets the foundation for understanding how the U.S. Army Special Forces are positioned to address unconventional warfare mission directives. Special operators share joint tasks and roles specific to the service component of the Headquarters of U.S. Department of the Army (HQDA) and to the unified combatant command through the U.S. Special Operations Command (USSOCOM). Establishing an agricultural assessment framework or training doctrine also requires an overview of the U.S. Army leadership structure, an overview of adult learning, and a background of food security assessment tools.

U.S. Department of Defense

The U.S. Department of Defense is one of 15 executive departments that function under the executive branch of the U.S. federal government. The mission of the U.S. Department of Defense (2019b, para. 1) is "to provide the military forces needed to deter war and ensure our nation's security." According to the Goldwater-Nichols Department of Defense Reorganization Act of 1986, more commonly known as Title 10-Armed Forces (2011a), the Department of Defense comprises nine primary components:

> (a) The Office of the Secretary of Defense; (b) the Joint Chiefs of Staff; (c) the Joint Staff; (d) the Defense Agencies; (e) Department of Defense Field Activities; (f) the Department of the Army; (g) the Department of the Navy; (h) the Department of the Air Force; (i) the unified and specified combatant

commands; and (j) such other offices, agencies, activities, and commands as may be established or designated by law or by the President. (p. 26)

The U.S. Department of Defense (2019a; see Figure 1) organizational structure includes the U.S. Department of the Army as one of three service-component departments that report to the U.S. Secretary of Defense Mark T. Esper, Ph.D., who also served as the 23rd Secretary of the Army (U.S. Department of Defense, 2020b).

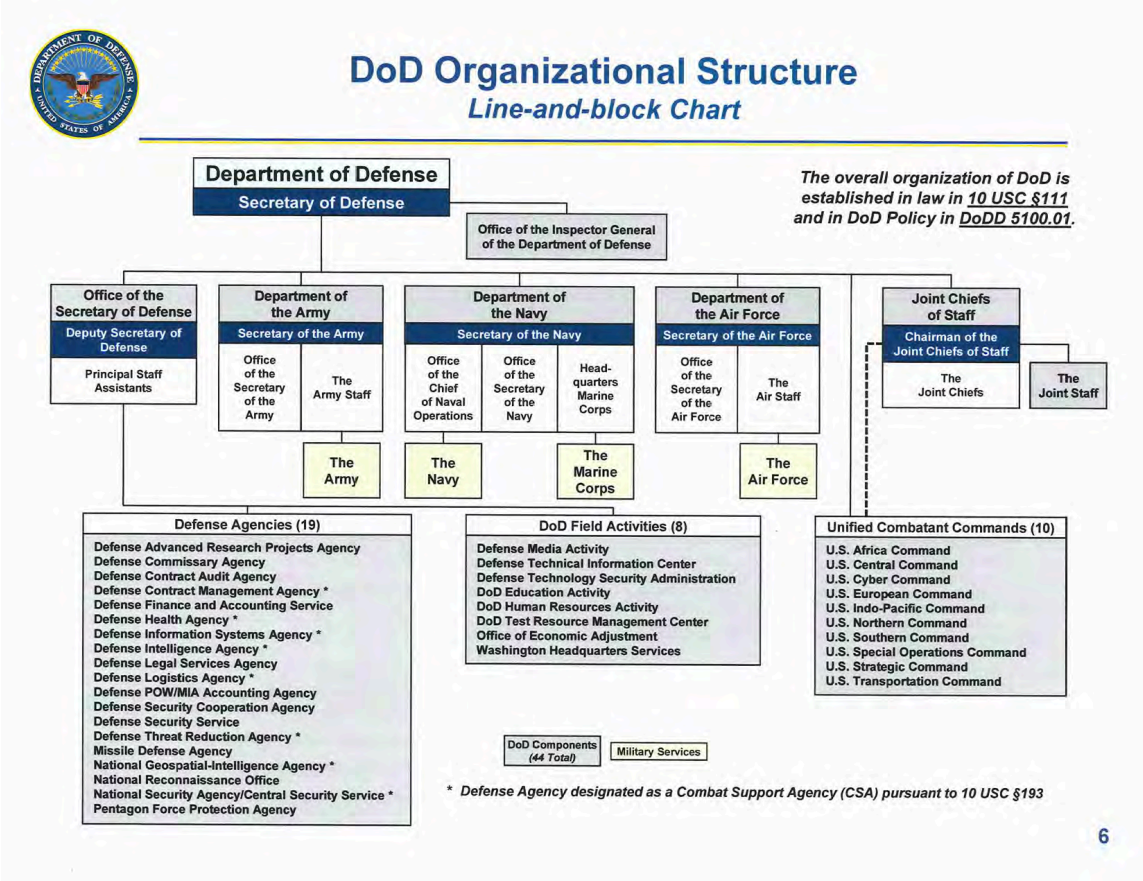


Figure 1. U.S. Department of Defense (2019a, p. 6) organizational structure. In the public domain.

The U.S. Army Special Operations are directed by the interagency service component from HQDA and by the joint doctrine of the unified combatant command in

USSOCOM. Because the U.S. Army Special Operations are guided by the HQDA and the USSOCOM, U.S. Army Special Forces are influenced by the organizational structures of each component. Thus, soldiers in the U.S. Army Special Forces play a joint role in the two. The interagency service role from HQDA and the joint role from USSOCOM are outlined by the U.S. Department of Defense's structure of combatant commands.

Combatant Commands

Unified and specified combatant commands are led by the Secretary of Defense and guided by the Chairman of the Joint Chiefs of Staff and the U.S. President. According to Title 10-Armed Forces (2011b), unified combatant commands have "broad, continuing missions and [are] composed of forces from two or more military departments" (p. 154). Conversely, specified combatant commands lead unique and "broad, continuing missions…normally composed of forces from a single military department" (Title 10-Armed Forces, 2011b, p. 154). All U.S. military service branches work together under combatant commands to ensure the effective control of military forces in both war and peace.

A combatant commander, who is at least a four-star general or admiral, leads each unified combatant command (Title 10-Armed Forces, 2011b). The U.S. Department of Defense (2020a) has 11 unified combatant commands: U.S. Africa Command (USAFRICOM), U.S. Central Command (USCENTCOM), U.S. European Command (USEUCOM), U.S. Indo-Pacific Command (USPACOM), U.S. Northern Command (USNORTHCOM), U.S. Southern Command (USSOUTHCOM), U.S. Cyber Command

(USCYBERCOM), U.S. Space Command (USSPACECOM), U.S. Special Operations Command (USSOCOM), U.S. Strategic Command (USSTRATCOM), and U.S. Transportation Command (USTRANSCOM; see Figure 2).

Figure 2. Eleven U.S. combatant command seals. Seals reprinted with permission; the use of the seals herein do not indicate the commands' approval or endorsement of the opinions expressed in this dissertation.

Seven of the unified combatant commands have geographical or regional responsibilities: USAFRICOM, USCENTCOM, USEUCOM, USPACOM,

USNORTHCOM, USSPACECOM, and USSOUTHCOM (USTRANSCOM, 2019; see Figure 3). In 2019, President Donald Trump and the U.S. Department of Defense added USSPACECOM as the most recent geographical combatant command.

Figure 3. The unified combatant commands with geographical responsibilities. USSPACECOM adds a 3-dimensional perspective (USTRANSCOM, 2019, para. 1). In the public domain.

The four unified combatant commands with functional responsibilities are USCYBERCOM, USSOCOM, USSTRATCOM, and USTRANSCOM (U.S. Department of Defense, 2020a). Each of the unified combatant commands operate in a joint effort to accomplish the specific mission outlined by the region or the function. The U.S. Department of Defense is currently undergoing a restructuring process to rename the 11 commands as simply combatant commands, instead of distinguishing them as functional or geographical commands (Maucione, 2020). However, each combatant

command still operates using a unified, joint force with missions guided by regional or functional orders.

U.S. Central Command (USCENTCOM)

Maintaining a military presence in USCENTCOM can be challenging due to the span of the area of responsibility and the diversity of the people who inhabit the area. The mission of USCENTCOM is to "build cooperation among nations throughout the Middle East[, Afghanistan, and Northeastern Africa], responding to crises, deterring and defeating threats, and increasing regional stability" (U.S. Department of Defense, 2020a, para. 3). However, USCENTCOM's area of responsibility extends "more than 4 million square miles and is populated by more than 550 million people from 22 ethnic groups, speaking 18 languages with hundreds of dialects and confessing multiple religions which transect national borders" (USCENTCOM, 2020, para.1). The area of responsibility for USCENTCOM spans three continents and includes multiple domains, such as land, sea, airways, pipelines, and navigable rivers.

The political climate in USCENTCOM presents unique challenges as this area is considered one of the most unstable parts of the world (USCENTCOM, 2020). Such instability has led to the U.S. military involvement in several campaigns, including Operation Desert Shield, Operation Desert Storm, Operation Enduring Freedom, Operation Iraqi Freedom, and Operation Inherent Resolve (USCENTCOM, 2020). Through these campaigns, USCENTCOM emerged in a fragile security environment in desperate need of stability efforts (McKenzie, 2020). However, building stability efforts required a basic understanding of the political and social climate.

To strengthen strategic communications and flow of information and commerce through the Middle East, the U.S. Department of Defense initiated support actions. The support actions in the Military Information Support Operations are designed to

> maintain freedom of movement; access and flow of global commerce; deter state-sponsored conventional attacks; mitigate malign influence; counter Weapons of Mass Destruction; promote regional stability, improve Partner Nation capabilities cooperation; show U.S. resolve and disrupt regional and trans-regional terrorist organizations. (USCENTCOM, 2020, para. 4)

Supported by U.S. Code and mission directives from the U.S. Department of Defense, these support actions are often implemented to delegitimize the adversary and develop rapport with indigenous populations living in the regions. Although the U.S. Army Special Operations Command (USASOC) lexicon refers to Military Information Support Operations as Psychological Operations (Cowan & Cook, 2018), both target operational and tactical efforts related to gathering information about a region's political, military, economic, and/or social environments. Consequently, because of the broad scope of USCENTCOM, building rapport with the people of each region should be accompanied by understanding of the differences between each country's culture as well as its listing on the United Nations' (UN; 2018) least developed countries (LDCs) list and the level of food (in)security in each country (see Table 1).

Table 1

Global Food Security Index Rankings of Countries in USCENTCOM

Country	Least Developed Country Status[a]	Overall Food Security Score[b]	Affordability[b]	Availability[b]	Quality and Safety[b]
Afghanistan	Yes	33.0[c]	-	-	-
Bahrain	No	66.6	81.9	56.3	56.9
Egypt	No	64.5	57.6	70.2	65.9
Iran	No	-	-	-	-
Iraq	No	44.0[d]	-	-	-
Jordan	No	61.0	70.5	54.8	54.3
Kazakhstan	No	67.3	77.5	57.7	68.3
Kuwait	No	74.8	88.1	62.3	75.9
Kyrgyzstan	No	-	-	-	-
Lebanon	No	-	-	-	-
Oman	No	68.4	77.8	57.6	74.4
Pakistan	No	56.8	63.3	55.7	43.6
Qatar	No	81.2	98.9	64.0	84.1
Saudi Arabia	No	73.5	86.3	61.8	73.5
Seychelles	No	-	-	-	-
Syria	No	38.4	34.6	38.9	46.4
Tajikistan	No	49.0	58.8	41.1	46.6
Turkmenistan	No	-	-	-	-

Table 1 Continued

Country	Least Developed Country Status[a]	Overall Food Security Score[b]	Affordability[b]	Availability[b]	Quality and Safety[b]
United Arab Emirates	No	76.5	89.8	63.7	78.5
Uzbekistan	No	59.0	65.6	55.1	53.4
Yemen	Yes	35.6	45.5	28.6	30.2

Note. Summary of food security values for the 22 USCENTCOM countries. Scores ranged from 0 (worst rating) to 100 (best rating for a fully-food secure home).
[a] Classification pulled from United Nations (2018) least developed countries list.
[b] Figures pulled from the top 113 country ranking on the Global Food Security Index (The Economist Group, 2019).
[c] Figures pulled from the World Food Program USA (2020).
[d] Figures pulled from USAID (2019).
- Unavailable data.

The Council on Foreign Relations (2018) rated three USCENTCOM countries—Afghanistan, Syrian Arab Republic (Syria), and Yemen—as three of the four highest-tiered conflict risks based on the likelihood of an attack and the impact on U.S. interests. Venezuela was the fourth country rated at a moderate-impact and high-likelihood risk level by the Council on Foreign Relations (2018). High-impact risk on U.S. interests was defined as "contingency [that] directly threatens the U.S. homeland, a defense treaty ally, or a vital strategic interest, and thus is likely to trigger a major U.S. military response" (Council on Foreign Relations, 2018, p. 4). High likelihood was assessed by a high projection of a probable attack in 2019. Because Afghanistan, Syrian Arab

Republic (Syria), and Yemen are in USCENTCOM, assessing the background of each country provides valuable context of the culture and conflict.

Afghanistan

Facing a growing rate of instability, conflict, and violence, Afghanistan was listed as one of the top three most food insecure countries in conflict (FAO & WFP, 2018a) and one of 47 countries on the UN's (2018) LDC list. As an LDC, it faces severe structural and social challenges and is "highly vulnerable to economic and environmental shocks" that prevent sustainable development (UN, 2018, para. 1). For example, the total population of Afghanistan is 34.9 million (U.S. Central Intelligence Agency [CIA], 2019a). From August to November 2017, approximately 7.6 million of those people (26% of the population) lived in Phase 3-Crisis or Phase 4-Emergency of FAO's and WFP's (2018a) integrated phase classification needing urgent food, nutrition, or livelihood assistance. Thus, in addition to conflict and displaced populations, the country has many factors contributing to its food and nutrition insecurity status (FAO, 2015):

> limited production and availability of food supplies, climate change, insufficient access to food due to widespread poverty, food shortages arising from disasters or price shocks, poor diets, poor health, water and sanitation conditions as well as insufficient knowledge of nutrition issues which prevent proper food utilization and others. (p. 3)

Rebuilding the agricultural industry in Afghanistan has been one of the highest development priorities for the U.S. in the region, which requires support from the

Afghan government and people. A key policy issue is to find the "right balance between economic efficiency and the risk of a national food crisis" (UN, 2018, p. 11). Due to the need to address physical security concerns, the U.S. military remains a key player in economic development and industry stability efforts (Johnson et al., 2012). The Afghan government is a presidential Islamic republic and is guided by Ashraf Ghani Ahmadzai, the Chief of State in Afghanistan and the President and Head of Government of the Islamic Republic of Afghanistan (CIA, 2019a). Furthermore, demographics and education provide a social perspective of Afghan citizens. The common ethnicities in Afghanistan are "Pashtun, Tajik, Hazara, Uzbek, other (includes smaller numbers of Baloch, Turkmen, Nuristani, Pamiri, Arab, Gujar, Brahui, Qizilbash, Aimaq, Pashai, and Kyrghyz)" (UN, 2018, p. 1). Another important component to understand as it relates to the study described herein is adult literacy. The adult literacy rate is 31.7%, and the Afghanistan government spent 3.9% of the total GDP on education, which resulted in 52% of males and 24.2% of females over the age of 15 who can read and write (CIA, 2019a).

Developing Afghan agriculture is vital to political and economic stability in the country. Agriculture contributes nearly 25% of the country's gross domestic product (GDP) and influences nearly 75% of every Afghan household (The World Bank Group, 2019). People who live in rural areas are especially impacted as nearly 90% of low-income families who live in rural areas of Afghanistan are involved in agriculture (CIA, 2019a). However, even with the average gross national income at $633 USD per capita, nearly 23% of the population is undernourished (UN, 2018). To mitigate this, address

the economic instability in agriculture, and develop the agricultural sector in Afghanistan between 2002–2010, the U.S. government invested more than $1 billion between 2002 and 2010 (SIGAR, 2011). More recently, just in 2018, USAID coordinated more than $201.4 million in domestic and international agricultural sales to attempt to restore Afghanistan's agricultural vitality and markets (USAID, 2019). Yet, despite efforts to develop Afghan agriculture and because of an increase in conflict and other societal factors, many regions of Afghanistan are still classified with chronic food insecurity.

Evidence to develop a comprehensive agricultural strategy for Afghanistan is inconsistent and lacking. Operating in a continuously vulnerable state leaves data for crop and livestock production, exports, domestic consumption, and food prices fragile (The World Bank Group, 2014). In fact, agricultural production in Afghanistan scored as a 7.5 instability level on the LDC scale, which was short of the 32.1 instability score needed to graduate from the LDC list (UN, 2018). The World Bank Group (2014) also reported that "of Afghanistan's land area of 65 million hectares, only about 8 [*sic*] million (or about 12 percent) is arable…and only 2 [*sic*] million ha of arable area is irrigated regularly each year" (p. 11). Because a majority of the country is either mountainous or desert, water and irrigation systems must be secure to transport water to the arable regions.

Syrian Arab Republic (Syria)

Driven by acute food insecurity factors, such as displacement, conflict, low wheat production, and high food prices, the Syrian Arab Republic (Syria) has nearly 5.5

million people facing urgent to crisis food insecurity (FAO & WFP, 2019). Approximately 28% of children under five years are stunted and nearly 92,000 children under five years are undernourished (Global Network Against Food Crises [GNAFC] & Food Security Information Network [FSIN], 2020). The on-going conflict threatened the country's socio-economic infrastructure and the production of food and fiber products. Displacement also served as a contributor to food insecurity and remained a challenge as families and individuals relocated or migrated to find safer locations (FAO & WFP, 2019). In September 2019, approximately 6.1 million Syrians were displaced due to internal conflict (GNAFC & FSIN, 2020). Syria also housed nearly 28,000 Palestinian refugees in 2019 (GNAFC & FSIN, 2020). When attempting to send to foreign assistance to Syria, gaining access to difficult populations emerged was a challenge heightened by conflict.

The agricultural industry accounts for nearly 20% of the Syrian GDP, and the primary agricultural products in Syria are livestock animals for meat and dairy (e.g., beef, mutton, eggs, and poultry); cereal grains (e.g., wheat, barley, lentils, and chickpeas); and fiber (e.g., cotton; CIA, 2019b). The Euphrates River is a key artery that cuts through the center of the country and provides access to water for irrigating the fertile soil on the north side. Having access to the Euphrates River also provides transportation options for agricultural products and people to move north or south on the river. Managing the conflict in Syria could help alleviate food insecurity concerns if households and communities can gain access to available food supplies. However, the movement of food can be disrupted by conflict slowing the supply chain.

Yemen

Yemen is currently facing the "worst human-made disaster in modern history" (FAO & WFP, 2019, p. vi) challenged by civil war threats (Council on Foreign Affairs, 2018). Driven by acute food insecurity factors, such as displacement, conflict, and economic collapse, more than half of Yemen's population—nearly 15.9 of 28.7 million people—faced crisis, emergency, or famine phases of food insecurity in 2018 (FAO & WFP, 2019). Approximately 65,000 of those people faced the most severe famine conditions as they reached the highest phase of food insecurity (FAO & WFP, 2019). Food insecurity impacts health care needs as 47% of children under the age of five grow to be stunted and 83.5% are anemic due to lack of nutritional requirements (GNAFC & FSIN, 2020). Individuals who do not live in the highest phase of food insecurity are likely to gain access to more food because of humanitarian aid (Tandon & Vishwanath, 2020). In 2017, the U.S. contributed nearly $1 billion USD in humanitarian assistance to Yemen (GNAFC & FSIN, 2020).

Next to oil production, Yemen's second largest GDP contributor is salt-water fishing. Additional agricultural industries include cereal grains, like wheat, sorghum, and maize, and small-scale livestock production (FAO, 2019). Yemen faces several agricultural challenges to maintaining food security, such as water shortages, climate change, pest management, high fuel prices, and disruption of the supply chain. For example, water shortages and drought drastically impact how much food can be produced in Yemen. The total area of Yemen is 527,968 square kilometers, and 0 square kilometers are surface water (CIA, 2019c). Another example is, in August 2019,

thousands of locusts swarmed East Africa, Southern Asia, and the Middle East threatening cereal harvests. These swarms coupled with threats from the Coronavirus Disease 2019 (COVID-19) delayed access to pesticides to attempt to control the populations. COVID-19 has not only threatened the safety of the health of the citizens, but it has also created crippling delays in the food supply chain (Tadros, 2020). With the challenges facing Yemen's agricultural industry, food could become a source of wealth and status.

Furthermore, food can be considered a weapon of war and political gain in Yemen (Runge & Graham, 2020). Yemen broke out in civil conflicts in 2014 against an Iranian-backed Houthi rebel tribe and a Saudi-driven militia (Council on Foreign Relations, 2018). These conflicts created several social issues within the country with one of the most concerning challenges being displaced individuals from homes, families, and communities (Runge & Graham, 2020). After conflict causes displacement, it can be difficult to identify areas needing humanitarian aid because individuals might not stay in the same location long as they search for resources to find a new home. As such, Tandon and Vishwanath (2020) recommended investigating the ongoing connection of conflict in Yemen through an economic collapse and food insecurity lens:

> One of the potential reasons why there might be little relationship between the geographic location of violence and food security is that particular types of violence—especially violent events that widely-affect supply chains—have strong adverse impacts on food security far beyond the location of where that violence occurs. (p. 2)

Connecting agricultural experts to soldiers who conduct agricultural assessments in conflict zones is vital to addressing food insecurity in regions that need it most (e.g., Afghanistan, Syria, and Yemen; FAO & WFP, 2018a; McCarthy et al., 2018). Using these experts to develop a framework to equip soldiers to conduct agricultural assessments is one way to assist food insecure regions and support military initiatives (McCarthy et al., 2018). As the National Security Strategy (The White House, 2017) aims to make the U.S. the leading provider of humanitarian assistance in the world, equipping soldiers who have access to threatened communities with agricultural assessment knowledge supports this strategy. Similarly, engaging local citizens to champion local efforts can be accomplished if developmental programs answer locally- and culturally-relevant issues. Developing educational programs to support agricultural development and assessment will not only address the humanitarian issue of food (in)security and poverty but also endure the safety and security of the United States.

U.S. Special Operations Command (USSOCOM)

Established in 1987 at MacDill Air Force Base, USSOCOM is a unique unified combatant command where the authorities use a military department-type structure and perform service-type functions. The primary functions of USSOCOM as outlined by the Joint Chiefs of Staff (2014) are

> direct action, special reconnaissance, countering weapons of mass destruction, counterterrorism, unconventional warfare, foreign internal defense, security force assistance, hostage rescue and recovery, counterinsurgency, foreign humanitarian

> assistance, military information support operations, and civil affairs operations. (p. ix)

The service components outlined in USSOCOM are the U.S. Army Special Operations Command (USASOC), Naval Special Warfare Command (NAVSPECWARCOM), Air Force Special Operations Command (AFSOC), Marine Corps Forces Special Operations Command (MARSOC), and the Joint Special Operations Command (JSOC). Each geographical combatant command is also supported by USSOCOM efforts.

The USSOCOM components have been involved in conflict for a majority of its 33-year existence, which positioned it to become a "global enterprise with broad joint warfighting, interagency, and international partnering responsibilities" (Black et al., 2018, p. 42). Because of the complex nature of USSOCOM (2020), its missions span a wide variety of directives, including

> civil affairs, counterinsurgency, counterterrorism, countering weapons of mass destruction, direct action, foreign humanitarian assistance, foreign internal defense, hostage rescue and recovery, military information support operations, security force assistance, special reconnaissance, unconventional warfare, and preparing of the environment. (para. 3)

Its vast responsibilities suggest that effectively operating using joint doctrine requires hybrid engagement from the leadership of the functional command and the service components.

Headquarters of the U.S. Department of the Army (HQDA)

The U.S. Department of the Army's mission for the Total Army, which comprises the U.S. Army, U.S. Army Reserves, and the National Guard, is "to deploy, fight, and win our Nation's wars by providing ready, prompt, and sustained land dominance by Army forces across the full spectrum of conflict as part of the Joint Force" (U.S. Department of the Army, 2019a, para. 2). Likewise, the U.S. Army strives to be ready to fight and win "against any adversary, anytime and anywhere, in a joint, combined, multi-domain, high-intensity conflict" in their vision for 2028 (U.S. Department of the Army, 2019a, para. 1). To support the mission and vision, HQDA guides and controls the institutional force that supports readiness and is composed of U.S. Army organizations that generate and sustain operational functions, which is known as the U.S. Army service component command or the Theater Army (U.S. Department of the Army, 2017a). The HQDA also outlines the roles of the U.S. Army's service component when operating with a unified command (U.S. Department of the Army, 2017a). These service component commands should not infringe on the jurisdiction of the unified combatant commanders' authority but should support joint efforts.

The HQDA is outlined by three primary components: Army Commands, Army Service Component Commands, and Direct Reporting Units. The Army Commands conducts several Title 10 functions that advance the U.S. Defense Strategy (Torreon & Feickert, 2018). The Army Commands comprises the U.S. Army Forces Command (FORSCOM) that trains and guides the Army's Total Force; the U.S. Army Training and Doctrine Command (TRADOC) that serves as the training and educational command to

strengthen the preparedness of the Army; the U.S. Army Materiel Command (AMC) that provides logistic support, superior technology, and acquisition development; and the U.S. Army Futures Command (AFC) that modernizes the Army for future missions (U.S. Department of the Army, 2020; see Figure 4).

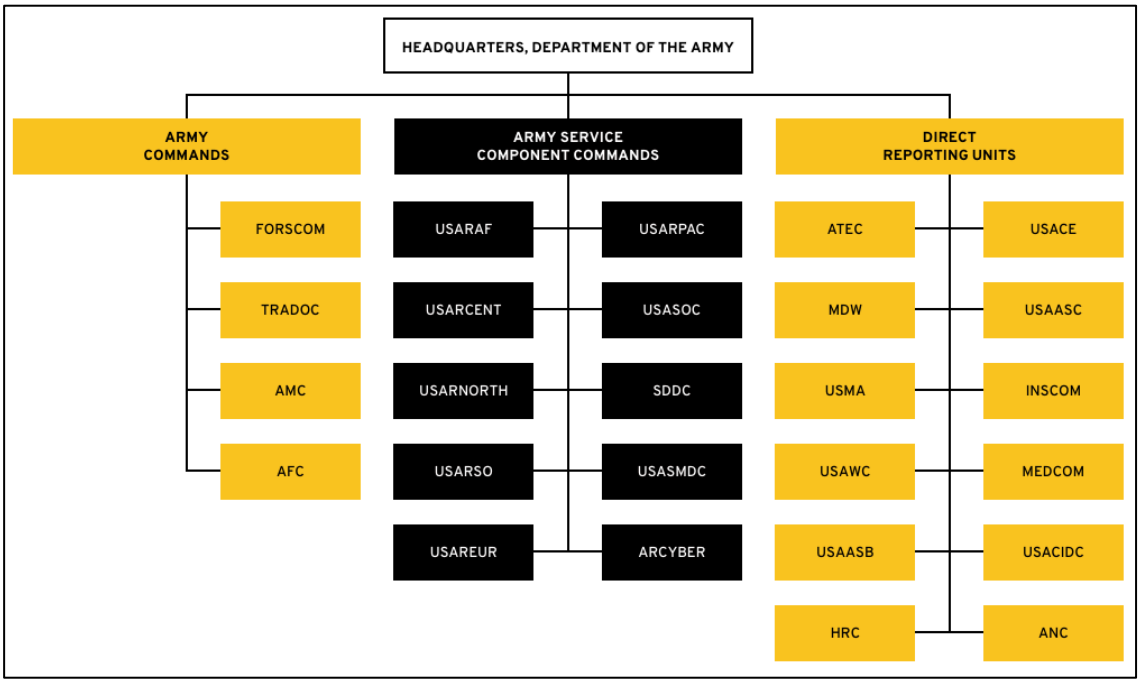


Figure 4. The HQDA command structure as outlined by Army Commands, Army Service Component Commands, and Direct Reporting Units (U.S. Department of the Army, 2020, para. 3). In the public domain.

The U.S. Army Service Component Commands are geographical and functional operational organizations that align with the unified combatant commands (Torreon & Feickert, 2018). According to the U.S. Department of the Army (2020), the supporting geographical combatant commands are U.S. Army Africa (USARAF); U.S. Army Central (USARCENT); U.S. Army Europe (USAREUR); U.S. Army North (USARNORTH); U.S. Army Pacific (USARPAC); and U.S. Army South (USARSO).

Furthermore, the supporting functional combatant commands are U.S. Army Special Operations Command (USASOC); Military Surface Deployment and Distribution Command (SDDC); U.S. Army Space and Missile Defense Command (USASMDC; formerly known as U.S. Army Space and Missile Defense Command/Army Forces Strategic Command); and U.S. Army Cyber Command (USARCYBER). Each Army Service Component Command supports geographical and functional combatant commands.

Finally, the Direct Reporting Units have operational and institutional functions for HQDA, and each unit plays a unique role to support the functions of HQDA (Torreon & Feickert, 2018). The Direct Reporting Units commands are U.S. Army Test and Evaluation Command (ATEC); U.S. Army Human Resources Command (HRC); U.S. Army Installation Management Command (IMCOM); U.S. Army Intelligence and Security Command (INSCOM); U.S. Army Military District of Washington (MDW); U.S. Army Medical Command (MEDCOM); U.S. Army Acquisition Support Center (USAASC); U.S. Army Corps of Engineers (USACE); U.S. Army Criminal Investigation Command (USACIDC); U.S. Military Academy (USMA); U.S. Army War College; Arlington National Cemetery (ANC); and U.S. Army Accessions Support Brigade (USAASB; U.S. Department of the Army, 2020). The Direct Reporting Units are highly trained to support their primary function.

U.S. Army Special Operations Command (USASOC)

Established in 1989, USASOC is the largest command in USSOCOM (Balestrieri, 2017). Comprised of nearly 23,000 soldiers, USASOC includes both active-

duty and Reserve forces (USASOC, 2019b). Soldiers in USASOC are directed by the interagency service component from HQDA and by the joint doctrine in the unified combatant command. As a result, USASOC is the designated Army Service Component Command to USSOCOM. The organizational structure of USASOC includes Special Forces Command, 75th Ranger Regiment, 160th Special Operations Aviation Regiment, Civil Affairs/Psychological Operations Command, John F. Kennedy Special Warfare Center and School, and Special Operations Support Command (see Figure 5).

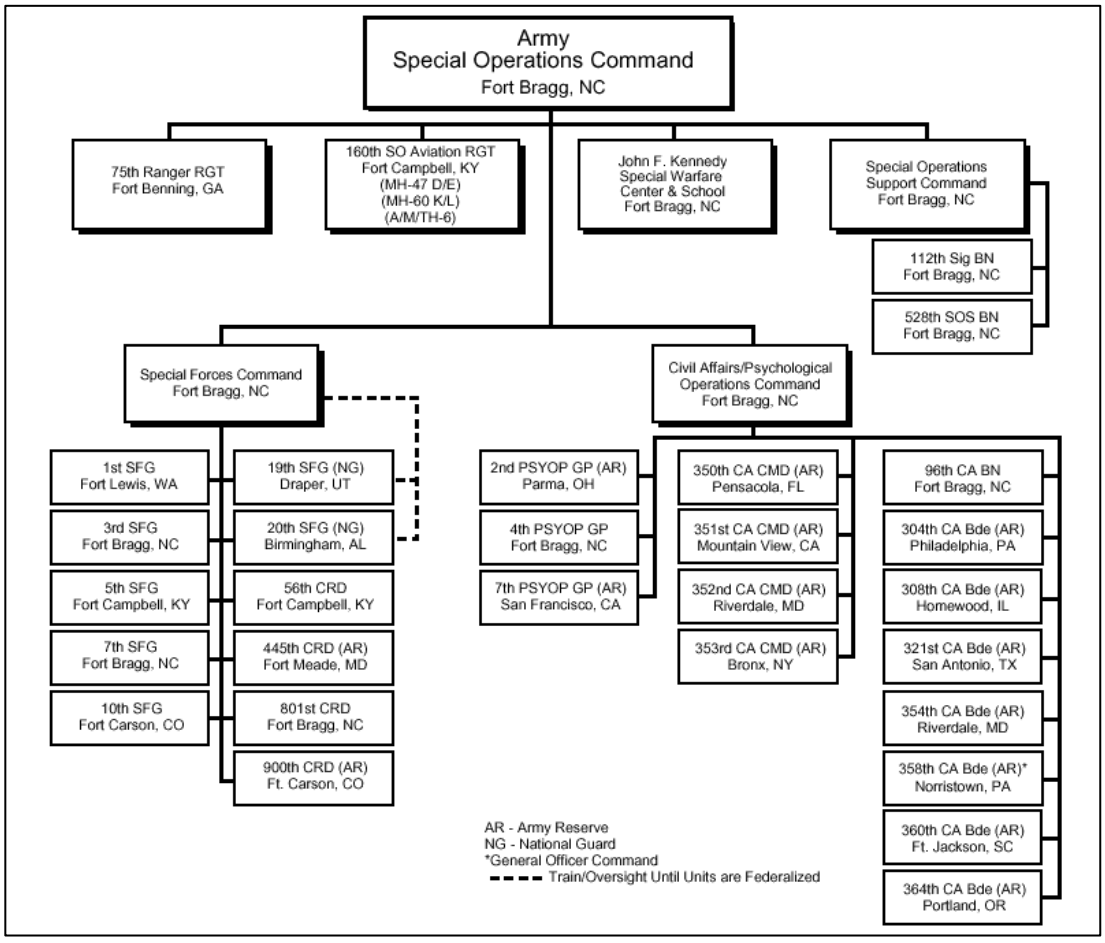


Figure 5. U.S. Army Special Operations (USASOC) organizational chart. From "US Army Special Operations Command (USASOC)," by J. Pike, 2013, (https://www.globalsecurity.org/military/agency/army/arsoc.htm). Copyright 2013 by GlobalSecurity.org. Reprinted with permission.

1st Special Forces Command (Airborne). The 1st Special Forces Command (Airborne), a division element of USASOC, is intended to "organize, equip, train, and validate forces to conduct full spectrum special operations in support of USSOCOM, geographic Combatant Commanders, American ambassadors, and other governmental agencies" (USASOC, 2019a, para. 1). The 1st Special Forces Command (Airborne) "plan[s], prepar[es], and execut[es]" missions related to special warfare (Cleveland et al., 2016, p. 15). Its 11 subordinate brigades are organized by "four distinct regiments which include Special Forces, Civil Affairs, Psychological Operations, and Sustainment elements" (USASOC, 2019a, para. 3). Most often, the regiment that is sent to an area of conflict first to lead unconventional warfare missions are the U.S. Army Special Forces.

U.S. Army Special Forces. Founded in 1952, the U.S. Army Special Forces, also known as Green Berets, are highly trained and highly-specialized soldiers who are expected to have more initiative, maturity, reliance, and resourcefulness than other soldiers (U.S. Department of the Army, 2019b). These soldiers are considered the "quiet professionals" of the U.S. military and are guided by the motto of "*De Oppresso Liber*—To free from oppression" (American Special Ops, 2019a, para. 11). U.S. Army Special Forces engage in highly-specialized operations focused on counterinsurgency, unconventional warfare, direct action, foreign internal defense, special reconnaissance, and security force assistance (U.S. Department of the Army, 2019b). The U.S. Army has "five active Special Forces groups and two Army National Guard Groups" (USASOC, 2019a, para. 1) that support each of the geographical combatant commands (see Figure 6).

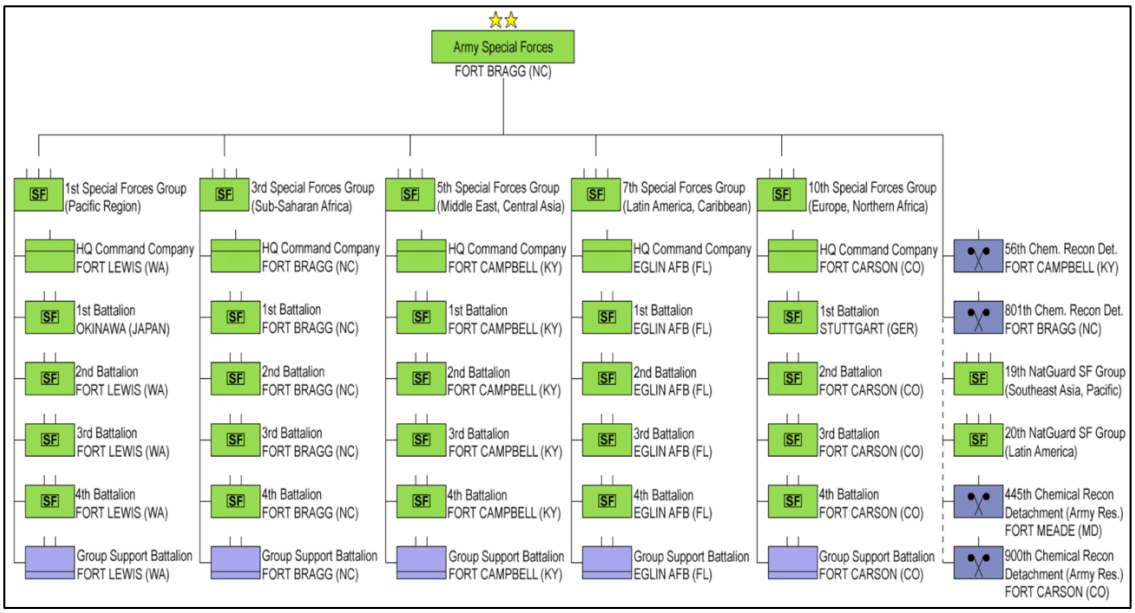


Figure 6. The U.S. Army Special Forces organizational chart (American Special Ops, 2019a, para. 12). In the public domain.

The U.S. Army Special Forces' tactical teams are organized into elite teams of 12 soldiers each, called Operational Detachment-Alpha (ODA) Teams or A-Teams. Soldiers in the U.S. Army Special Forces are cross trained in "weapons, communications, intelligence, medicine, and engineering" and some "ODA member[s] also possesses specialized language and cultural training" (USASOC, 2019a, para. 4). Typical 12-man ODAs consist of one Detachment Commander (Captain); one Assistant Detachment Commander (Warrant Officer 1 or Chief Warrant Officer 2); one Operations Sergeant (Master Sergeant); one Assistant Operations and Intelligence Sergeant (Sergeant First Class); two Weapons Sergeants (Sergeant First Class/Sergeant); two Communications Sergeants (Sergeant First Class/Sergeant); two Medical Sergeants (Sergeant First Class/Sergeant); and two Engineering Sergeants (Sergeant First

Class/Sergeant; American Special Ops, 2019b). Other soldiers may be placed on ODA Teams if they respond to orders needing different specializations.

Because of the highly-specialized skills U.S. Army Special Forces need to conduct the mission challenges, they must endure an intense selection and training process. The U.S. Army has three types of soldiers—enlisted, commissioned officers, and warrant officers (U.S. Department of the Army, 2019b). Although soldiers previously had to serve a minimum of three years, or at least until they ranked at or above E-3, before they could apply for the U.S. Army Special Forces, individuals can now apply by one of three ways. Those are to join (a) as a civilian recruit through the U.S. Army 18X Special Forces enlistment program, (b) as enlisted personnel currently serving, or (c) as an officer currently serving (Powers, 2018). Each route has different eligibility requirements.

To join the U.S. Army as a Special Forces solider, a civilian recruit must "be an active duty or Army National Guard Soldier; be a U.S. citizen; qualify for airborne training; and meet the Physical Fitness Assessment minimum standard of 49 pushups, 59 sit-ups, 15:12 (two-mile run), [and] six pull-ups" (U.S. Department of the Army, 2019b, para. 5–8). To use the 18X Special Forces enlistment program, recruits must successfully complete a 17-week course, *Infantry One Station Unit Training*, consisting of Army Basic Training and Advanced Individual Training (Powers, 2018). Recruits must, then, successfully complete Airborne training, or jump school, and complete a five-phase program that "will prepare them, teach them, and test and evaluate their capabilities to join the Special Forces Groups in the Army" (Powers, 2018, para. 4).

Prior to enlisting through the 18X enlistment program, soldiers could apply for the Special Forces by being an enlisted soldier or a commissioned officer. Soldiers currently serving as enlisted personnel who are interested in joining the Special Forces must (U.S. Department of the Army, 2019b)

- Have a minimum rank of E-3,
- Not be older than 36 years (can be waived) for Special Forces Assessment and Selection course attendance,
- Be eligible for a secret security clearance,
- Be airborne qualified or volunteer for airborne training,
- Have no more than 14 years of time served (E-3 to E-6),
- Have no more than 12 years of time served and nine months of time-in-grade when applying for the Special Forces Assessment and Selection course,
- Be either Airborne or Ranger qualified (E-7),
- Have an ASVAB General Technical score of 110,
- Pass a Special Forces physical in accordance with AR 40-501,
- Be able to reclassify from a current [Military Occupation Specialty (MOS)] or branch,
- Have a minimum of 36 months remaining time in service at the time of graduation from the Special Forces Qualification Course, and
- Not have 30 days or more lost time under USC 972 within current or preceding enlistments. (para. 10–21)

Commissioned officers who are currently serving can also apply for the U.S. Army Special Forces. To be accepted, officers must (U.S. Department of the Army, 2019b)

- Be a First Lieutenant or Captain to attend Special Forces Assessment and Selection (First lieutenants [*sic*] must be promotable to captain before attending the Special Forces Qualification Course.),
- Have a security clearance and meet eligibility criteria for a top-secret clearance,
- Not have disciplinary information on file, and
- Have a Defense Language Aptitude Battery score of 85 or higher. (para. 24–27)

Applying for the U.S. Army Special Forces may be an appealing option for currently serving enlisted soldiers or officers because of additional benefits to advance their skillsets and careers. Other soldiers see the greatest benefit as belonging to and being trained under one of the most elite U.S. Army units. Being selected as a U.S. Army Special Forces solider is a rigorous and extremely difficult process; however, once selected, they become a member of an elite group who dedicate their lives to serving others and freeing the world from oppression. Therefore, curricular and training support designed for U.S. Army Special Forces should consider the U.S. Army's leadership structure and apply appropriate adult learning techniques.

Modern Warfare Strategies—Stability

Stability is integral to most U.S. Army missions, but the level of stability efforts may vary based on operation or location. At any rate, stability efforts occur in both offensive and defensive operations (U.S. Department of the Army, 2019c). Stability is designed to address security-related issues involved in post-conflict situations (Zoli & Armstrong, 2010) to explain the relationship between a nation's political tensions and the country's ability to impact policy through long-term development (Rabasa, et al. 2011). When implemented with a long-term development approach, stability efforts seek to restore order in the host-nation or region.

Effective stability efforts rely on collaboration with the host-nation's government and civil authorities (U.S. Department of the Army, 2019c). In most cases, the U.S. military and U.S. governmental civilian agencies facilitate this process by providing security measures, planning for long-term development, and fostering collaborative relationships with the host nation (Bullimore, 2006; Earle, 2012). Accomplishing this mission requires members of the U.S. Army to partner with the host-nation's leaders to develop (U.S. Department of the Army; 2019c)

> a force capable of securing borders, protecting the population, holding individuals accountable for criminal activities, regulating the behavior of individuals or groups that pose a security risk, reestablishing essential civil services, and setting conditions in the operational area that enable the success of other partners. (2–11)

Reaching stability in a host-nation relies on building rapport with leaders and individuals in that host-nation (Bullimore, 2006; U.S. Department of the Army, 2008). As a result, the U.S. Department of the Army instituted irregular warfare efforts, known as unconventional warfare, to help U.S. soldiers build relationships with local populaces.

Unconventional Warfare

Unconventional warfare is a strategic, tactical, and operational approach to building stability and mobilizing indigenous populations in a host-nation. Unconventional warfare is defined as "operations conducted by, with, or through irregular forces in support of a resistance movement, an insurgency, or conventional military operations" (U.S. Department of the Army, 2008, 1–2). USSOCOM military service members adopt unconventional warfare efforts as a key element to conducting special operations, and USASOC soldiers typically lead the missions (Joint Chiefs of Staff, 2014). Unconventional warfare missions are designed to allow USASOC soldiers to maintain a "small-footprint, low-visibility operations often of a covert or clandestine nature" (Votel et al., 2016, p. 102) rather than conventional warfare, which is typically driven by counterterrorism or counterinsurgency efforts. As a result, unconventional warfare efforts have evolved with the national defense needs of the U.S. military.

Although irregular warfare strategies can be traced back to World War II and the Cold War, unconventional warfare tactics became a prominent effort during the Vietnam conflict (Lindsay, 1962). To psychologically win the "hearts and minds" of people in local villages in South Vietnam, U.S. military service members and governmental agencies used unconventional warfare to build trust and rapport with the local populace

and create a counterinsurgency against the Viet Cong (Lindsay, 1962). The Civil Operations and Revolutionary Development Support (CORDS) initiative became the primary military effort to target winning "hearts and minds" and engage the new strategy of unconventional warfare methods (MacDonald et al., 2019).

Similar to CORDS, modern unconventional warfare tactics target psychological operations. Unconventional warfare missions are often coined as Gray Zone operations, which are "characterized by intense political, economic, informational, and military competition more fervent in nature than normal steady-state diplomacy, yet short of conventional war" (Votel et al., 2016, p. 102). By leveraging the power of information, unconventional warfare missions employ "'irregular,' 'asymmetric,' or 'unrestricted' warfare" methods, which, "even when violence is joined, direct methods are generally avoided for the classic techniques of guerrilla warfare, terrorism, sabotage, subversion, and insurgency" (U.S. Department of the Army, 2008, 1–1). Mission analysis tools can provide assessment metrics to aid in gathering information related to these unconventional warfare missions.

Mission Analysis Tools. Pivotal to unconventional warfare is a thorough understanding of existing or former conflict in a region as well as political, economic, and cultural elements. Because of interconnected relationships among these elements, assessment tools used to conduct unconventional warfare missions use an effects-based approach, rather than an objective-based approach, to gathering information. Effects-based approaches investigate the relationship(s) and causal influence(s) of situations and dynamics (Vego, 2006). They support unconventional warfare missions because they

provide analysis tools to help soldiers make causal inferences and decisions based on dynamics or situations they observe and assess.

Without mission analysis tools investigating these relationships, members of the U.S. military could not effectively conduct stability efforts. Several strategic, operational, and tactical mission analysis tools exist to support assessments in a host-nation (see Figure 7). However, Hartley (2017) argued the DIME and PMESII assessments are the most effective tools because of their effects-based design.

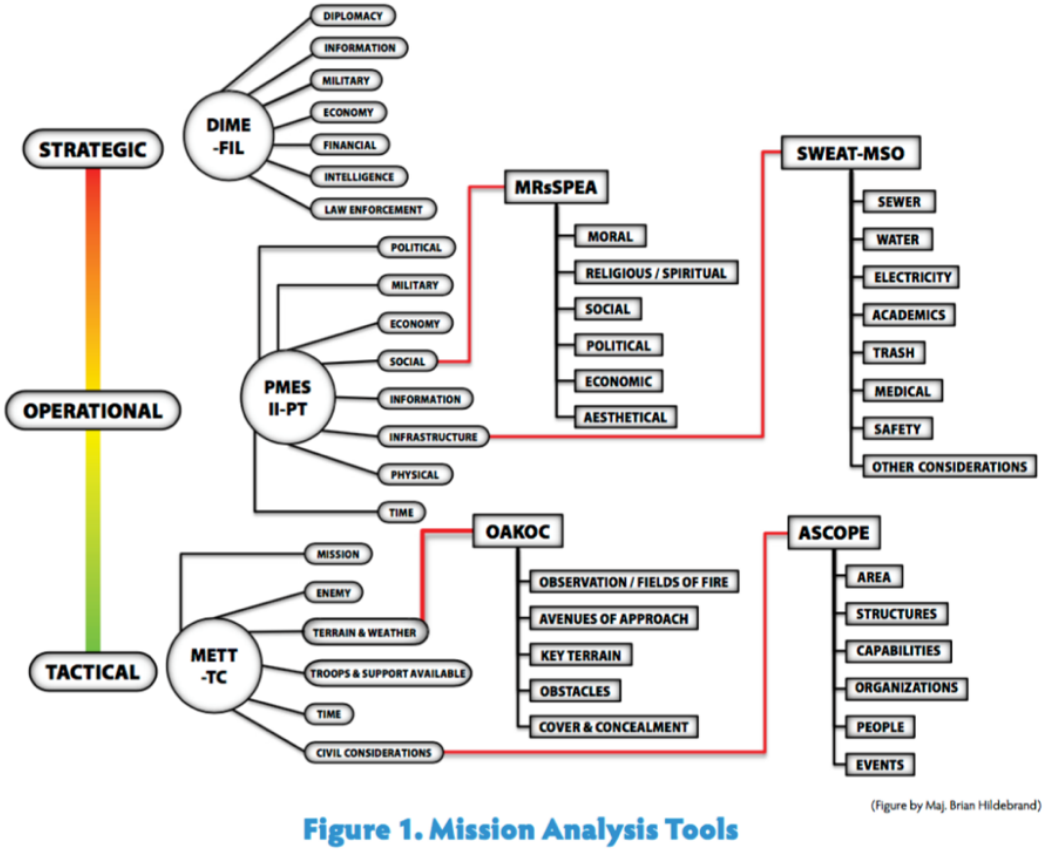


Figure 7. U.S. military mission analysis tools (Hildebrand, 2016). This figure is reprinted with the permission of *Military Review*, the Professional Journal of the U.S. Army, Combined Arms Center, Fort Leavenworth, Kansas. It was originally published in the May/June 2016 issue of *Military Review*.

These mission analysis tools are not all-inclusive as understanding human interactions with these elements is important in achieving a holistic assessment. Rațiu (2017) argued human terrain, including motivations, goals, capabilities, actions, and behaviors, are missing from the most common mission analysis tools listed above. Inherent to human motivations, capabilities, and behaviors are factors influencing basic human needs, such as food (in)security (Katsos, 2017). Considering that food (in)security is linked to economic, political, and social (in)stability (FAO & WFP, 2018a; USAID, 2016), adding a food (in)security element to a mission analysis tool merits further investigation.

Phases of Agricultural Assessment in Conflict Zones. Food (in)security plays a significant role with civil, political, and social issues. Food (in)security's relationship to these sectors plays a prominent role in the economy as any disruption or surplus can impact stability and peace (Katsos & AlKafaji, 2019). As a result, the broad, interconnected reach of food (in)security in communities engages several organizations and partners to play a role in gathering information to understand dynamics in conflict zones. In addition to gathering information, these partners often play a role in establishing plans for developing the regions to emerge out of conflict and regain stability.

Successfully maintaining and, in some cases, rebuilding agricultural systems is a lynchpin to development (Richardson & Nunes, 2015; Shinn et al., 2012), which should be guided by thorough and effective assessments. These assessments can be conducted for several reasons, including gathering information to support intelligence efforts,

building rapport with local populaces, establishing a U.S. presence in a community, protecting U.S. interests abroad, or helping a community or host-nation regain stability from conflict by humanitarian aid or long-term development (U.S. Department of the Army, 2008). These assessments often consider food (in)security variables as communities cannot regain stability and peace without strong agricultural systems (Katsos, 2017). Direct and indirect agricultural assessments occur at several levels in regions of conflict regardless of the level of training or expertise (see Figure 8). In cases where information is key to U.S. intelligence, the U.S. intelligence community (e.g., U.S. Central Intelligence Agency, National Security Agency, and Defense Intelligence Agency) performs initial assessments in regions of interest. However, due to the nature of many of these organizations, assessment information is likely classified.

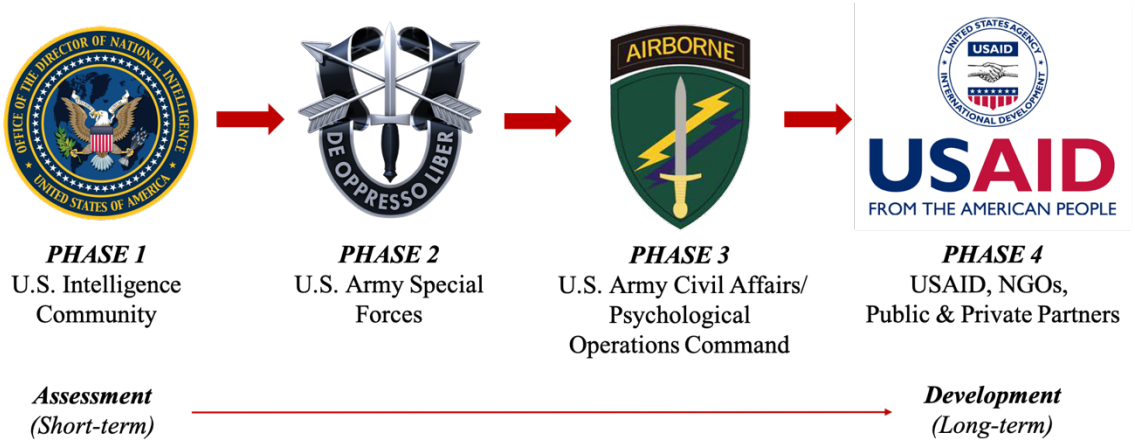


Figure 8. Key players conducting agricultural assessments in conflict zones. These logos serve as examples and are not intended to be an all-inclusive list. Logos/seals reprinted with permission; the use of the logos (U.S. Intelligence Community, U.S. Army Special Forces, U.S. Army Civil Affairs/Psychological Operations Command, USAID) herein do not indicate the organizations' approval or endorsement of the opinions expressed in this dissertation.

The second level of assessment is conducted by U.S. Army Special Forces soldiers who deploy to conflict zones to gather information to inform the U.S. Department of Defense and Intelligence Community and to build rapport with the local populace (U.S. Department of the Army, 2019b). While they might maintain a presence in a community for an extended period of time, their mission is typically intended to gather information and assess a situation. In cases where unconventional warfare is key to their mission, agricultural assessment might play a more prominent role.

The next stages shift to a long-term development focus by gathering information to rebuild community stability. In the U.S. Department of Defense, these missions are led by the U.S. Army Civil Affairs/Psychological Operations Command (U.S. Department of the Army, 2000). Soldiers in the U.S. Army Civil Affairs/Psychological Operations Command typically focus on building long-term relationships with the local populace. Because agriculture is necessary in each nation and community, information gathered from assessments is key to their missions. Finally, U.S. agencies such as USAID, non-governmental organizations (NGOs), and partners in the public and private sectors lead agricultural assessments because their experience is often more specialized in food systems (SIGAR, 2018). These individuals typically conduct humanitarian efforts with a long-term focus of community development.

Although the process of agricultural or community assessment is not always linear, distinguishing the difference between assessment and development occurs during phases of the stability efforts of the communities or host-nations (Hartley, 2017; Hillson, 2009). Even though agricultural considerations are inherently built into existing mission

analysis tools (e.g., farming zones, water infrastructure, and transportation of goods), there is not an assessment metric specifically designed for individuals in the U.S. Army Special Forces conducting ground level, operational and tactical agricultural assessments. As soldiers in the U.S. Army Special Forces are one of the first contacts for the U.S. in conflict zones, it is vital to develop a curricular and training framework to support their efforts conducting agricultural assessment.

U.S. Army Leadership Dynamics

U.S. Army soldiers are often placed in their MOS based on their skills, experiences, and leadership potential. Often, a soldier's MOS determines their leadership reach and influence. However, personal attributes and competencies are the underlying elements that foster a soldier's ability to "be, know, and do" in the U.S. Army (U.S. Department of the Army, 2019a, p. vii). Northouse (2019) defined leadership as "capacity or potential to influence. People have power when they have the ability to affect others' beliefs, attitudes, and courses of action" (p. 9). Similarly, the U.S. Department of the Army (2019a) defined leadership as "the activity of influencing people by providing purpose, direction, and motivation to accomplish the mission and improve the organization" (p. vii). Because of the need for their highly-trained, highly-specialized skillset, USASOC soldiers use their advanced leadership skills in their 12-man ODA Teams to showcase their knowledge, ideas, or ability to work with individuals inside and outside of their MOS. As a result, soldiers who are selected for the U.S. Army Special Forces embody formal and informal leadership capabilities.

The U.S. Department of the Army and USASOC rely on soldiers' abilities to lead in their ODA Teams. The U.S. Department of the Army (2012) described the role of leadership in their internal structure by highlighting the need for both formal and informal leadership that will support the traditional chain of command, direct partner relationships, and employ needed skillsets to interact with both informal and formal teams. For example, according to the U.S. Department of the Army (2012),

> formal leadership is granted to individuals by virtue of assignment to positions of responsibility and is a function of rank and experience. The Uniform Code of Military Justice supports military leaders in positions of legitimate authority. Formal leaders impose their authority over subordinates through lawful orders and directives. (p. 4)

In some cases, informal leadership is also needed, which may leave the leadership in a decentralized process, but commanders and supervisors have authority to step in at any point to take control, if needed. However, through the lens of informal leadership, the U.S. Department of the Army (2012) documented that

> informal leadership exists throughout organizations, must support legitimate authority, and plays an important role in mission accomplishment. Informal leadership is not based on rank or position in the organizational hierarchy. It can arise from knowledge, experience, or technical expertise and may require initiative on the part of the individual to assume responsibility. When leading without designated authority, informal leaders need to appreciate potential impacts and contribute to the team's success. As the final decision maker, the

> formal leader is ultimately responsible for legitimizing an informal leader's advice. (p. 4)

Again, these statements outline the action of leadership versus the process of leadership embodied in the individual soldier's character. In the *FM 6-22—Leadership Development Supplement* training, core leadership competencies needed in the U.S. Army's structure should reflect how soldiers outwardly lead people, guide the mission of the U.S. Army, and develop their abilities using their inward leadership capability (U.S. Department of the Army, 2015). Likewise, in addition to these competencies, Army leaders can also embody team leadership based on Northouse's (2019) framework, including ways to establish a "clear, elevating goal; results-driven structure; competent team members; unified commitment; [and] collaborative climate, supported by standards of excellence; external support and recognition; and principled leadership" (p. 376). These characteristics can be developed on an informal level or with formal training.

Finally, to train soldiers using unified leadership principles, the U.S. Department of the Army (2019a) released a memorandum for leaders in TRADOC. The memorandum focused on priorities for training soldiers, including readiness; ability to acquire, build and improve the U.S. Army; and leadership development to strengthen the Army profession (U.S. Department of the Army, 2019d). The U.S. Department of the Army (2019d) aspires to:

> Develop leaders we all want to be led by—alert, calm, approachable, competent, and committed leaders of character who lead by personal example ***and with a philosophy of mission command*** [*sic*]. Confident, agile, adaptable, and decisive

> professionals who foster truth, teamwork, cohesion and ***discipline initiative*** [*sic*]. Leaders who know how to conduct tough, realistic training. Trusted Army Professionals who [are] doctrinally sound and foster a positive command climate. (p. 1)

To supplement these priorities with adaptable and realistic training, adult learning strategies should be the foundation of a curricular framework for agricultural assessments in conflict zones.

Adult Learning

Developing effective curriculum frameworks and training support materials begins with analyzing and investigating learners' needs and educational strategies to convert into doctrine. Numerous scholars and researchers have investigated the educational learning strategies and variables for use in effective curricula development and teaching (Bloom, 1956; Davenport & Davenport, 1985; Gagné, 1972; Harrow, 1972; Hollingsworth & Ybarra, 2009; Hollingsworth & Ybarra, 2018; Houle, 1961; Knowles, 1978; Krathwohl et al., 1956; Mager, 1997; Merriam, 2001; Tough, 1971; Vygotsky, 1962). USASOC soldiers are adult learners who receive extensive formal and informal training to prepare for missions. Identifying the most important variables related to the teaching process and learning strategies for USASOC agricultural assessment curricula can be accomplished best by outlining the principles of adult learning, evaluating effective models for designing and delivering effective content, and applying adult learning and informal strategies in a USASOC context.

Knowles (1978) acknowledged that adult learners have different needs and expectations in the classroom than children do. As a result, Knowles (1980) contrasted andragogy (instruction intended for adults) with pedagogy (instruction intended for children). Distinguishing how adults learn differently than youth audiences can be guided by understanding underlying assumptions of what needs a typical adult learner might have. For example, Merriam (2001) outlined five andragogy assumptions that describe an adult learner as someone who

> (a) has an independent self-concept and who can direct his or her own learning, (b) has accumulated a reservoir of life experiences that is a rich resource for learning, (c) has learning needs closely related to changing social roles, (d) is problem-centered and interested in immediate application of knowledge, and (e) is motivated to learn by internal rather than external factors. (p. 5)

Andragogy as an educational theory has received pushback from subsequent researchers (Davenport & Davenport, 1985; Houle, 1961; Tough, 1971) who argued that separating instruction between adults and children was not the most effective educational approach because of the difficulty to separate previous experiences from learning capabilities. Knowles (1989) later modeled the difference of andragogy versus pedagogy on a continuum showcasing student-directed to teacher-directed learning. Following this continuum, andragogy emerged as arguably the most learned-centered model in educational programming for adults (Houle, 1996).

Principles of Adult Learning

Because adult learners have unique life situations that shape their perspectives, teaching adult audiences is different than youth audiences (Collins, 2004; Merriam, 2001). Two key principles distinguishing adults from adolescences are adults are typically self-guided and intrinsically-motivated learners (Collins, 2004). Adult learners are also more involved in the process of teaching as their life experiences often allow them to serve as co-facilitators with the instructor (Cordiner, 2020). These experiences also drive adult learners to possess a need for lessons to be relevant to real-world applications (Knowles, 1980) As adults use life experiences and backgrounds to direct their learning, developing a curricular framework would provide adequate structure for learners to understand the material, but leaves flexibility for learners to make individual meaning from the assessment criteria. Because USASOC soldiers bring a wide variety of experience to informal and formal classrooms, curricula frameworks should be designed and delivered in the context of agricultural assessments in conflict zones.

Designing Effective Instruction

Learning occurs in different domains—cognitive (Bloom, 1956), affective (Krathwohl et al., 1956), and psychomotor (Harrow, 1972). Each domain expands on a students' ability to grasp new information. The cognitive learning domain targets attained knowledge through mental development, which was the original learning domain targeted in explicit instruction (Bloom, 1956). However, instructors realized students do not learn only through their cognitive development. Students' attitudes, emotions, or feelings allow them to engage with learning on a more personal and deeper

level, which became known as the affective learning domain (Krathwohl et al., 1956). Finally, to address students' kinesthetic tendencies, the psychomotor learning domain targets physical or manual skills through activity (Harrow, 1972). Expanding on Bloom's (1956) learning domains Gagné (1972) introduced five categories of learning: cognitive strategies, intellectual skills, verbal information, attitudes, and motor skills. These categories targeted a learner's experience by using applied thinking rather than abstract thinking. To connect Gagné's (1972) categories outlining a learner's experience with learning objectives to direct the learning process, the curricular framework in the context of my study should engage multiple learners by targeting the cognitive, affective, and psychomotor learning domains.

Models of Instruction

Teaching adult learners using effective models is another important variable to consider when developing a curriculum framework. Effective curriculum models include steps for designing effective instruction and steps for delivery. Even though it was initially written for secondary classrooms, Hollingsworth and Ybarra's (2018) Explicit Direct Instruction (EDI) model sets a framework for designing and delivering high-quality, learner-focused lessons. The EDI model illustrates learners' experiences throughout the preparation, presentation, and assessment of lessons (see Figure 9). The EDI model includes steps for preparing, presenting, and assessing students in a lesson (Hollingsworth & Ybarra, 2009). At all points in the presenting section, the instructor should also check for understanding from students. Instructors can also select the teaching method(s) they use to help target the students' learning domains and objectives.

A few learner-centered strategies that could be applied in the EDI model are case studies, problem-solving opportunities, projects, and inquiry-based lessons (Edelson et al., 1989; McCombs & Whisler, 1997; Milistetd et al., 2019).

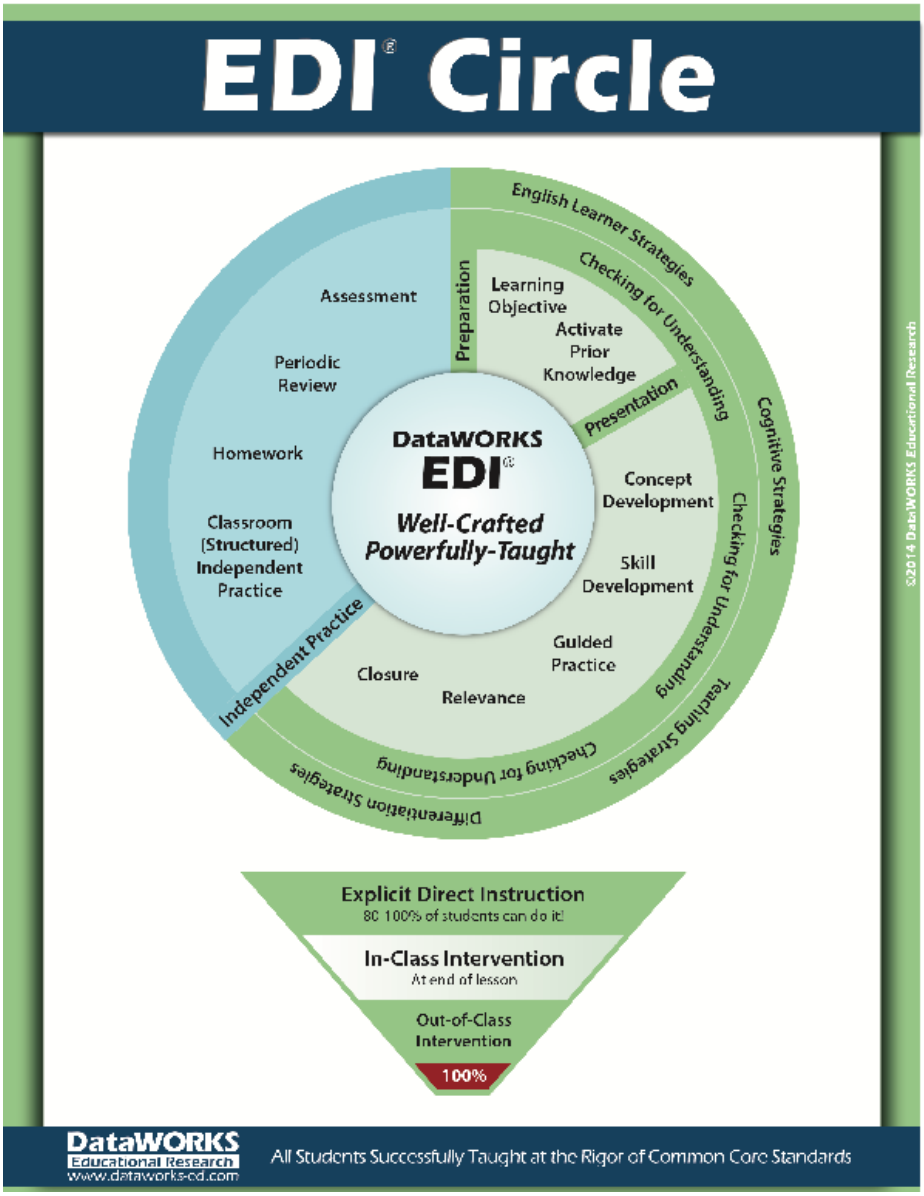


Figure 9. Learner-centered model highlighting the steps outlining the planning, presenting, and assessing student progress using EDI. From "Explicit Direct Instruction: The Power of the Well-Crafted and Well Taught Lesson," by Hollingsworth and Ybarra, 2018, (https://dataworks-ed.com/research-edi/). Copyright 2018 by DataWORKS Educational Research. Reprinted with permission.

Many times, adult learners do not need formal models of instruction like the EDI model to help them learn. As a result, Gagné (1965) developed a nine-step process to model how adults process and learn new information in formal and nonformal avenues. These steps guide how instruction can best be delivered to meet the needs of adult learners (Kruse, 2009): (1) gain attention; (2) inform learners of objectives; (3) stimulate recall of prior learning; (4) present the content; (5) provide "learning guidance" (p. 1); (6) elicit performance or practice; (7) provide feedback; (8) assess performance; and (9) enhance retention and transfer to the job. Instructors of adult learning can follow this process to engage adult learners with content and encourage ownership of the information.

Developing Rigorous Learning Objectives

Designing and developing an effective curriculum framework for adult learners requires writing effective learning objectives that target each learning domain—cognitive, affective, and psychomotor. Learning objectives assess, through performance, condition, and criterion, what learners should be able to do after the lesson, how they will do it, and at what level mastery should occur (Mager, 1997). Learning objectives should contain the "concepts (main ideas), the skills (measurable behavior), and sometimes a context (restricting condition) that describe what the students will be able to do successfully and independently by the end of instruction" (Hollingsworth & Ybarra, 2009, p. 54). Each objective should begin with an action verb targeting the desired learning domain.

To develop higher order thinking skills in the cognitive domain, Bloom (1956) stated that students' learning occurs through knowledge (retaining new information), comprehension (grasping the meaning of content), application (applying material to real-world contexts), analysis (breaking down elements into manageable pieces), synthesis (assembling parts to establish a new whole or new meaning), and evaluation (associating the value of the content of material in a holistic view; Herr, 2007). Anderson et al. (2001) expanded these categories by targeting how a person learns versus what they learn. Learning objectives can be organized by learning domain and by how students remember, understand, apply, analyze, evaluate, and create (Anderson et al., 2001). As students advance through the cognitive process, the complexity of the learning objectives increases. Anderson et al. (2001) also outlined learning objectives for the affective domain (guided by receiving, responding, valuing, organizing, and characterizing) and the psychomotor domain (guided by imitation, manipulation, precision, articulation, and naturalization action verbs).

Soldiers in TRADOC develop curricular support through unit training, adaptive leadership development, doctrine guidance, and capability and materiel integration (U.S. Department of the Army; 2017a). To be prepared to "win in a complex world," soldiers must pass rigorous training organized by TRADOC that target each of the learning domains (U.S. Department of the Army, 2014). Similar to Hollingsworth and Ybarra's (2018) EDI model highlighting learner-centered instruction, TRADOC uses systematic approaches to learning and developing curricula. One example is the USSOCOM Design Way that consists of "appreciat[ing] the context, defin[ing]the problem, and

develop[ing] an approach" (Black et al., 2018, p. 44). Following a similar systematic approach of observing the context, identifying the problem, and developing a solution, I identified variables and metrics to use in a learner-centered curricula framework for agricultural assessment in conflict zones.

Delivering Effective Instruction

Effective delivery of instruction can be guided by connecting teaching strategies with learner's needs. Hollingsworth and Ybarra (2009) stated that checking for understanding, explaining, modeling, and demonstrating are all examples of effective classroom delivery strategies. When teaching adult learners, instructors should "keep it relevant, remember student backgrounds, integrate emotion into lessons, encourage exploration, make assignments convenient, and always offer feedback" (Point Park University Online, 2016, para. 2). Instructors can improve delivery strategies by setting the stage for future learning and scaffolding learning objectives.

Making Connections—Zone of Proximal Development

Effective instructors can guide the student learning process by scaffolding and connecting learning opportunities for students. Vygotsky (1962, 1978) introduced the zone of proximal development, which is defined as the distance between a learner's previous knowledge and expected learning outcomes when introduced to new content. To help learners shorten the gap between existing knowledge and new learning objectives, Vygotsky (1962, 1978) and Ausubel (1963) introduced scaffolding, which is a teaching strategy that provides incremental instruction to close the gap between a learner's existing knowledge and future learning expectations. Instructors who scaffold

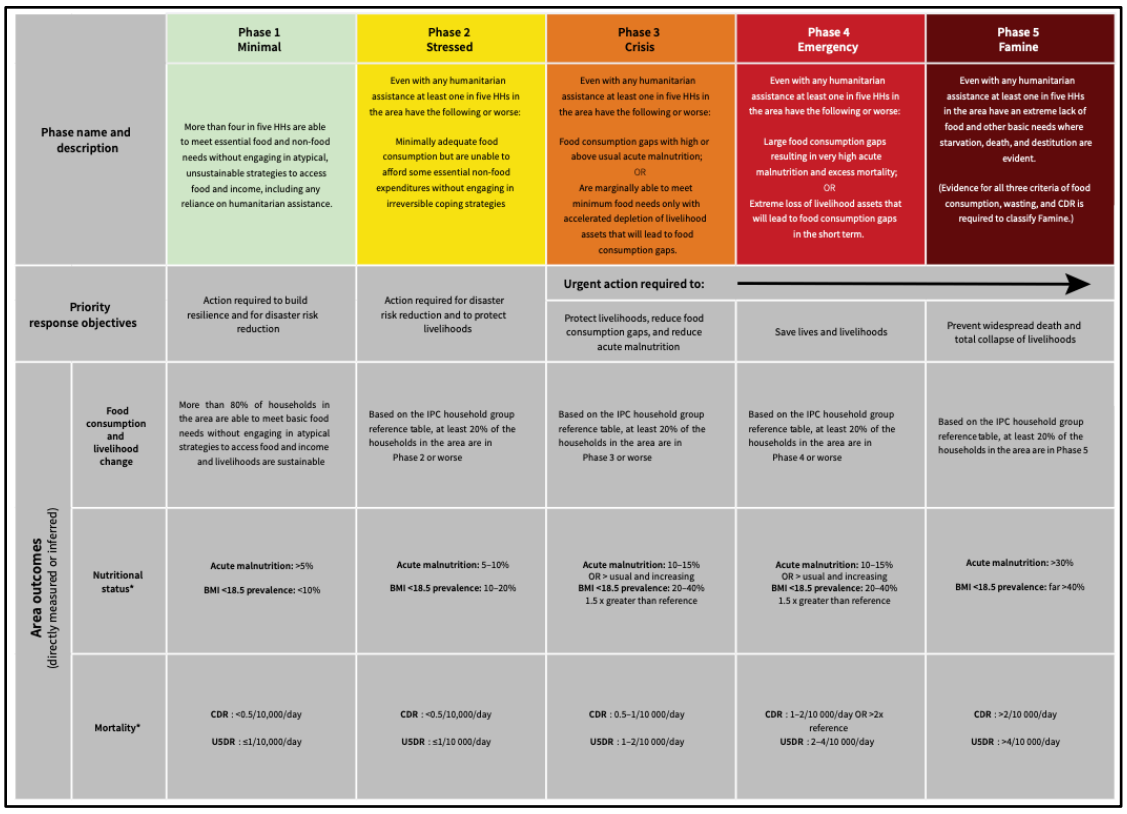
instructional material break the content into manageable steps to systemically introduce learners to new concepts (Ausubel, 1963). Scaffolding is also an effective strategy for checking for understanding throughout the process. Guiding students through the process of connecting main ideas is a valuable strategy to build student rapport, identify connections in learning, and advance a lesson.

Due to USASOC soldiers' previous training, developing new assessment materials should include learning strategies to scaffold the learner's knowledge of assessment and unconventional warfare to conceptualizing agricultural assessments in conflict zones. In addition, because of its emphasis on adult learning, Gagné's (1965) nine-step process focused on developing sound research objectives, learning outcomes, and assessment options will be key to developing a USASOC curricula framework. His initial research on learning principles was in the context of military training. In this context, Gagné (1962) considered many practical issues when developing his steps for educational instruction, including "minimal expenditure of time, money, and wasted effort" (p. 84). Hence, developing a curricula framework for USASOC should be accomplished using minimal, but appropriate, levels of time, money, and effort. The learning objectives, learning outcomes, and proposed learning assessments should reflect efficiency and effectiveness and be guided by basic human needs. Elements influencing conflict and food (in)security are further outlined in the conceptual framework.

Phases of Food (In)Security

Food (in)security can be assessed in five phases: minimal, stressed, crisis, emergency, and famine (FAO & WFP, 2019; see Figure 10). The phases in Figure 10 are

delineated by estimates representing household food consumption and livelihood changes based on efforts to secure food resources, nutritional demands, and mortality rates (FAO & WFP, 2019). First, the minimal phase is met when 75% of a household is deemed to be food-secure (i.e., food items are accessible, an assortment of nutritious food items is available, and food items are sustained over time; FAO & WFP, 2019). Second, the stressed phase occurs when, despite humanitarian efforts, at least 20% of a household is able to provide food resources for the household but has minimal disposable income remaining after essential food items are purchased. Third, the crisis phase occurs when at least 20% of a household experiences periodic gaps in food consumption, or when a household can provide essential food resources by depleting livelihood assets (FAO & WFP, 2019). This phase is the first phase requiring an urgent humanitarian response. Fourth, the emergency phase occurs when at least 20% of a household experiences large food consumption gaps despite humanitarian efforts. These affects often result in high acute malnutrition or mortality from starvation (FAO & WFP, 2019). Last, the famine phase occurs when at least 20% of a household experiences an extreme lack of food and other basic needs, resulting in populations facing evident "starvation, death, and destitution" (FAO & WFP, 2019, p. 36).



		Phase 1 Minimal	Phase 2 Stressed	Phase 3 Crisis	Phase 4 Emergency	Phase 5 Famine
Phase name and description		More than four in five HHs are able to meet essential food and non-food needs without engaging in atypical, unsustainable strategies to access food and income, including any reliance on humanitarian assistance.	Even with any humanitarian assistance at least one in five HHs in the area have the following or worse: Minimally adequate food consumption but are unable to afford some essential non-food expenditures without engaging in irreversible coping strategies	Even with any humanitarian assistance at least one in five HHs in the area have the following or worse: Food consumption gaps with high or above usual acute malnutrition; OR Are marginally able to meet minimum food needs only with accelerated depletion of livelihood assets that will lead to food consumption gaps.	Even with any humanitarian assistance at least one in five HHs in the area have the following or worse: Large food consumption gaps resulting in very high acute malnutrition and excess mortality; OR Extreme loss of livelihood assets that will lead to food consumption gaps in the short term.	Even with any humanitarian assistance at least one in five HHs in the area have an extreme lack of food and other basic needs where starvation, death, and destitution are evident. (Evidence for all three criteria of food consumption, wasting, and CDR is required to classify Famine.)
Priority response objectives		Action required to build resilience and for disaster risk reduction	Action required for disaster risk reduction and to protect livelihoods	Urgent action required to: Protect livelihoods, reduce food consumption gaps, and reduce acute malnutrition	Save lives and livelihoods	Prevent widespread death and total collapse of livelihoods
Area outcomes (directly measured or inferred)	Food consumption and livelihood change	More than 80% of households in the area are able to meet basic food needs without engaging in atypical strategies to access food and income and livelihoods are sustainable	Based on the IPC household group reference table, at least 20% of the households in the area are in Phase 2 or worse	Based on the IPC household group reference table, at least 20% of the households in the area are in Phase 3 or worse	Based on the IPC household group reference table, at least 20% of the households in the area are in Phase 4 or worse	Based on the IPC household group reference table, at least 20% of the households in the area are in Phase 5
	Nutritional status*	**Acute malnutrition:** >5% **BMI <18.5 prevalence:** <10%	**Acute malnutrition:** 5–10% **BMI <18.5 prevalence:** 10–20%	**Acute malnutrition:** 10–15% OR > usual and increasing **BMI <18.5 prevalence:** 20–40% 1.5 x greater than reference	**Acute malnutrition:** 10–15% OR > usual and increasing **BMI <18.5 prevalence:** 20–40% 1.5 x greater than reference	**Acute malnutrition:** >30% **BMI <18.5 prevalence:** far >40%
	Mortality*	**CDR** : <0.5/10,000/day **USDR** : ≤1/10,000/day	**CDR** : <0.5/10,000/day **USDR** : ≤1/10 000/day	**CDR** : 0.5–1/10 000/day **USDR** : 1–2/10 000/day	**CDR** : 1–2/10 000/day OR >2x reference **USDR** : 2–4/10 000/day	**CDR** : >2/10 000/day **USDR** : >4/10 000/day

Figure 10. Acute food insecurity reference table. From "Monitoring Food Security in Countries with Conflict Situations: A Joint FAO/WFP Update for the United Nations Security Council" by the Food and Agriculture Organization of the United Nations (FAO) and World Food Programme (WFP), 2019, (http://www.fao.org/emergencies/resources/documents/resources-detail/en/c/1178141/). Copyright 2019 by FAO and WFP. Reprinted with permission.

FAO and WFP's (2019) framework, developed by conflict-related factors in 22 countries and territories facing acute food insecurity, focuses on household food consumption deficits but does not include confounding variables to food insecurity (e.g., malnutrition, disease outbreaks, and lack of health access). In countries with minimal risk of food insecurity, households can access food and basic nutritional requirements without needing a high level of humanitarian assistance. These individuals are also unlikely to struggle to find food and nutritional resources. FAO's and WFP's (2019)

priority response objectives in areas with the minimal risk of food insecurity is to build a resilience plan and reduce disaster risks. On the other side, countries in the famine phase have an extreme lack of resources, which makes death likely and apparent. FAO's and WFP's (2019) priority response to these areas is to save as many lives as possible by preventing widespread death and the total collapse of livelihoods and cultures in areas of famine. FAO and WFP (2019) encourage urgent action response to occur when a community faces the crisis phase of food (in)security. FAO and WFP's (2019) outline of food (in)security phases sets a foundation for understanding the severity of basic human needs in the selected areas.

Considering these values influence acute food (in)security, it is vital to update food (in)security assessments for USASOC soldiers who conduct agricultural assessments in conflict zones. Because food (in)security is impacted by conflict, I designed the study herein to include a review of food (in)security variables in research question one. Guided by an integrative literature review, I sought to identify food (in)security variables influencing agricultural assessments in conflict zones in research question one, which served as a foundation for the second and third research questions. Therefore, a thorough review of food (in)security is included as a finding.

Conceptual Framework

Maslow's hierarchy of needs (1943, 1954, 1970a, 1970b, 1993), FAO's and WFP's (2019) conflict-related factors associated with influencing food (in)security, and the ASCOPE/PMESII Framework (U.S. Joint Force Command, 2006) guided the conceptual framework for the study herein.

Maslow's Hierarchy of Needs (1943, 1954, 1970a, 1970b, 1993)

Meeting basic human needs is paramount to creating curricular and training support frameworks. Maslow's (1943, 1954) hierarchy of needs is a foundational tool originally used to describe five levels of human needs, first outlining the hierarchy of biological/physiological, safety, social, esteem, and self-actualization needs (see Figure 11). McLeod (2007) suggested Maslow's original work (1943, 1954) was organized as a list of needs to survive in basic conditions, claiming that needs must be met in a foundational order to reach the top of the pinnacle. Maslow's (1970a, 1970b) hierarchy later evolved to include cognitive, aesthetic, and transcendence needs (see Figure 12).

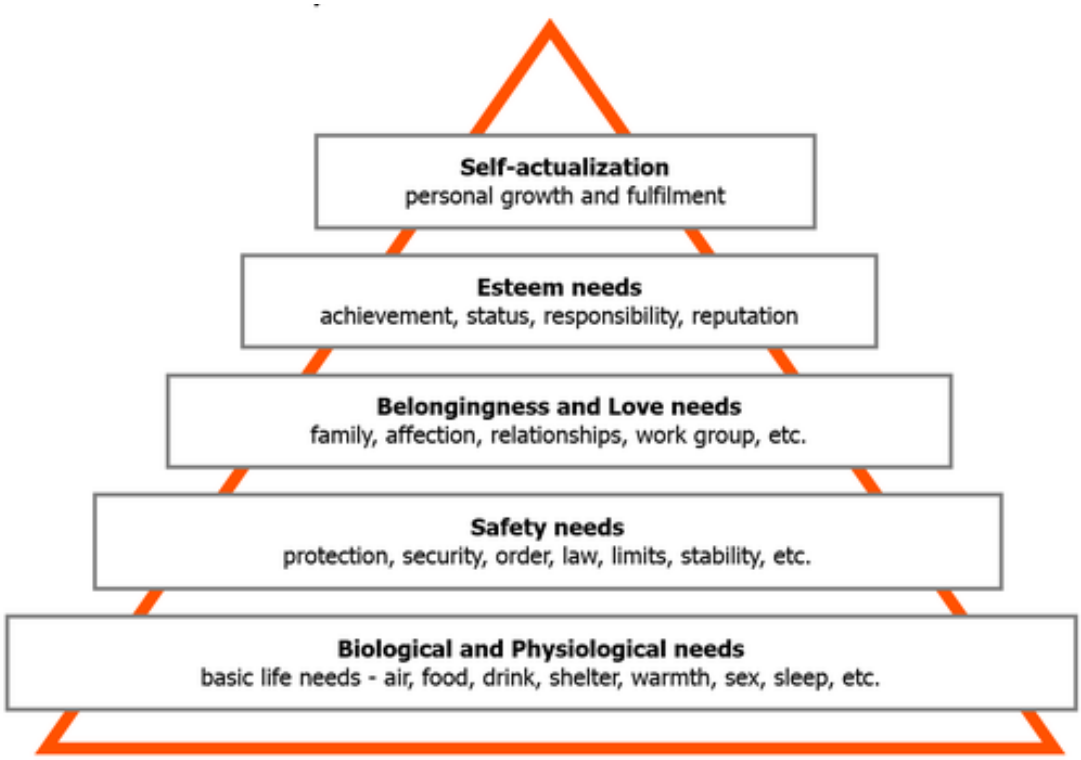


Figure 11. Maslow's (1943; as cited in Dörr, 2016) original hierarchy of needs model. In the public domain.

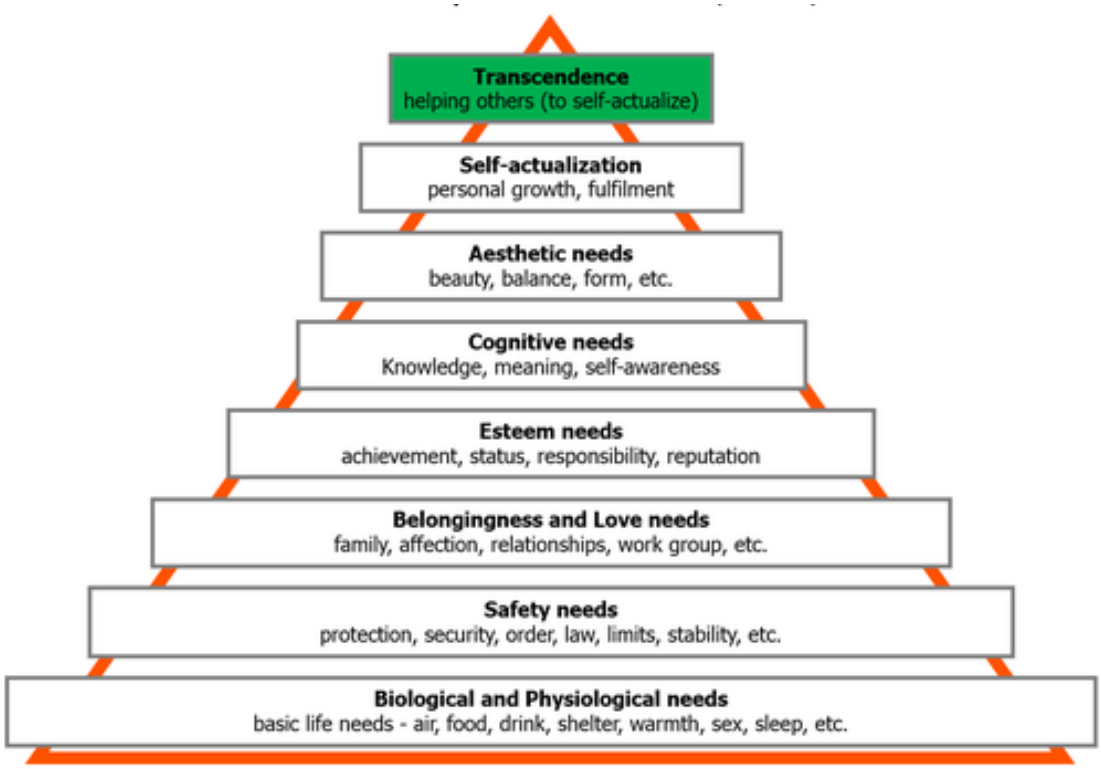


Figure 12. Maslow's (1993; as cited in Dörr, 2016) revised hierarchy of needs. In the public domain.

Maslow's (1993) hierarchy expands the cognitive, aesthetic, and transcendence needs illustrated in the 1970a and 1970b models by adding self-actualization and transcendence needs. Although Maslow's (1993) model is not intended to be all-encompassing, it does provide fundamental considerations for basic human needs that are valuable to stability efforts and international development. People constantly seek ways to ensure their basic needs are met (Shinn et al., 2012), and if biological or physiological needs are not met through sustainable food security, a system or community could become off-balance, creating a new dynamic in conflict zones (Katsos, 2017). As individuals seek to meet their basic needs, human motivations could become a new concern and potential threat in conflict zones (G. Shinn, personal communication,

February 14, 2020). For example, if people are motivated by providing enough food for their families, they might be willing to go to varying levels of extremes to ensure they can. However, when a population reaches food (in)security at the emergency to famine phases, it is unknown how much they are willing to put toward those extreme levels of conflict (FAO & WFP, 2018a). Populations in the stressed or crisis phases might be populations to watch closer in terms of how they might respond to ensuring their human needs are met in conflict zones (FAO & WFP, 2018a). Hence, investigating factors that drive or contribute to food insecurity will be valuable when developing a curricular and training support framework for agricultural assessment in conflict zones because of potential motivators to meet basic human needs.

At the root of food (in)security are standard biological and physiological human needs. As Maslow (1943, 1954, 1970a, 1970b, 1993) suggested, without meeting these basic human needs, humanity cannot survive. The importance of these fundamental elements can be magnified in areas of conflict (Katsos, 2017). Because most conflict zones are unpredictable and unstable, maintaining a constant food supply to meet basic needs can be challenging. Many times, the source of the instability can also influence a household's or community's ability to rebuild after or during a conflict because of damaged infrastructure, disrupted transportation, and collapsed economies. Because Maslow's (1943) hierarchy of needs provides a basic framework of human needs, I chose to use the 1943 model as a conceptual framework for developing a basic agricultural assessment framework. Also, because conflict zones present new challenges when assessing basic human needs, Maslow's (1943) model provided a foundational and

rudimentary perspective. As a result, using Maslow's (1943) hierarchy of needs, I prioritized food (in)security variables to address basic human needs into a hierarchy of assessment priorities for USASOC soldiers to use when conducting agricultural assessments in conflict zones.

FAO and WFP's (2018a) Conflict-Related Factors

In addition to Maslow's (1943) hierarchy of needs, I used FAO and WFP's (2018a) conflict-related factors as a conceptual framework for my study. FAO and WFP (2018a) established the conflict-related factors by investigating 22 countries and territories that were considered influencers of acute food insecurity. Each of the selected countries also showcased high levels of violence and conflict and were required to share a United Nations peacekeeping mission (FAO & WFP, 2018a). More than 30 additional countries were omitted because of lack of data or unstable conditions in the nature of their economies (FAO & WFP, 2018a). Data gathered from these countries formed the conflict-related factors associated with food (in)security. These variables outline the holistic view of conflict and food insecurity using seven factors: (a) displacement; (b) destruction of infrastructure needed for food production and distribution; (c) economic collapse; (d) disruption of trade and job losses; (e) fuel and food price inflation; (f) humanitarian access restricted; and (g) collapse of basic services and government support (FAO & WFP, 2018a; see Figure 13).

Displacement	When people abandon their land, homes and jobs they cannot grow or afford to buy food, they face extremely limited access to public services.
Destruction of infrastructure needed for food production and distribution	Supply routes are disrupted by, for example, road blocks and mines, so markets cannot be supplied. Agricultural land, mills, storage facilities, machinery etc are often damaged/destroyed.
Economic collapse	Conflict prevents businesses from operating and weakens the national economy, reducing employment opportunities and increasing poverty levels.
Disruption of trade and job losses	People face limited income opportunities and cannot afford to buy the necessities of life.
Fuel and food price inflation	Local currencies are weakened, and supply lines disrupted making food and fuel imports more expensive.
Humanitarian access restricted	People in conflict are reliant on food assistance but insecurity and unserviceable roads prevent humanitarian convoys from reaching them. In such dire circumstances people may face famine.
Collapse of basic services and Government support	Conflict undermines and sometimes destroys health and public distribution systems etc leaving people completely unsupported and reliant on humanitarian support. Poor sanitation leads to outbreaks of life-threating epidemics, particularly acute watery diarrhea/cholera, that further increase malnutrition levels.

Figure 13. Factors that drive hunger and conflict. From "Monitoring Food Security in Countries with Conflict Situations: A Joint FAO/WFP Update for the United Nations Security Council" by the Food and Agriculture Organization of the United Nations (FAO) and World Food Programme (WFP), 2018a, (http://www.fao.org/emergencies/resources/documents/resources-detail/en/c/1150274/). Copyright 2018 by FAO and WFP. Reprinted with permission.

I used FAO's and WFP's (2018a) factors that drive hunger and conflict as a model to conceptualize food (in)security in conflict zones. Conflict zones can refer to locations facing emerging-, current-, and post-conflict scenarios. Conflict is typically cyclical and can reappear in a community or host-nation following circumstances that could lead to conflict, which are typically associated with political climates, military movements, economic failure, social disputes, information delay, or infrastructure

collapse (U.S. Joint Force Command, 2006). The variables outlined by FAO and WFP (2018a) showcase factors that emerge as a result of or, in some cases, as an additional cause of conflict. These variables magnify food insecurity, which makes understanding them a high priority for developing an assessment framework. I used these factors to sort food (in)security variables that emerged in the three research questions. These factors also guided the conceptual understanding of how food (in)security interacts with operational dimensions (e.g., political, military, economic, social, information, and infrastructure) in areas of conflict. Establishing a framework to advance curriculum and training support for agricultural assessment in conflict zones relies on a clear perspective of food (in)security variables at a regional level; therefore, FAO and WFP's (2018a) seven food (in)security factors contributing to conflict provided a valuable lens for defining food (in)security.

ASCOPE/PMESII Framework

The ASCOPE/PMESII Framework (U.S. Joint Force Command, 2006) is an assessment matrix used by soldiers in the U.S. Army Special Forces to evaluate the relationship(s) between civil considerations (Areas, Structures, Capabilities, Organizations, People, and Events [ASCOPE]) and operational considerations (Political, Military, Economic, Social, Information, and Infrastructure [PMESII]). In an operational setting, PMESII outlines key dynamics that interact with the environment of the assessment, which could also include potential actions or motivations of the populace (Joint Chiefs of Staff, 2017; see Figure 14 & Appendix A). Although PMESII offers a sound framework in an operational setting, it lacks a civil consideration element. As a

result, adding the intersection of civil considerations (e.g., ASCOPE) provides a more holistic assessment of a scenario. The ASCOPE/PMESII Framework provides a common structure for assessing civil and operational elements (Hildebrand, 2016; Rațiu, 2017) and is commonly used by soldiers in USSOCOM and USASOC.

ASCOPE/PMESII

	P Political	M Military	E Economic	S Social	I Information	I Infrastructure
A Areas	Areas - Political (District Boundary, Party affiliation areas)	Areas - Military (Coalition / LN bases, historic ambush/IED sites)	Areas - Economic (bazaars, shops, markets)	Areas - Social (parks and other meeting areas)	Areas –Information (Radio/TV/newspapers /where people gather for word-of-mouth)	Areas – Infrastructure (Irrigation networks, water tables, medical coverage)
S Structures	Structures - Political (town halls, government offices)	Structures - Military / Police (police HQ, Military HHQ locations)	Structures - Economic (banks, markets, storage facilities)	Structures - Social (Churches, restaurants, bars, etc.)	Structures - Information (Cell / Radio / TV towers, print shops)	Structures - Infrastructure (roads, bridges, power lines, walls, dams)
C Capabilities	Capabilities - Political (Dispute resolution, Insurgent capabilities)	Capabilities - Military (security posture, strengths and weaknesses)	Capabilities - Economic (access to banks, ability to withstand natural disasters)	Capabilities - Social (Strength of local & national ties)	Capabilities - Info (Literacy rate, availability of media / phone service)	Capabilities - Infrastructure (Ability to build / maintain roads, walls, dams)
O Organizations	Organizations - Political (Political parties and other power brokers, UN,)	Organizations - Military (What units of military, police, insurgent are present)	Organizations - Economic (Banks, large land holders, big businesses)	Organizations - Social (tribes, clans, families, youth groups, NGOs / IGOs)	Organizations - Info (NEWS groups, influential people who pass word)	Organizations - Infrastructure (Government ministries, construction companies)
P People	People - Political (Governors, councils, elders)	People - Military (Leaders from coalition, LN and insurgent forces)	People - Economic (Bankers, landholders, merchants)	People - Social (Religious leaders, influential families	People - Info (Media owners, mullahs, heads of powerful families)	People - Infrastructure Builders, contractors, development councils)
E Events	Events - Political (elections, council meetings)	Events - Military (lethal/nonlethal events, loss of leadership, operations, anniversaries)	Events - Economic (drought, harvest, business open/close)	Events - Social (holidays, weddings, religious days)	Events - Info (IO campaigns, project openings, CIVCAS events)	Events - Infrastructure (road / bridge construction, well digging, scheduled maintenance)

Figure 14. ASCOPE/PMESII Framework used to conduct community assessments (U.S. Joint Force Command, 2006). In the public domain.

Although the ASCOPE/PMESII Framework is an effective assessment tool, it lacks specific consideration for the most basic form of addressing human needs through food (in)security. Even still, the ASCOPE/PMESII Framework serves as a conceptual model outlining how U.S. Army soldiers conduct community assessments. Therefore,

the ASCOPE/PMESII Framework will guide the development of the conceptual model created as a result of my dissertation study.

Summary

Developing a curricular and training support framework for agricultural assessment in conflict zones is guided by outlining the basics of the U.S. Department of Defense, USSOCOM, USASOC, warfare strategies, U.S. Army leadership structure, adult learning, phases of food (in)security, Maslow's hierarchy of needs, food (in)security factors driving conflict, and the ASCOPE/PMESII Framework. Combining the three conceptual frameworks—Maslow's hierarchy of needs (1943), FAO's and WFP's (2019) conflict-related factors associated with influencing food (in)security, and the ASCOPE/PMESII Framework (U.S. Joint Force Command, 2006)—provided a holistic view of human needs, conflict-related factors, and assessment considerations. All elements support the need to develop a curricular and training support framework for USASOC soldiers to use when conducting agricultural assessments in conflict zones.

CHAPTER III
METHODS

The exploratory sequential mixed methods study described herein includes three phases that I reported and analyzed using independent methods to specifically target each research question and objective. The complexity of the research questions required multiple research methods to conduct the study (Creswell & Clark, 2018): integrative literature review, qualitative semi-structured interviews, and a Q sort.

Mixed methods research designs provide an in-depth and rigorous approach to collecting complex data that are driven by different research questions (Creswell & Clark, 2018; Greene, 2007). Exploratory sequential mixed methods are designed to conduct qualitative research to better understand the context of phenomena with the analyzed data serving as the foundation to build the quantitative phase (Creswell & Creswell, 2018). Recognizing that the scope of qualitative and quantitative designs can be limited, Greene (2015) suggested "a mixed methods perspective legitimizes multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important and to be valued and cherished" (p. 750). Mixed methods designs allow researchers to offset the weaknesses of quantitative and qualitative designs, which adds to the credibility and completeness of the findings (Creswell & Clark, 2018). Mixed methods research is also typically guided by a pragmatic worldview suggesting that, to gain a broad, holistic understanding of a research problem, the research design should include both a qualitative and quantitative

approach (Creswell & Creswell, 2018). Therefore, a mixed methods research design best addressed the research questions in the study described herein (Greene & Hall, 2010).

Each phase of data collection informed the next phase (Merriam & Tisdell, 2016). Variables that emerged from the integrative literature review in phase one became the basis for the qualitative, semi-structured interviews with USASOC soldiers in phase two (Bryman, 2016; Merriam & Tisdell, 2016). Furthermore, I used key themes that emerged from the interviews in phase two to develop statements regarding training strategies for agricultural assessments using a Q sort in phase three. The exploratory sequential design of reviewing the literature, conducting interviews with USASOC soldiers, and developing a training framework best fit the needs of my study because of the lack of training materials available to prepare USASOC soldiers to conduct agricultural assessments in conflict zones.

Institutional Review Board

The Texas A&M University Institutional Review Board (IRB) requires all studies including human subjects be approved prior to conducting research. Texas A&M University's IRB office approved all documents that involved human subjects for the study, which included recruitment emails, information sheets, demographic surveys, semi-structured interview questions, follow-up interview recruitment email, follow-up interview questions, and Q sort statements. Texas A&M University IRB approved my study on August 2, 2019, (Protocol No. IRB 2019-0130; see Appendix B) following approval from the U.S. Department of the Army's Research Protection Administrative Review (RPAR) on July 29, 2019 (see Appendix C).

RQ1: What are the Existing Curricular and Training Frameworks used to Study Food (In)Security and Conduct Agricultural Assessments in Conflict Zones?

I conducted an integrative literature review (Torraco, 2005) to address research question one. Integrative literature reviews are best designed to share findings for emerging or mature fields (Torraco, 2005). Because studying the role that food security plays in agricultural assessments in conflict zones is an emerging topic, an integrative literature review was the best fit to identify possible variables and indices recommended for future studies (Torraco, 2005). Integrative literature reviews also typically concentrate on a key topic and explore the depth of a selected topic in the field (Callahan, 2010). Therefore, developing a conceptual model outlining food (in)security variables in conflict zones served as the first step in developing a USASOC curricular framework for conducting agricultural assessments.

Torraco (2005) defined integrative literature reviews as "a form of research that reviews, critiques, and synthesizes representative literature on a topic in an integrated way such that new frameworks and perspectives on the topic are generated" (p. 356). The methodology of an integrative literature review should include "how the literature was identified, analyzed, synthesized, and reported" (Torraco, 2005, p. 360). In an integrative literature review, the literature becomes the data, so it was important to establish a rigorous approach for gathering sources (Torraco, 2005). Therefore, I chose the Web of Science Social Sciences Citation Index (SSCI) to identify my literature base for research question one (Torraco, 2005). I chose SSCI because it included a collection of "some of the oldest, and most prestigious journals in their respective fields" (Clarivate

Analytics, 2018, para. 3) and because it has a vast reach of nearly 6.4 million records from 2,700 social science journals representing 55 disciplines (Clarivate Analytics, 2018). Due to the strength of the sources and depth of records, SSCI was also an ideal database to gather food security and agricultural assessment research.

After selecting the SSCI, I set the parameters of the literature review search to include the years between 2009–2019. Because research on agricultural assessments in conflict zones was most prevalent during the Global War on Terror, I chose literature from 2009–2014 to yield valuable data for agricultural assessments in conflict zones, and I chose literature between 2015–2019 to provide insight to emerging trends in agricultural assessment frameworks (Torraco, 2005). Because I sought to understand existing frameworks used to conduct agricultural assessment, I set the literature sample to include food (in)security or agricultural assessment in conflict zones as variables. I used the SSCI communication, education, and political science databases to seek studies connected to educating and assessing international audiences and to investigate political connections to the field of agriculture.

First, I searched the communication database using the keywords of *food (in)security* and *agricultural assessments in conflict zones*, yielding 16 articles. Of the 16 articles, I excluded six articles that were not empirical, peer-reviewed journal articles (e.g., periodical reviews) or were not relevant to food (in)security, international conflict, and/or agricultural assessments (e.g., organizational structure and internal conflict articles) leaving 10 relevant and usable articles.

Second, I searched the education research database using the keywords of *food (in)security* and *agricultural assessments in conflict zones*, yielding 42 articles. Of the 42 articles, I excluded 26 articles that were not empirical, peer-reviewed journal articles (e.g., early access journal articles, book reviews, and editorials) or were not relevant to food (in)security, conflict, and/or agricultural assessments (e.g., influence on diabetes education, sleep deprivation, and college retention) leaving 16 relevant and usable articles.

Third, I searched the political science database using the keywords of *food (in)security* and *agricultural assessments in conflict zones* to narrow the lens to government-driven agricultural assessments or political issues covering the key variables. This search yielded 103 articles. Of the 103 articles, I excluded 40 articles that were not empirical, peer-reviewed journal articles (e.g., book reviews, editorials, and early access journals) or were not relevant to food (in)security or agricultural assessments in conflict zones (e.g., economic patriotism, criminal law, and media influence in food communication) or that were duplicated articles, which left 63 relevant and usable articles.

Therefore, the search of the SSCI database for articles concerning education, communication, and political science articles yielded a sample of 87 potential articles. I then read each article to determine its relevance to education, communication, and political science and removed 24 additional articles from the selected sample that did not meet the predetermined criteria listed above (e.g., empirical, peer-reviewed journal articles that investigated both food (in)security and agricultural assessments in conflict

zones). As a result, I had a sample of 63 usable articles related to education, communication, and political science.

I synthesized the purpose of each related article and identified key variables and indices related to food (in)security and agricultural assessment in conflict zones (Torraco, 2005). Using the constant comparative method (Glaser, 1965), I classified food (in)security variables based on themes that emerged from reviewing the articles. Using the constant comparative method (Glaser, 1965), I refined these themes into 59 codes (communications, 16; education, 16; and political science, 27) to use as classifying variables (Torraco, 2005).

Research question one and the five corresponding objectives resulted in a conceptual model of food security and agricultural assessment in conflict zones. Torraco (2005) suggested that careful analysis of identified literature "allows the author to reconstruct, conceptually, the topic for a clearer understanding of it and to assess how well the topic is represented in the literature" (pp. 361–362). Thus, I combined the selected studies from the education, communication, and political science databases to identify food (in)security variables.

I reported the data from research question one according to findings in the education, communication, and political science databases and as Torraco suggested in 2005. I first provided a review of relevant literature sources and the research variables and indices in those sources. Second, I synthesized my findings to develop a conceptual model for understanding how food security influences agricultural assessments in conflict zones through education, communication, and political science lenses. Third, I

addressed research objectives one, two, three, and four of research question one prior to developing a conceptual model and addressing objective five.

RQ2: What are the Current Needs of USASOC Soldiers Who Conduct Agricultural Assessments in Conflict Zones?

I conducted qualitative, semi-structured interviews (Merriam & Tisdell, 2016) to address research question two.

Context of Study

The U.S. Army leads the Department of Defense's stability efforts in conflict zones (U.S. Department of the Army, 2019c). The mission of the U.S. Army Special Operations Command (USASOC) is to "man, train, equip, educate, organize, sustain, and support forces" through special operations across the world (U.S. Department of the Army, 2019a, para. 1). The USASOC soldiers support joint force initiatives and interagency partners to meet national strategies (U.S. Department of the Army, 2019a). They also support the U.S. Special Operations Command (USSOCOM) in unconventional warfare efforts supporting civil-military operation lines and stability, which often include economic and agricultural assessments (U.S. Department of the Army, 2008).

Although the U.S. Department of the Army (2017b) has adjusted unconventional warfare tactics since 2008, USASOC soldiers' primary unconventional warfare responsibilities include

> a) typography, hydrography, climate, weather, and terrain, including landforms, drainage, vegetation, and soils; b) census, location, ethnic composition, and

> health factors of the population; c) attitude of the population, including ideological, religious, and cultural aspects; d) government structure, including forms, personalities, existing laws, and political heritage; e) educational standards and facilities and important cultural activities and repositories; f) communications, transportation, utility, power, and natural resources; g) labor potential, including availability by type and skill, practices, and organizations; h) economic development, including principal industries, scientific and technical capabilities, commercial processes, banking structure, monetary system, price and commodity controls, extent and nature of agricultural production, and accustomed population dietary habits; i) leadership and cadres of resistance movements; j) organization and operation of guerrilla forces in and the extent and degree of volition involved in local support; and k) irregular activities, including espionage, sabotage, and other factors of subversion and disaffection from the indigenous population. (U.S. Department of the Army, 2008, 7–2)

As noted, agricultural initiatives are closely tied to unconventional warfare responsibilities and strategies (U.S. Department of the Army, 2008). When deployed, USASOC soldiers lead the initial assessments in each community or region, and after the initial assessment, if the U.S. Secretary of Defense chooses to maintain American presence in that region, civil affairs soldiers conduct the second level of agricultural and community assessments (T. Lindsey, personal communication, November 25, 2018). However, USASOC soldiers have no formal training or frameworks specific to agricultural assessments in conflict regions (D. Joiner, personal communication,

February 12, 2019). Drew Joiner, assistant operations sergeant in the U.S. Army Special Forces, explained (personal communication, February 12, 2019):

> We [USASOC soldiers] typically have to personally seek information from agricultural experts if we want to understand basic agricultural systems when we are deployed. It would be extremely helpful if we had a basic understanding of agricultural systems before we deployed. That would better help us evaluate the food systems impact on the economies after we arrive to our assignments.

Therefore, understanding soldiers' experiences and identifying themes to support unconventional warfare efforts was best supported by developing a framework to train soldiers to conduct agricultural assessments in conflict zones.

Study Design

Qualitative research helps explain how and why people make meaning of their experiences through words rather than numbers (Bryman, 2016) as qualitative researchers typically seek to explain the contextual reasoning for a learned social behavior (Bryman, 2016; Merriam & Tisdell, 2016). Creswell and Creswell (2018) suggested the process for collecting qualitative research "involves emerging questions and procedures, data typically collected in the participant's setting, data analysis inductively building from particulars to general themes, and the researcher wanting to make interpretations of the meaning of the data" (p. 4). Bryman (2016) summarized qualitative researchers as sharing an inductive view of research and theory, interpretivist epistemological position, and a constructivist ontological position.

Using a naturalistic approach (Lincoln & Guba, 1985), I conducted qualitative, semi-structured interviews (Merriam & Tisdell, 2016) with USASOC soldiers who had completed agricultural assessments in conflict zones. Lincoln and Guba (1985) suggested naturalistic interviewers avoid manipulating research outcomes and help the researcher gain the most unbiased data possible. Because I inductively sought to understand soldiers' perspectives of agricultural assessments, I chose to use semi-structured interviews.

Merriam and Tisdell (2016) said semi-structured interviewing is best used when researchers cannot directly observe behavior, when the experience(s) are unique to the interviewee, when the knowledge would be difficult to replicate, or when the account of the experience is best told by the interviewee. Because USASOC soldiers have unique access to populations who face food insecurity in conflict zones and are often the first individuals to conduct agricultural assessments in these regions, semi-structured interviews best fit the needs of the objectives for research question two (Merriam & Tisdell, 2016).

Four general weaknesses challenged the depth of answers from a semi-structured interview design (Creswell & Creswell, 2018). First, some answers were too broad because I designed the questions to be more open-ended (Merriam & Tisdell, 2016). Second, during the semi-structured interviews, some soldiers filtered the information they shared to ensure they discussed the topic at an unclassified level. Third, not all soldiers easily expressed their stories verbally (Creswell & Creswell, 2018). Fourth, a researcher's presence and the location can yield biased responses because interviews are

often not in the natural field setting (Creswell & Creswell, 2018). To accommodate for these challenges, I asked follow-up questions for soldiers to elaborate their open-ended responses, and I interviewed soldiers in physical locations that were familiar and comfortable for them.

Participants

I contacted the Officer-in-Charge (OIC) of the USASOC Unconventional Warfare Course, Chief Warrant Officer 2 Richard "Trey" Lindsey, at Fort Campbell, Kentucky, and gained research access permission from COL John Dyke, Deputy Commander of the 5th Special Forces Group (Airborne) of the U.S. Department of the Army to collect data from any willing 5th Special Forces Group (Airborne) soldier who had completed agricultural assessments in conflict zones (see Appendix D). Soldiers at Fort Campbell had a strong need for research on agricultural assessment, so they welcomed the research (T. Lindsey, personal communication, February 8, 2019).

The OIC of the USASOC Unconventional Warfare Course assisted with recruiting soldiers (n = 19; see Table 2) through face-to-face conversations or a recruitment email (see Appendix E) in an effort to reach data saturation (Merriam & Tisdell, 2016; Warren, 2001). Fusch and Ness (2015) suggested that, "data saturation is reached when there is enough information to replicate the study when the ability to obtain additional new information has been attained, and when further coding is no longer feasible" (p. 1408). Although I gained clearance for follow-up phone interviews with soldiers if I did not meet data saturation (T. Lindsey, personal communication, February 8, 2019), such follow up was not needed. I purposively selected soldiers based

on their experience serving in USASOC, and all interviewees had experience conducting at least one community assessment involving an agricultural component at the time of the interview (Merriam & Tisdell, 2016).

Table 2

Demographics of USASOC Soldiers (n = 19)

Demographic Characteristic	*n*	*%*
Gender		
Male	19	100
Rank		
E-6: Staff Sergeant	4	21
E-7: Sergeant First Class	5	26
E-8: Master Sergeant	2	11
E-9: Sergeant Major	1	5
CW2: Chief Warrant Officer 2	2	11
CW3: Chief Warrant Officer 3	1	5
CW4: Chief Warrant Officer 4	2	11
O-3: Captain	1	5
O-4: Major	1	5
Years in the Military (active and reserve)		
0–5 years	0	0
6–10 years	5	26
11–15 years	3	16
16–20 years	7	37

Table 2 Continued

Demographic Characteristic	*n*	%
21–25 years	4	21

Note. All soldiers had experience conducting conflict assessments.

Instrumentation

I developed the initial semi-structured interview questions based on variables and metrics discovered in the integrative literature review and based on elements in the conceptual framework (see Table 3 and Appendix F). I used a naturalistic approach, guided by my research positionality and constructivist paradigm, to allow inductive questions to emerge based on statements made during the interviews. To mitigate personal bias, I used a reflexive journal of experiences during the semi-structured interviews (Lincoln & Guba, 1985). I designed the example questions to investigate what curricular frameworks USASOC soldiers previously used and identify additional needs.

Table 3

Semi-Structured Interview Questionnaire

Question #	Question
1	Describe your experience with agriculture or agricultural production.
2	To date, what type of formal agricultural training have you had?
3	To date, what type of informational agricultural training have you had?
4	Describe the type of training that would be the most helpful regarding agricultural assessment.

Table 3 Continued

Question #	Question
5	Think back to the communities you have completed assessments in prior to now. Describe what type of community or agricultural infrastructure would have been helpful to know prior to your deployment.
6	At what point do you see power structures in the communities influencing future agricultural assessments?
7	To what extent do you see training for different agricultural practices valuable for your missions aboard?
8	What additional resources would help you be more successful with agricultural assessment in conflict zones?
9	What type of relationship do you see food (in)security and conflict? Do you believe they are related? Why or why not?
10	Would you like to receive a copy of your transcribed audio file? If so, please provide your email address.

Pilot Study

To review the quality of my interview questions, I submitted my interview protocol to the OIC of the USASOC Unconventional Warfare Course at Fort Campbell, Kentucky. The OIC was a Chief Warrant Officer (CW2) in the Advanced Skills Company, 5th Special Forces Group (Airborne) at Fort Campbell, and he specialized in interviewing procedures at USASOC (T. Lindsey, personal communication, February 8, 2019). He reviewed the questions and context of the study to ensure they were relevant and rigorous enough to gain rich responses (Bryman, 2016; Creswell & Creswell, 2018). The OIC of the USASOC Unconventional Warfare Course also shared the interview protocol with additional soldiers in the U.S. Army 5th Special Forces Group (Airborne)

who specialized in unconventional warfare efforts (n = 10; not included in the study's sample) and with his commander to gain additional advice on the relevance of the questions to the study and USASOC needs (T. Lindsey, personal communication, February 8, 2019). After I received feedback on the quality of the questions from the OIC's team, I conducted pilot interviews (Krueger & Casey, 2015) with individuals who had experience conducting agricultural assessments in conflict zones (n = 5) to ensure the questions made sense to the interviewees.

Data Collection

I conducted semi-structured interviews at Fort Campbell in September 2019. The interviews lasted 50–60 minutes to avoid participant fatigue but to still gain candid and quality responses (Merriam & Tisdell, 2016). Prior to the interview, I gave participants a participant information form (see Appendix G) explaining their roles and rights in the research, the background of the study, data usage, possible risks associated with participating, and who to contact should they have concerns with the study (Bryman, 2016). Participants also received a demographic survey (see Appendix H) prior to the interview to collect gender, ethnicity, educational level, years of military service, and level of agricultural experience data.

To maintain participant confidentiality (Bryman, 2016), I assigned participants a code with a letter-number combination using the first letter of the participant's first name and the numeric order I conducted the interview (Loviglio, 2012). I cleaned the data after data collection (Kaiser, 2009) by removing identifiers, including names, locations, or titles (Bryman, 2016). I stored data collection records, journals, and audits in a locked

desk in a locked office and online data on a password-protected computer (Merriam & Tisdell, 2016). When collecting face-to-face data at Fort Campbell, I conducted interviews in a quiet, secluded boardroom to make the participants feel comfortable sharing what they experienced at an unclassified level (Merriam & Tisdell, 2016). To avoid interviewer fatigue, I conducted no more than eight interviews per day.

Data Analysis

I transcribed and coded the data immediately following the interviews (Creswell & Creswell, 2018). I used the inductive data analysis process to identify themes that emerged as existing strategies and as needs to support the development of a future agricultural assessment framework (Bryman, 2016). Merriam and Tisdell (2016) defined inductive data analysis as "gathering data to build concepts, hypotheses or theories rather than deductively testing hypotheses as in positivist research" (p. 17). Inductive analysis seeks to identify a framework or model as the outcome of research, which occurs through pulling generalizable inferences from the data (Bryman, 2016).

I used the constant comparative method to highlight emerging themes from the data (Glaser, 1965). I analyzed similarities in the units of the data and pulled them as exemplary statements (Merriam & Tisdell, 2016). Yin (2018) argued that, although the individual responses can vary, cross-case analysis can connect identified themes. Because the purpose of the study was to develop a curricular framework and because open and axial coding best fit my research objectives (Yin, 2018), I manually used open and axial coded and highlighted key themes in the data (Merriam & Tisdell, 2016). After the initial open-coding phase of identifying emerging themes and patterns, I used axial

coding to group codes and develop the conceptual analysis of code characteristics (Charmaz, 2006). Finally, I used theoretical coding (Charmaz, 2006) to identify the central phenomenon to convert into a conceptual model and curricular framework (Strauss & Corbin, 1990). Birks and Mills (2015) explained that the central theory, or phenomenon, should be an abstract concept; should appear within, and be reflective, of the data; and should increase the depth of the topic by connecting concepts found in the data. I used the themes that emerged from my study to create a conceptual model and curricular framework for USASOC soldiers to conduct agriculture assessments in conflict zones.

Trustworthiness

Lincoln and Guba (1985) suggested that, because qualitative data uses different protocols and variables than quantitative data does, qualitative data should be evaluated for trustworthiness and authenticity instead of validity and reliability. Rather than "presupposing a single absolute account of social reality" by applying reliability and validity to qualitative data, one role of social scientists is to uncover "absolute truths" in their research (Bryman, 2016, p. 384). Trustworthiness has four primary criteria—credibility, transferability, dependability, and confirmability—that set the stage for building confidence in the data displaying what it is intended to measure (Bryman, 2016; Lincoln & Guba, 1985).

Credibility

Because there can be multiple accounts of what actually happened in social reality, researchers must determine how "feasible" or "credible" the data are to

determine their acceptability to others (Bryman, 2016, p. 384). To achieve credibility, I used the respondent validation and triangulation techniques (Bryman, 2016). Respondent validation, or member validation, promoted transparency in the data by offering to share findings with the research participants (Bryman, 2016). I also included a section on participants' rights in my participant information sheet, in which I offered to share an account of the findings from his or her interview (Bryman, 2016). Furthermore, triangulation—using multiple sources of data to explain a social phenomenon—is a common way that researchers can establish credibility in a study (Denzin, 1978). I achieved triangulation by conducting semi-structured interviews, writing observation notes of the surrounding environment, and recording field notes (Shenton, 2004).

Transferability

Because qualitative data are typically an intimate view of the phenomenon, one cannot generalize findings to larger populations (Bryman, 2016; Lincoln & Guba, 1985). Transferability shows the depth of the findings versus just the "breadth" of the findings (Bryman, 2016). To achieve transferability, I used open-ended interviewing techniques that allow the interviewee to share thick description, or rich details, of the experience to increase the depth (Geertz, 2008) and the reach (Lincoln & Guba, 1985) of the findings.

Dependability

Lincoln and Guba (1985) suggested dependability must be established to confirm merit in the research. Dependability refers to replicability—"if the work were repeated, in the same context, with the same methods and with the same participants, similar results would be obtained" (Shenton, 2004, p. 71). To achieve dependability, I kept an

audit trail to record "all phases of the research process—problem formulation, selection of search participants, fieldwork notes, interview transcripts, data analysis decisions, and so on—in an accessible manner" (Bryman, 2016, p. 384). Lincoln and Guba (1985) suggested having peers or individuals who are close to the research check the audit trails to encourage transparency. Therefore, I prepared an audit trail to share with my committee members and chair, if requested.

Confirmability

In qualitative research, researchers should be objective (Shenton, 2004) and not allow personal values or theoretical inclinations to influence the findings or how the study is conducted (Bryman, 2016). To promote confirmability and to mitigate bias while collecting data, I kept a reflexive journal of my thoughts and experiences (Lincoln & Guba, 1985).

Authenticity

In addition to adhering to the four criteria for trustworthiness, I remained aware of the broader impact, or the authenticity, of my research (Bryman, 2016). Authenticity relates to several principles of action research (Bryman, 2016). My data were considered action research because "the collection of data is likely to be involved in the formulation of the diagnosis of a problem and the emergence of a solution" (Bryman, 2016, p. 387). Lincoln and Guba (1985) established five reflection criteria to promote authenticity in data—fairness, ontological authenticity, educative authenticity, catalytic authenticity, and tactical authenticity. I kept an account of each of the five authenticity variables in

my reflexive journal to ensure I was actively considering the broader impact of my research throughout the process (Bryman, 2016).

RQ3: What Perspectives of Curricular and Training Framework Elements and Metrics are Desired when Conducting Agricultural Assessment in Conflict Zones?

I used Q methodology (Watts & Stenner, 2012) to address research question three: To characterize viewpoints about skills needed to conduct agriculture assessments in conflict zones. Q methodology was developed with operant subjectivity as a core component contributing to the holistic analysis of participants' views on selected topics (Watts & Stenner, 2012). Leggette and Redwine (2016) explained that, "instead of using instruments to test the performance of an individual and make comparisons to the population, Q methodology uses each individual, complete with all the subjectivity and holistic diversity, as tests for the performance of items" (p. 61). Q methodology can serve as a tool to understand perspectives and opinions about a topic in a way that is more comprehensive than traditional correlational research (Riggs et al., 2017) as it inverts Spearman's r factor analysis to measure individuals' viewpoints (Leggette & Redwine, 2016). Simons (2013) outlined Q methodology with five phases—concourse development, Q sort identification (Q set and P set), Q sort administration, factor analysis, and factor interpretation.

Concourse

The totality of beliefs, opinions, perceptions, and understandings related to the investigated topic determines the concourse (Leggette & Redwine, 2016). I used three sources to define my concourse: 1) variables that emerged from research question one;

2) themes and concepts that emerged from research question two; and 3) underlying concepts noted in my conceptual framework, which was guided by FAO and WFP's (2018a) conflict-related factors.

Q Set

Brown (1993) stated that Q sets, which are a subset of the concourse statements, should represent all aspects of the issue being investigated. I sorted variables that emerged from my integrative literature review (RQ1), themes from the USASOC interviews (RQ2), and concepts from my conceptual framework to identify the Q set (see Table 4). I then used the constant comparative method (Glaser, 1965) using open and axial coding to determine the items that comprised my final Q set.

Table 4

Q Set Statements

Statement #	Statement
1	Cultural context of agricultural food products.
2	Cultural context of agricultural production/crops/etc.
3	Gender roles in agricultural production.
4	Generational differences (i.e., disparity of youth to elders in communities) in production.
5	Land ownership (i.e., how can an individual use the land to produce food products).
6	Power structure influence (e.g., governmental, political regimes) in agricultural production.
7	Typical diet within households (i.e., nutritional demands for regions).
8	Typical geographic or region where agricultural systems are produced.

Table 4 Continued

Statement #	Statement
9	Common pests associated with crops.
10	Feed crops for livestock consumption (e.g., oats, alfalfa).
11	Fiber crops for cordage and textiles (e.g., cotton, hemp).
12	Food crops for human consumption (e.g., wheat, potatoes).
13	Harvest seasons for crops.
14	Industrial and secondary crops for various personal and industrial uses (e.g., rubber, tobacco).
15	Nutrient requirements for growing different plants.
16	Oil crops for consumption or industrial uses (e.g., cottonseed, corn).
17	Ornamental crops for landscape gardening (e.g., dogwood, azalea).
18	Pest management.
19	Plant/animal identification.
20	Cash crop influence in local economy.
21	Domestic agricultural trade relationships/dynamics.
22	Food prices in regional markets.
23	Foreign agricultural trade relationships/dynamics.
24	Agricultural products and their relationships to the energy sector.
25	Climate change and its effect on agricultural products.
26	Environmental influence/sustainability of crops/livestock.
27	Food product shelf life (i.e., how long the food can be stored before it spoils).
28	Soil types.

Table 4 Continued

Statement #	Statement
29	Capability of water infrastructure (i.e., cost associated with water systems).
30	Impact of irrigation techniques on soil/ground.
31	Maintenance of water infrastructure systems (i.e., irrigation canals, water pumps, etc.)
32	Water infrastructure (i.e., what type of watering system the plant needs, such as flood irrigation, drip irrigation, spray, etc.).
33	Water usage (i.e., how much water the plant needs and how often it should be irrigated).
34	Livestock herd management.
35	Poultry production management.
36	Veterinary care.
37	Agricultural product export maps.
38	Farm machinery/equipment maintenance.
39	Transportation systems for agricultural harvests/exports.

P Set

Because Q methodology seeks to understand individual differences between the members in the sample, or P set, the individuals can be purposively selected to match the frame of the study (Leggette & Redwine, 2016; Watts & Stenner, 2012). Therefore, I purposively selected 14 participants (n = 14; see Table 5)—including, but not limited to, faculty members, government agency representatives, and practitioners—who had a background or an interest in food security, agricultural assessment, or international

agricultural development. Because food security and agricultural assessments in conflict zones typically occur in developing nations, selecting individuals with a background or interest in agricultural development provided valuable and unique perspectives. I recruited participants for the P set via a recruitment email (see Appendix I).

Table 5

Demographics of P Set (n = 14)

Demographic Characteristic	*n*	*%*
Gender		
Female	4	29
Male	10	71
Affiliation		
Academia	6	43
Governmental Organizations (e.g., USAID)	5	43
Non-Governmental Organizations	2	7
Private Contractor	1	7
Years Working in International Development		
0–5 years	1	7
6–10 years	1	7
11–15 years	1	7
16–20 years	6	43
21–25+ years	5	36

Q Sort Administration

The process of rating items based on participants' perspectives and viewpoints is called a Q sort (Watts & Stenner, 2012). To ensure the Q set statements made sense and the interview process worked efficiently, I piloted the Q sort with graduate students interested in international agriculture who were not selected for the study. During the pilot study, I practiced asking participants, while also taking notes, to discuss their selections as they ranked the statements (Watts & Stenner, 2012).

I conducted the Q sorts in a location convenient for the participants, which included both face-to-face and Zoom™ meeting locations. If the participants wanted to meet at a central location on Texas A&M University's campus, I reserved a small conference room in the Agriculture and Life Sciences Building on Texas A&M University's campus to complete the Q sort process. Prior to completing the Q sort, participants received an information sheet outlining their rights as a research participant (see Appendix J) and completed a demographic survey that collected data about their age, gender, professional/educational classification, years of schooling, involvement with international agriculture, and involvement with food security (see Appendix K). To maintain confidentiality, I assigned participants a code with a letter-number combination using the first letter of the participant's first name and the numeric order I conducted the Q sort (Loviglio, 2012). I also used a reflexive journal to record my experiences and discoveries made while administering the Q sorts.

I began the Q sort conversation with the participants by reading a condition of instructions statement (see Appendix L). I asked participants to complete the Q sort

using the condition of "*What are the most desired curricular elements for USASOC soldiers conducting agricultural assessments in conflict zones?*" For the in-person Q sorts, I asked participants to organize the Q set on a forced-distribution poster or foam board using 2 x 3-inch pieces of cardstock for each of the 39 statements (Leggette & Redwine, 2016; see Figure 15 and Appendix M). Furthermore, for the Q sorts completed over Zoom™, I emailed the Q set statements (see Table 3) and a blank, digital foam board (see Appendix N) for participants to type the statement number in their preferred order while I listened to their reasoning over Zoom™.

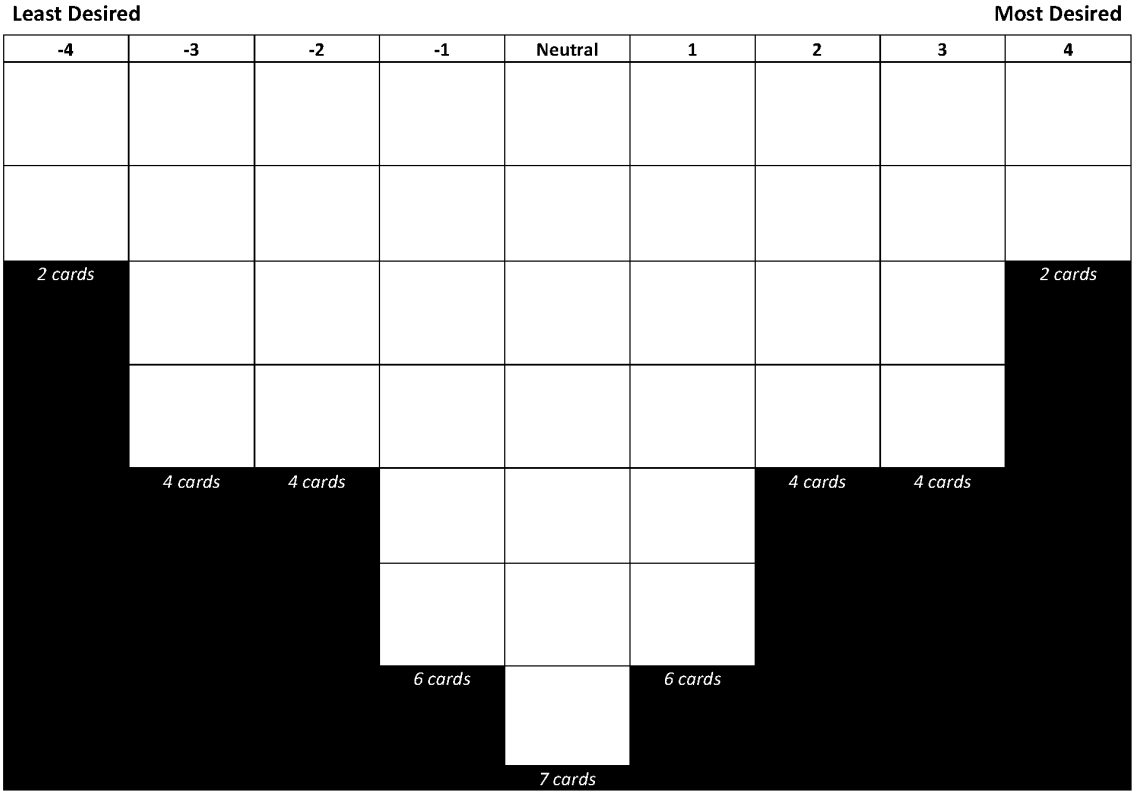


Figure 15. Q sort foam board.

Because I wanted participants to make clear "most desirable" and "least desirable" statements at the poles (Watts & Stenner, 2012), I designed the kurtosis of the

foam board to be more leptokurtic rather than platykurtic. I designed a steeper kurtosis to allow for participants to have more flexibility while sorting, as more statements can be arranged in the neutral category (Watts & Stenner, 2012). While leptokurtic shapes can prevent the P set from making detailed decisions about the range of statements, this shape fit the needs of this study because I wanted clear, defined poles to emerge from the sort to help us identify potential personas that might emerge (Watts & Stenner, 2012). Participants initially received the Q set statements as one stack of cards, and I encouraged them to discuss their initial thoughts of the desirability of each statement as they briefly sorted through the stack. I then asked participants to rank statements from least desired to most desired using their perspectives as the basis for their ranking (Leggette & Redwine, 2016; see Appendix N).

As participants sorted the Q set, I asked open-ended questions about why they ranked the statements the way they did (Watts & Stenner, 2012). Participants had the option to change any of their rankings of the statements as they moved through the process, and I encouraged them to talk about why they placed each statement accordingly (Watts & Stenner, 2012). I recorded field notes in a journal, and if participants granted permission, I recorded the conversation on a recording device (Spradley, 2016). Participants had 50–60 minutes to complete the demographic survey and the Q sort.

Data Analysis

I analyzed the data using the PQMethod online software (Killam et al., 2013). Spearman (1937) highlighted three steps to Q sort data analysis—factor analysis, factor

extraction, and factor rotation. To begin I entered the participants' sorts (n = 14) into PQMethod and correlated them. Because I collected the Q sorts using a forced distribution of the P set, I submitted the resultant correlational matrix from the factor analysis to a Principal Component Analysis (PCA) to determine factors, or number of viewpoints, to extract based on Watts and Stenner's (2012) formula for significant loading scores. I used the Kaiser-Guttman Criterion (Kaiser, 1958) to identify four factors with Eigenvalues above 1 that warranted further investigation. To minimize standard error and maximize reliability, I removed four additional factors with low reliability composites or high standard errors compared to other factor values in the set.

After identifying the factors, I used the Varimax factor rotation (Kaiser, 1958) to display orthogonal rotation and illustrate each factor's viewpoint for analysis. Each of the extracted factors defined one of the dimensions, or factor space (Watts & Stenner, 2012). Watts and Stenner (2012) stated that "a factor is also a portion of meaning. This means that each dimension of the space is defined by meaning and that the space itself is meaningful" (p. 114). Based on the factors' rotation, I calculated the factor scores.

Van Exel and de Graaf (2005) stated that the final step before describing and interpreting factors is calculating factor scores and difference scores. The factor score is a weighted-average statement score (z score) of respondents who contributed to that factor (Van Exel & de Graaf, 2005). I converted the z score for each item, which was "no more or less than a single Q sort configured to represent the viewpoint of a particular factor" (Watts & Stenner, 2012, p. 140), into a single factor array.

The factor array aligned with the same distribution as the original data and was formulated based on the size and the rank order of the *z* scores (Watts & Stenner, 2012). I used *z* scores to determine which statements were statistically significantly similar or different. Each factor array had a level of "intercorrelation," even if the arrays were non-orthogonal (Watts & Stenner, 2012, p. 141). The degree of these intercorrelations are listed as a consensus versus disagreement values. Using the factor arrays and qualitative statements gathered in the Q sort interviews, I determined which group of people most closely aligned with each viewpoint to define the sort, and I used the factors identified in the Q sort to build a conceptual model.

Assumptions

I followed two noteworthy assumptions to conduct the study described herein. First, I assumed that participants shared a similar definition of conflict zones. The purpose of the study was to establish a framework that advances curricular and training support for agricultural assessment in conflict zones, so I operationalized "conflict zones" as a broad concept referring to populations facing emerging-, current-, and post-conflict scenarios. When conducting the semi-structured interviews with the soldiers in the 5th Special Forces Group (Airborne), I asked soldiers to describe their experience conducting assessments in conflict zones, which was often interpreted as locations that have experienced emerging-, current-, and (immediate) post-conflict scenarios. Some of the regions the soldiers described, such as certain provinces, could be considered post-conflict regions or emerging-conflict zones. Hence, I asked soldiers to describe their experiences through a conflict lens.

Second, I assumed that the individuals I interviewed (RQ2) and selected to complete the Q sort (RQ3) were familiar with agriculture as it related to elements influencing the food, fiber, and natural resources systems in areas influenced by conflict. I purposively selected the P set for the Q sort in research question three because of their experience in international agricultural development and in the Middle East or Afghanistan. Because most of their experiences followed a development approach, I asked participants to assume the mindset of considering initial assessments in those communities before the missions were transitioned to other groups who had a long-term development mission in the selected communities.

Limitations

The study described herein had four primary limitations. First, the area of responsibility for USCENTCOM spans the Middle East, Afghanistan, and Northeastern Africa. Thus, developing a curricular and training support framework for this diverse region is challenging because the area is broad. Even creating a curricular and training framework for individual provinces in Afghanistan would require recommendations specific to the locations. As a result, it will be pivotal to combine the training framework and conceptual model developed from my study with cultural and regional knowledge of each country in USCENTCOM to disseminate to TRADOC as a doctrine proposal.

Second, USASOC is a broad command that encompasses nearly 23,000 soldiers. The views and statements included in research question two address the views of soldiers in the 5th Special Forces Group (Airborne) who primarily had combat deployment experience in the Middle East and Afghanistan. To create a holistic training

and support framework designed for USASOC soldiers, I would need to interview soldiers who represent other commands and groups in USASOC. For example, agricultural and community assessments are key to the mission of the U.S. Army Civil Affairs/Psychological Operations Command. Investigating their perspectives would be a valuable, and necessary, component to building a holistic perspective of agricultural assessments that occur in conflict zones. Nonetheless, starting with perspectives from soldiers in 5th Special Forces Group (Airborne) who had experience completing initial agricultural or community assessments was an important starting place for developing a training framework. For this reason, I provided a conceptual model for a curricular framework as it will leave room for adjustments and recommendations for specific regions of the country.

Third, agricultural assessment is not intended to be, nor should it be solely considered, a linear process. Depending on the area and the current state of conflict, several departments, organizations, and individuals may have specialized experience supporting information gathered during community assessments. Just because U.S. Special Forces soldiers primarily conduct community assessments for security purposes does not mean they might not collaborate with individuals who view the community with a long-term, development lens. Investigating combined perspectives from all stakeholders who are involved in the assessment and development process would be a valuable step to address this limitation in the future.

Fourth, agricultural assessment typically occurred when soldiers were ordered to complete unconventional warfare missions intended to build rapport “by, with, and

through" indigenous populations in the regions where they were deployed. Soldiers communicated their experiences at an unclassified level for my study (U.S. Department of the Army, 2008, 1–2). As a result, there could be more information from assessments in selected areas, but the information might be classified. Therefore, the findings from my dissertation will be disseminated at an unclassified level where soldiers will need to individually adapt the curricular and training support framework to their future missions using information they may or may not be privy to.

Summary

In conclusion, the exploratory sequential mixed methods study described herein used three phases—integrative literature review, qualitative semi-structured interviews, and a Q sort—to establish a framework to advance curricular and training support for agricultural assessment in conflict zones.

CHAPTER IV
FINDINGS

I used three research questions to guide the findings: RQ1) what is/are the existing curricular and training framework(s) used to study food (in)security and conduct agricultural assessments in conflict zones; RQ2) what are the current needs of USASOC soldiers who conduct agricultural assessments in conflict zones; and RQ3) what perspectives of curricular and training framework elements and metrics are desired when conducting agricultural assessment in conflict zones? I present my research findings by research question and then research objective.

RQ1: What are the Existing Curricular and Training Frameworks used to Study Food (In)Security and Conduct Agricultural Assessments in Conflict Zones?

I conducted an integrative literature review (Torraco, 2005) to identify the existing curricular and training frameworks used in research studies related to food security and agricultural assessments in conflict zones. I answered research question one using five research objectives: RO1.1) review the literature to summarize variables used to describe food (in)security; RO1.2) review the literature to summarize frameworks used to conduct agricultural assessments in conflict zones; RO1.3) identify variables related to food (in)security; RO1.4) identify variables related to agricultural assessments in conflict zones; and RO1.5) synthesize the findings to identify potential food (in)security research studies and to develop a conceptual model for conducting agricultural assessments in conflict zones.

RO1.1: Review the Literature to Summarize Variables used to Describe Food (In)Security

Food (in)security has been integral to households and communities since the beginning of humankind. Often interchanged with nutrition, or lack thereof, to sustain life, variables influencing food (in)security in conflict zones are much more complex. Researchers have studied variables that drive or contribute to food (in)security and have investigated the influence of food (in)security on households, communities, cultures, and nations. To gain a holistic view of research conducted on food (in)security and agricultural assessments in conflict zones, I reviewed literature from 2009–2019 in the SSCI communication, education, and political science databases.

Using food (in)security literature published in the communication, education, and political science databases, I identified seven phenomena describing food (in)security variables in conflict zones (see Table 6). In the communication database, I identified *message delivery* and *message reception* with 16 variables. In the education database, I identified *agricultural production* and *anthropological/social issues* with 14 variables. Last, in the political science database, I identified *political influence*, *economics/policy*, and *anthropological/social issues* with 25 variables.

Table 6

Summary of Phenomena and Variables for RQ1

Database, Phenomena, Variable	Frequency
Communication Studies (*n* = 8)	---
Message Delivery	---

Table 6 Continued

Database, Phenomena, Variable	Frequency
Access to Information	2
Connection to Security	1
Gender	1
Health Influence	1
Policy	1
Political Influence	1
Message Reception	---
Affordability	1
Climate	1
Community Access	1
Crop Production/Yield	1
Culture	2
Ecology	1
Energy	1
Environment	1
Seed Technology	1
Water	1
Education Studies (n = 12)	---
Agricultural Production	---
Climate	1
Crop Production/Yield	1

Table 6 Continued

Database, Phenomena, Variable	Frequency
Economics	1
Environment	1
Food Storage	1
Succession	3
Water	1
Anthropological/Social Issues	---
Access to Information	1
Adoptive Behavior	4
Community Extension	3
Culture	11
Education	6
Gender	4
Political Influence	1
Political Science Studies (n = 45)	---
Anthropological/Social Issues	---
Availability of Food	1
Communication	2
Education	1
Gender	3
Land Use	5
Navigation	3

Table 6 Continued

Database, Phenomena, Variable	Frequency
Nutrition	3
Social	1
Economics/Policy	---
Economics	9
Inflation	2
Policy	20
Regulation	1
Subsidies	1
Trade	6
Political Influence	---
Access to Information	1
Aquaculture	6
Biodiversity	2
Biotechnology	3
Climate	6
Environment	4
Interconnection of Sectors	4
Policy	21
Political Influence	8
Response	2
Security	5

Table 6 Continued

Database, Phenomena, Variable	Frequency
Sustainability	2
Water	2

Note. The frequency counts include the number of studies where the variables occur. Some studies had more than one variable.

Communication

Two overarching phenomena emerged in the food (in)security literature published between 2009–2019 in the communication-related journals and indexed in the SSCI database: *message delivery* (Hudson et al., 2017; Kiiza & Pederson, 2012; Tan et al., 2017) and *message reception* (Donkor et al., 2019; Knezevic et al., 2014; LeGreco & Douglas, 2017). A few (n = 4) studies highlighted food (in)security as a barrier or challenge to communication, while others (n = 4) highlighted information about the ability to positively impact food (in)security and poverty by communicating with individuals who live in low-income communities (Tan et al., 2017).

Message delivery could be broken into six variables: access to information, connection to security, gender, health influence, policy, and political influence. Hudson et al. (2017) focused on challenges to delivering information to small shareholder farmers in Saharan Africa. They found the lack of information in those regions could increase the threat of food insecurity because small farmers might not be aware of new ideas to improve agricultural production or have access to resources to afford implementing new ideas. Political influences, gender, and health influence also

challenged food (in)security communication with stakeholder groups. Dutta and Thaker (2019) highlighted that living in neoliberal transformations poses unique barriers to modernizing agricultural production. Furthermore, in some cases, women in developing countries tended the fields to produce food for their families and, thus, Dutta and Thaker (2019) noted that food security policy and development efforts should target women. Ensuring women receive and comprehend information is a vital component of addressing food (in)security as improved production or knowledge of shelf life could help alleviate the poverty threats they might face. Reaching these populations can be met using technology, however, Kiiza and Pederson (2012) suggested that access to functioning technology (e.g., FM radio stations, mobile phones, and internet facilities) was limited in areas challenged with food insecurity. This lack of access created a barrier for people to transmit helpful educational information to remote areas.

Message reception about food (in)security could be broken into 10 variables: affordability, climate, community access, crop production/yield, culture, ecology, energy, environment, seed technology, and water. Adopting new ideas and environmental strategies (e.g., adapting to changing climates, saving water, and implementing new seed technologies) depended on audiences receiving clear messages (Donker et al., 2019; Dutta & Thaker, 2019: Fischhendler et al., 2016; Kiiza & Pederson, 2012; Tan et al., 2017). For example, some communities or households had barriers to the affordability of food resources in the areas (Knezevic et al., 2014; LeGreco & Douglas, 2017), and such barriers significantly contributed to food insecurity as the population did not have access to information about strategies to increase caloric or

nutritional requirements. As a result, community-engaged planning, community access, and cultural awareness also created an opportunity to increase communication. For example, LeGreco and Douglas (2017) investigated if community-engaged planning could help alleviate food insecurity as ensuring individuals in the community knew about events and understood the message(s) was beneficial to the effectiveness of the communication. Contrarily, community planning in conflict zones posed a barrier to helping audiences receive information.

Education

Two overarching phenomena emerged in the food (in)security literature published between 2009–2019 in the education-related journals and indexed in the SSCI database: articles addressing *agricultural production* (Brown et al., 2018; Mukute et al., 2018; Odigbo et al., 2011) and *anthropological/social issues* (Lamontagne-Godwin et al., 2019; Meiklejohn et al., 2017; Noga et al., 2017; Odigbo et al., 2011; Ohwovoriole & Ochonogor, 2009; Rhea, 2018; Walter, 2012; Wijaya & Offermans, 2019; Zakaria, 2017). Both phenomena added valuable information to understanding the educational dynamics surrounding of food (in)security.

First, *agricultural production* influencing food (in)security could be further broken into seven variables: climate, crop production/yield, economics, environment, shelf life, and succession. Mukute et al. (2018) investigated the effectiveness of discussing the "interconnected issues of climate change, water, food security, and solidarity" using transgressive learning in an organic agriculture case study in Zimbabwe (p. ab). Educating community members about the interconnectedness of production or

supply chain issues in food systems provided a valuable perspective for developing a conceptual model describing food (in)security. Succession concerns (Brown et al., 2018; Graebner et al., 2009), including crop production and yield (Zakaria, 2017), were additional agricultural production issues influencing food (in)security. Zakaria (2017) discussed elements to help smallholder women farmers improve crop production in their households, including the need to establish a succession plan. Farming succession planning was vital to understanding the dynamics of food (in)security (Graebner et al., 2009) as, in many cases, households and individuals do not have possessions to pass along to the next generation. However, if they do and food (in)security looms as a household priority, succession planning can be challenging.

Furthermore, *anthropological/social issues* in an educational setting (Noga et al., 2017; Odigbo et al., 2011; Ohwovoriole & Ochonogor, 2009; Rhea, 2018) can be further broken down into seven variables: access to information, adoptive behavior, community extension, culture, education, gender, and political influence. Although adoptive behaviors (Noga et al., 2017; Odigbo et al., 2011; Ohwovoriole & Ochonogor, 2009; Rhea, 2018) were generally more of an anthropological issue related to culture (Lamontagne-Godwin et al., 2019; Rhea, 2018) in a community, researchers often studied the culture of agricultural production to alleviate food insecurity. For example, Odigbo et al. (2011) investigated the adoption of shelf-stable products not requiring refrigeration or cool storage. Understanding the participant's likelihood to adopt this technology is important in an educational setting (Graebner et al., 2009; Mukute et al., 2018) as it could tremendously impact food (in)security issues related to availability of

food. Additional anthropological or social issues influencing food (in)security variables were culture and gender (Lamontagne-Godwin et al., 2019). Cultural and gender (Lamontagne-Godwin et al., 2019; Rhea, 2018; Walter, 2012; Zakaria, 2017) variables established causal relationships in food (in)security. These relationships provided valuable perspectives to motivations related to food in(security), political influences (Ohwovoriole & Ochonogor, 2009) and educational initiatives to spread awareness in a community or a household. For example, Wijaya and Offermans (2019) investigated the role public extension workers had on sustainable agriculture in Indonesia.

Political Science

Three overarching phenomena emerged in the food (in)security literature published between 2009–2019 in the political science journals and indexed in the SSCI database: *anthropological/social issues* (Adelle, 2019; Breslin & Christou, 2015; Candel, 2016; Collins, 2016; Detraz & Windsor, 2014; Millar, 2015; Young, 2017); *economics/policy* (Ackleson & Kastner, 2011; Artioli et al., 2017; Collins, 2016; Conker, 2018; Daugbjerg & Feindt, 2017; Essex, 2014; Faling, 2018; Fielding & Shortland, 2010; Gustafson, 2019; Hammoudi et al., 2015; Lee, 2013; Lima & Gupta, 2013; Malcolm, 2017; Marsden, 2012; Neville, 2015; Nijar, 2011; Richardson-Ngwenya & Richardson, 2014, Smith, 2014; Wegren et al., 2017; Zeitoun, 2011); and *political influence* (Billiet, 2019; Daugbjerg & Feindt, 2017; Essex, 2014; Esteban Montes et al., 2009; Ferretti, 2019; Fielding & Shortland, 2010; Herman & Treverton, 2009; Jones et al., 2017; Koren & Bagozzi, 2017; Malcolm, 2017; Wischnath & Buhaug, 2014; Zeitoun, 2011).

First, *anthropological/social issues* could be broken into eight variables: availability of food, communication, education, gender, land use, navigation, nutrition, and social. Anthropological/social issues (Adelle, 2019; Breslin & Christou, 2015; Candel, 2016; Collins, 2016; Detraz & Windsor, 2014; Millar, 2015; Young, 2017) were synonymous with political science because they were key to how people interacted and functioned. Gender issues and land use played a key role in social issues as Millar (2015) explained that investigating rural women's challenges facing "local people's access to and relationships with the land…which can have detrimental effects for their livelihoods and food security" (p. ab). A gender lens could also be applied to climate migration (Detraz & Windsor, 2014). Furthermore, the interconnection of sectors emerged as a key consideration. Young (2017) outlined that regional trade agreements influenced the "assessment of social, political and historical considerations, as well as the involvement of international and transnational legal regimes that govern climate change, energy, fisheries and trade" (p. ab). In short, the human element of anthropological/social issues connected all of the variables.

Second, *economics/policy* could be broken into six variables: economics, inflation, policy, regulation, subsidies, and trade. *Economics/policy* emerged as prominent phenomena in a political science context due to the relationship of economics, policy, regulation, and trade on food (in)security (Ackleson & Kastner, 2011; Artioli et al., 2017; Collins, 2016; Conker, 2018; Daugbjerg & Feindt, 2017; Essex, 2014; Faling, 2018; Fielding & Shortland, 2010; Gustafson, 2019; Hammoudi et al., 2015; Lee, 2013; Lima & Gupta, 2013; Malcolm, 2017; Marsden, 2012; Neville, 2015; Nijar, 2011;

Richardson-Ngwenya & Richardson, 2014, Smith, 2014; Wegren et al., 2017; Zeitoun, 2011). For example, Nijar (2011) studied how access laws and policy could impact the exchange of genetic resources that could help promote agricultural biological diversity. Policy statements influenced land use (Neville, 2015), environment (Marsden, 2012), biofuels (Lima & Gupta, 2013), and international trade (Lee, 2013) as most conflicts were sparked by interest in economic or policy drivers. Thus, economic interests and policy serve as key variables influencing food (in)security as they could impact the ability to access food items or be involved with the agricultural supply chain.

Last, *political influence* could be broken into 12 variables: access to information, aquaculture, biodiversity, climate, environment, interconnection of sectors, policy, political influence, response, security, sustainability, and water. Scholars publishing research associating *political influence* on food (in)security variables emerged as a commonality in the literature (Billiet, 2019; Daugbjerg & Feindt, 2017; Essex, 2014; Esteban Montes et al., 2009; Ferretti, 2019; Fielding & Shortland, 2010; Herman & Treverton, 2009; Jones et al., 2017; Koren & Bagozzi, 2017; Malcolm, 2017; Wischnath & Buhaug, 2014; Zeitoun, 2011). For example, Wischnath and Buhaug (2014) investigated how a loss of food production could increase during conflicts, significantly influencing political issues (Daugbjerg & Feindt, 2017), interconnection of sectors (Essex, 2014), and security (Malcolm, 2017; Zeitoun, 2011). Furthermore, agricultural resources could influence conflict and food (in)security variables, particularity in sustenance environments (Herman & Treverton, 2009; Koren & Bagozzi, 2017). Many

times, individuals involved in conflict survive on food produced near their locations, which could further spark political action.

RO1.2: Review the Literature to Summarize Frameworks used to Conduct Agricultural Assessments in Conflict Zones

The communication, education, and political science studies I sorted in the SSCI databases (n = 87) did not include the use of specific agricultural assessments in conflict zones. Several authors discussed the impact of political influences on agricultural production and food systems, but they did not explicitly discuss agricultural assessment variables for use in conflict zones. Although authors described the relationship(s) in a water-energy-food nexus (Artioli et al., 2017) and the interconnected role among "personal, political, and community security" in conflict (Breslin & Christou, 2015), no agricultural assessments specific to conflict zones emerged.

RO1.3: Identify Variables Related to Food (In)Security

Variables describing food (in)security vary depending on the location of the study, the purpose of the research, and the needs in the communities where the research was conducted. Operationally, FAO (2008) defined food (in)security as the availability of, access to, and utilization of food, and its stability over time. Food (in)security variables can also be influenced by the economy, environment, humanitarian efforts, infrastructure, transportation, and political dynamics (FAO, 2008; Katsos, 2017; USAID, 2016). Many times, extraneous factors (e.g., conflict, climate, and natural disasters) that interfere with the dynamics or the production of the food supply or supply chain

influence food (in)security. Variables describing food (in)security, what it looks like, and factors influencing its prominence are discussed below.

Communication

In the eight communication studies, 16 variables emerged: *access to information*, *affordability*, *climate*, *community access*, *connection to security*, *crop production/yield*, *culture*, *ecology*, *energy*, *environment*, *gender*, *health influence*, *political influence*, *policy*, *seed technology*, and *water* (see Table 7).

Table 7

Purpose of Study and Food (In)Security Variables Identified in Communication Studies

ID	Author(s)	Purpose	Variables Identified
1	Donkor et al. (2019)	Investigate "issues in climate adaptation and climate services development in water resources, food security[,] and agriculture" (p. ab).	Climate, Environment, Water
2	Dutta & Thaker (2019)	"Examines how those at the margins of global neoliberal transformations symbolically and materially make sense of and resist [agricultural] transformations" (p. ab).	Culture, Gender, Policy, Political Influence
3	Fischhendler et al. (2016)	"Documents the ways in which players adopt securitized language concerning various land uses such as energy, food, ecology, and traditional (national) security" (p. ab).	Connection to Security, Ecology, Energy
4	Hudson et al. (2017)	"Summarizes evidence on food insecurity in Sub-Saharan Africa and strategies to provide information on innovative agricultural practices to smallholder farmers" (p. ab).	Access to Information
5	Kiiza & Pederson (2012)	Investigate "commensurate efforts to promote ICT-based market information along with yield-augmenting agricultural seed technologies" (p. ab).	Access to Information, Crop Production/ Yield, Seed Technology

Table 7 Continued

ID	Author(s)	Purpose	Variables Identified
6	Knezevic et al. (2014)	Use "participatory action research to collect data on the cost and affordability of food and…those who are directly affected by food insecurity" (p. ab).	Affordability
7	LeGreco & Douglas (2017)	Investigate if "community-engaged organizing is benefited when key members intentionally carry narratives that illustrate how pieces of systems fit together" (p. 308).	Community Access
8	Tan et al. (2017)	Engage "with issues of food insecurity, health, and poverty among the low-income community in Singapore" (p. ab).	Culture, Health Influence

Note. This table does not include two initially-sorted articles because I removed them based on the established inclusion criteria.

Education

In the 12 education studies, 14 variables emerged: *access to information*, *adoptive behavior*, *community extension*, *climate*, *crop production/yield*, *culture*, *economics*, *education*, *environment*, *food storage*, *gender, political influence, succession,* and *water* (see Table 8).

Table 8

Purpose of Study and Food (In)Security Variables Identified in Education Studies

ID	Author(s)	Purpose	Variables Identified
1	Brown et al. (2018)	Explore "why substantial agricultural information gaps persist in African smallholder farming communities and how to reduce them" (p. ab).	Economics, Environment, Succession

Table 8 Continued

ID	Author(s)	Purpose	Variables Identified
2	Graebner et al. (2009)	Investigate "the development of a graphic representation tool as a way to support educational planning in an elementary school in the rural area of Brasilia (Brazil's capital), aiming at the implementation of an integrated action-research project focusing on hunger and nutrition" (p. ab).	Education, Succession
3	Lamontagne-Godwin et al. (2019)	Address "unequal reach and access to information [as] an issue that affects women involved in agricultural activities around the world" (p. ab).	Culture, Gender
4	Meiklejohn et al. (2017)	Investigate "the impacts of an eight-session nutrition education programme [sic] delivered within community case management services for young people experiencing homelessness" (p. ab).	Community Extension, Education
5	Mukute et al. (2018)	Explore "the emergence of transgressive learning in CHAT-informed development work research in a networked organic agriculture case study in Zimbabwe, based on intervention research involving district organic associations tackling interconnected issues of climate change, water, food security and solidarity" (p. ab).	Access to Information, Climate, Education, Water
6	Noga et al. (2017)	Examine "how institutional factors influencing the promotion of two elephant crop-raiding deterrent innovations (ECDIs) introduced to farmers through a ministry-based extension system in the Okavango Delta, Botswana, have impacted farmers' adoption behavior [sic]" (p. ab).	Adoptive Behavior, Community Extension
7	Odigbo et al. (2011)	Investigate adoption of "shelf-stable products [that] do not require refrigeration or freezing for safety and acceptable organoleptic characteristics after a storage period" (p. ab).	Adoptive Behavior, Food Storage
8	Ohwovoriole & Ochonogor (2009)	Investigate "the implementation of Food and Nutrition Policy for Food Security in Warri Metropolis" (p. ab).	Adoptive Behavior, Gender, Political Influence

Table 8 Continued

ID	Author(s)	Purpose	Variables Identified
9	Rhea (2018)	Investigate "food as its scape to propose an Indigenist, Gaian pedagogy and asks what food studies might reveal ecopedagogically [sic] for approaches to teaching about Indigenous matters in the context of environmental education and its research" (p. ab).	Adoptive Behavior, Culture, Education
10	Walter (2012)	Examines "how two sites of adult learning in the food movement create educational alternatives to the dominant U.S. food system…[further] examines how these pedagogies challenge racialized [sic], classed and gendered ideologies and practices in their aims, curricular content, and publically [sic] documented educational processes" (p. ab).	Education, Gender
11	Wijaya & Offermans (2019)	Examine "the role of public extension workers as boundary workers in Indonesia on sustainable agriculture and challenges around them" (p. ab).	Community Extension, Education
12	Zakaria (2017)	Examine "determinants of women smallholder farmers' participation in their households' decision-making regarding cash crop production" (p. ab).	Crop Production/ Yield, Gender, Succession

Note. This table does not include two initially-sorted articles because I removed them based on the established inclusion criteria.

Political Science

In the 45 political science studies, 25 variables emerged: *access to information*, *aquaculture*, *availability of food*, *biodiversity*, *biotechnology*, *climate*, *communication*, *economics*, *education*, *environment*, *gender*, *inflation*, *interconnection of sectors*, *land use*, *navigation*, *nutrition*, *policy*, *political influence*, *regulation*, *response*, *security*, *social*, *subsidies*, *sustainability*, and *trade* (see Table 9).

Table 9

Purpose of Study and Food (In)Security Variables Identified in Political Science Studies

ID	Author(s)	Purpose	Variables Identified
1	Ackleson & Kastner (2011)	Explore "arena of health regulation and the international agricultural and food trade" (p. ab).	Economics, Regulation, Trade
2	Adelle (2019)	Explore "how knowledge is currently already produced and used in a way that enhances food democracy, including through Participatory Action Research with peasant farmers, using the arts to create a 'contemplative commons' about food and the unique dialogue process through which the social movement La Via Campesina operates" (p. ab).	Communication, Education
3	Artioli et al. (2017)	Aim "to 'urbanise' [sic] the nexus agenda and consider the implications of policy integration for urban governance. This examines the nexus in the context of current approaches to urban governance and power relations shaping the provision of water, energy and food in urban areas" (p. ab).	Interconnection of Sectors, Policy
4	Billiet (2019)	Analyze "the complexity of the post-Brexit fisheries context and its possible repercussions for food policy and the seafood sector" (p. ab).	Aquaculture, Policy
5	Breslin & Christou (2015)	Investigate role of "personal, political and community security have all struggled to develop a shared understanding that has become a firm guide to action, whereas food security, health security, environmental security and economic security have not only become firm parts of debate and discussion" (p. ab).	Interconnection of Sectors, Security
6	Candel (2016)	Apply a "framework consisting of five governance capabilities required to deal with wicked problems (reflexivity, responsiveness, resilience, revitalization and rescaling) to a case study of how the Commission deals with the wicked problem of food security" (p. ab).	Response

Table 9 Continued

ID	Author(s)	Purpose	Variables Identified
7	Chong (2014)	Examine "the emergence of EbA in international legal frameworks for climate change and biodiversity and progress towards [sic] implementation" (p. ab).	Biodiversity, Climate, Policy
8	Collins (2016)	Examine "two separate sets of agricultural investment principles—one created by the United Nations Food and Agriculture Organization (FAO), the United Nations Conference on Trade and Development, the International Fund for Agricultural Development and the World Bank, and the other by the United Nations Committee on World Food Security—this article finds that, despite different processes and participants in the creation of these principles, they nonetheless share a language of 'empowerment targeted at women and marginalized groups" (p. ab).	Gender, Policy
9	Conker (2018)	Analyze "the role of hydraulic development in state- and nation-making in the context of Turkey by looking at the institutional documents published by official authorities and speeches made by key politicians" (p. ab).	Policy, Water
10	Cupak et al. (2016)	Analyze "diversification of food consumption in Slovakia" (p. ab).	Nutrition
11	Daugbjerg & Feindt (2017)	Introduce "the concept of post-exceptionalism in public policies. The analysis of change in agri-food policy serves as a generative example to conceptualize current transformations in sectoral policy arrangements in democratic welfare states" (p. ab).	Policy, Political Influence
12	Dauvergne (2018)	Analyze "the understanding of why and how the power of business is rising over the narratives and institutions of global agricultural governance" (p. ab).	Economics, Environment, Sustainability
13	Denton & Harris (2019)	Analyze "piracy developments in the Gulf of Guinea" and address their impact on the fishing industry (p. ab).	Aquaculture, Navigation

Table 9 Continued

ID	Author(s)	Purpose	Variables Identified
14	Detraz & Windsor (2014)	Examine "the securitization of climate migration debates through gender lenses" (p. ab).	Climate, Gender
15	Essex (2014)	Examine "the geopolitics of food security, fear, and austerity as expressed in the rhetoric and strategies of major aid donor governments, especially the US and UK, and proposes an alternative geopolitics [sic] that builds from the affective dimensions of hunger, food insecurity, and vulnerability as experienced by the hungry and poor" (p. ab).	Interconnection of Sectors, Policy, Political Influence
16	Esteban Montes et al. (2009)	Investigate the "political stabilization, state building, democratic strengthening and achievement of economic and social development to a sustainable level" in Haiti (p. ab).	Economics, Political Influence, Social
17	Faling (2018)	Analyze "policy entrepreneurship for the establishment of the Global Alliance for Climate-Smart Agriculture (GACSA), a global multi-actor collaboration to address climate change and foster food security and development" (p. ab).	Climate, Policy, Sustainability
18	Farsund & Daugbjerg (2017)	Compare "food security policy making in Australia and Norway" (p. ab).	Policy
19	Ferretti (2019)	Address "geopolitics of hunger as proposed by a Brazilian geographer, Josue de Castro…to merit fuller acknowledgement both within and beyond the discipline of geography" (p. ab).	Land Use, Nutrition, Political Influence
20	Fielding & Shortland (2010)	Investigate "political repression and military counter-insurgency measures employed by the Egyptian government [to have] the potential to exacerbate rather than reduce political violence [and] the overall level of conflict intensity in Egypt can be mitigated by food subsidies" (p. ab).	Economics, Political Influence, Subsidies

Table 9 Continued

ID	Author(s)	Purpose	Variables Identified
21	Gustafson (2019)	Investigate "the likelihood of violent escalation increas[ing if] the food price increases and unemployment rate is high or when the event is spontaneous" (p. ab).	Economics, Inflation, Policy
22	Hammoudi et al. (2015)	Propose "a theoretical model of Industrial Economics to analyze the interactions between domestic and export sectors of developing countries and their role in the availability of food supply in the domestic market sectors (p. ab).	Availability of Food, Policy, Trade
23	Hendrix & Glaser (2011)	Investigate "the effects of civil conflict on reported marine and inland fish catch, focusing on the effects of conflict through redeployment of labor, population displacement, counter-insurgency strategy and tactics, and third-party encroachment into territorial waters" (p. ab).	Aquaculture, Navigation
24	Herman & Treverton (2009)	Investigate "the security implications of global warming means thinking about how groups, nations and institutions adapt to the fact of climate change" (p. ab).	Climate, Security
25	Jones et al. (2017)	Investigate "climate variability and its implications [on] the relationship between climate-induced food insecurity and violent conflict…the relationship[s] as contingent on the institutional and structural vulnerability of the state" (p. ab).	Climate, Political Influence
26	Kapstein, E. B. (2018).	Address "the utility of the VGGT [Voluntary Guidelines on the Governance of Tenure of Land, Forests and Fisheries] as an instrument for strengthening land rights along with its limits" (p. ab).	Land Use
27	Koch et al. (2013)	Explore soil security "as a conceptual framework that could be used as the basis for a soil policy framework with soil carbon as an exemplar indicator" (p. ab).	Environmental, Policy

Table 9 Continued

ID	Author(s)	Purpose	Variables Identified
28	Koren & Bagozzi (2017)	Develop "a food-security based theory to explain the significant variation that we observe in violence against civilians across both time and subnational geographic space. We argue that combatants, be they government or rebel actors, often must turn to local agricultural resources for sustenance" (p. ab).	Nutrition, Political Influence, Security
29	Lee (2013)	Analyze "public-facing discourse reveals distinctive meanings and metaphors concerning the role of trade in food security and in the conceptualization [sic] of nature (particularly in reference to agricultural biotechnology) along with elements of co-construction"	Biotechnology, Communication, Economics, Trade
30	Lima & Gupta (2013)	Investigate "the global biofuel policy context and analyze its nature, its institutional architecture, and issues of access and allocation" (p. ab).	Access to Information, Biotechnology, Policy
31	Malcolm (2017)	Outline "the way in which maritime security challenges are publicly articulated by Small Island Developing States (SIDS) in order to better understand the backdrop against which security policy and practice emerge" (p. ab).	Aquaculture, Policy, Security
32	Marsden (2012)	Investigate "conditions leading to a dominant policy framing that tends to marginalise [sic] diverse and place-based agro-ecological systems by creating a new legitimacy for bio-economic rather than eco-economic solutions" (p. ab).	Environment, Policy
33	Millar (2015)	Investigate "local people's access to and relationships with the land [that] are being redefined…with potentially detrimental effects for their livelihoods and food security. This article explores one such project in Sierra Leone, focusing specifically on the experiences of rural women" (p. ab).	Gender, Land Use

Table 9 Continued

ID	Author(s)	Purpose	Variables Identified
34	Neville (2015)	Investigate Tana Delta "land-use plans to global debates over biofuels, drawing on language of food security, land tenure, and sovereignty" (p. ab).	Biotechnology, Land Use, Policy
35	Nijar (2011)	Examine "the impact of the national access laws and other instruments on the free access and exchange of these genetic resources and hence on the maintenance of agricultural biological diversity" (p. ab).	Biodiversity, Policy
36	Petrossian & Pezzella (2018)	Examine "the problem of IUU [illegal, unreported and unregulated] fishing and seafood fraud through the application of the crime script analysis technique" (p. ab).	Aquaculture
37	Richardson-Ngwenya & Richardson (2014)	Examine "the impacts of the Measures for Sugar Protocol countries (AMSP) in Swaziland" (p. ab).	Economics, Policy, Trade
38	Shamsie (2012)	Examine "post-earthquake aid to agriculture and food security in Haiti" (p. ab).	Policy, Response
39	Smith (2014)	Investigate "the complex and circular relationship between rising food prices and unrest, an instrumental approach with country fixed effects is used to isolate causality at the country-month unit of analysis for the period 1990 through 2012" (p. ab).	Economics, Inflation
40	Turzi (2012)	Investigate "as climate constraints and demographic imperatives make food security an ever more critical issue [if] agricultural resources may become the new linchpin in international relations" (p. ab).	Climate, Environment

Table 9 Continued

ID	Author(s)	Purpose	Variables Identified
41	Visser et al. (2014)	Investigate "substantial costs of re-cultivating abandoned land, management and financial problems of megafarms and agroholdings, lack of infrastructure for exports and increased domestic demand for feed grains as input for the meat sector" in Russia (p. ab).	Land Use, Trade
42	Wegren et al. (2017)	Assess "support for the government's food security policy, and to analyze the impact of the self-imposed food embargo on Russian consumers" (p. ab).	Policy, Trade
43	Wischnath & Buhaug (2014)	Investigate "complementary processes through which loss of food production may escalate enduring conflicts: lowered opportunity costs of rebelling, increased opportunities for recruitment, and accentuated and more widespread social grievances" (p. ab).	Economics, Political Influence
44	Young (2017)	Review "proposals for reform within the World Trade Organization and regional trade agreements, including the new disciplines on fisheries subsidies that were endorsed in the text of the Trans-Pacific Partnership" as it relates to the "assessment of social, political and historical considerations, as well as the involvement of international and transnational legal regimes that govern climate change, energy, fisheries and trade" (p. ab).	Aquaculture, Interconnection of Sectors, Navigation
45	Zeitoun (2011)	Examine "reasons to attain water security by states and the international water policy community often fall short of their goals and suggest a conceptual tool as partial remedy" (p. ab).	Policy, Security, Water

Note. This table does not include 18 initially-sorted articles because I removed them based on the established inclusion criteria.

RO1.4: Identify Variables Related to Agricultural Assessments in Conflict Zones

Articles (n = 65) in the communication, education, and political science journals did not include specific agricultural assessments for use in conflict zones. However, several authors (e.g., Artioli et al., 2017; Breslin & Christou, 2015; Esteban Montes et al., 2009; Fischhendler et al., 2016; Herman & Treverton, 2009; Koren & Bagozzi, 2017; Malcolm, 2017; Young, 2017) referenced relationships connected to food (in)security that could be studied as contributors or influences of conflict.

RO1.5: Synthesize the Findings to Identify Potential Food (In)Security Research Studies and to Develop a Conceptual Model for Conducting Agricultural Assessments in Conflict Zones

Message delivery and *message reception* emerged as phenomena involving food (in)security in the communication studies. *Agricultural production* and *anthropological/social issues* emerged in the education studies, and *political influence*, *economics/policy*, and *anthropological/social issues* emerged as phenomena influencing food (in)security in the political science studies. Each of these food (in)security phenomena is influenced by elements in conflict zones. A central theme is the nexus of economics/policy, anthropological/social issues, and political influence as they impact food (in)security in conflict zones. These elements overlaid with the agricultural production supply chain, from production to distribution, can further influence access to food, availability of food, utilization of nutrients, and sustainability over time. Clear communication, both in reception and delivery, play a key role in food (in)security in conflict zones and during conflict periods. When individuals in a community or

household can access and understand delivered messages, they can advance food (in)security (see Figure 16).

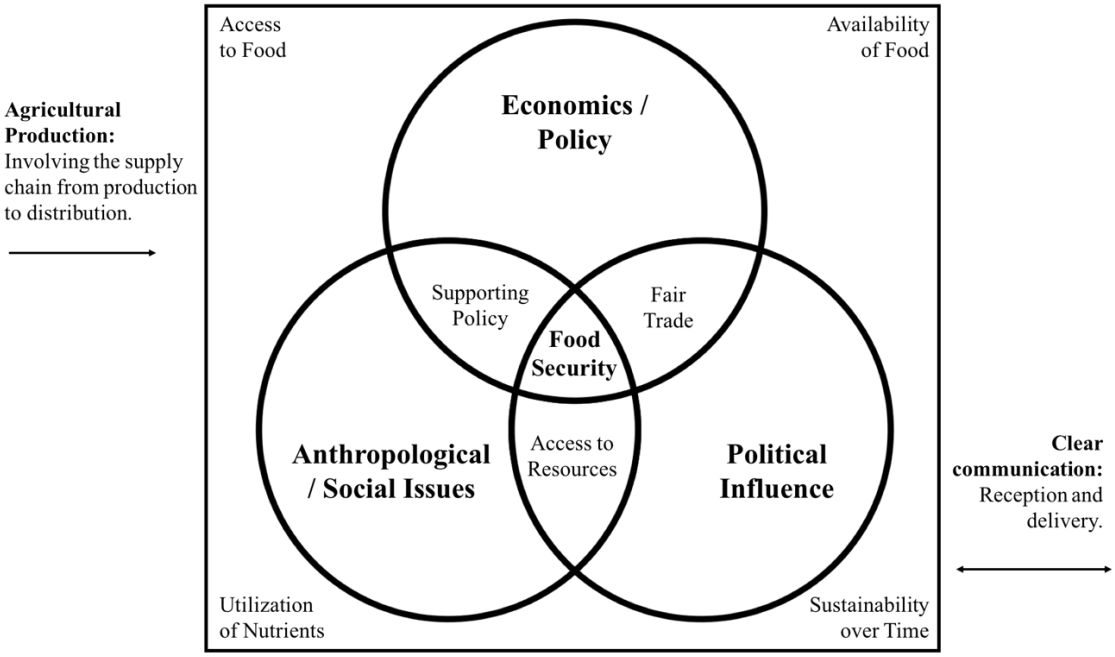


Figure 16. Conceptual model of variables influencing food (in)security in conflict zones as published between 2009–2019 in the SSCI communication, education, and political science databases.

RQ2: What are the Current Needs of USASOC Soldiers Who Conduct Agricultural Assessments in Conflict Zones?

I conducted qualitative, semi-structured interviews (Merriam & Tisdell, 2016) to identify the current needs of USASOC soldiers conducting agricultural assessments in conflict zones. I answered research question two using two research objectives: RO2.1) identify existing USASOC support/training strategies for conducting agricultural assessments in conflict zones; and RO2.2.) determine USASOC support/training needs for conducting agricultural assessments in conflict zones.

I completed 19 interviews with U.S. Army 5th Group Special Forces (Airborne) soldiers who had completed at least one deployment to the Middle East or Afghanistan as a special operator. Thus, each one of the soldiers had at least one deployment experience where agricultural assessment or food-related directives were key to their mission. Although only four soldiers had an agricultural background or prior agricultural experience, each of the soldiers could discuss the connection of agricultural or food-related systems to their missions.

RO2.1: Identify Existing USASOC Support/Training Strategies for Conducting Agricultural Assessments in Conflict Zones

Because the purpose of my study was to develop a curricular or training support framework for USASOC soldiers when conducting agricultural assessments in conflict zones, I, first, focused the qualitative interviews on identifying what, if any, support or training strategies soldiers used when conducting such agricultural assessments. Three prominent themes emerged as existing support or training strategies used when conducting agricultural assessments—*rapport, security,* and *second- and third-order effects* (see Table 10). Each theme had subthemes supported by exemplary statements or units of data discussed in the narrative.

Table 10

Summary of Themes and Subthemes for RO2.1

Theme and Subtheme	Frequency
Rapport	57
Security	43

Table 10 Continued

Theme and Subtheme	Frequency
Trade Routes	21
Power	16
Second- and Third-Order Effects	37
Development	15
Relationships	13

Note. The subtheme frequencies for the *security* and *second- and third-order effects* themes do not equal the total theme's frequencies because soldiers made additional statements that did not fit the subthemes.

Rapport

Soldiers (L01, L05, D12, S16, P17) expressed the direct relationship that agriculture or food systems play in building rapport with a local populace. "The success of our mission, 'by, with, and through' indigenous populations, requires us to empower the local populace to build stability without a need for outside support or influence" (L01). L05 echoed that "agriculture is one of the quickest ways to establish rapport and build relationships with local individuals" as food can be a connector to different populations because everyone shares the basic need to eat.

Furthermore, because agriculture is foundational to most economies and communities, G11 and R18 expressed a need to "speak the language" of agriculture so they could relate to the individuals in the areas they served. Food systems vary by region so speaking the language of agriculture could play a prominent role in building rapport with people in specific regions (L01, P17). P17 added that "some people say farming is

farming. That is not always true. Agriculture looks different in different parts of the world. If we do not speak their 'language' of agriculture, we missed our mark." Furthermore, L01 and S10 expressed that without understanding the basics related to food production, they would not be able to do their jobs to the degrees they should, which could put some soldiers and businesses in danger (P09).

Considering the role agriculture plays in building rapport with a local populace, two soldiers (P09, A13) expressed the ability to observe how local individuals were living and tried to adjust operations to match what was going on in the local province or community. "Observing how the local populace obtained or grew their food helped us understand how individuals in the communities were having their basic needs, such as food security and nutritional demands, met" (P09). A13 added that "our job is not intended to promote a western lifestyle in the Middle East" because it would not work. Soldiers can, however, "observe how people consume their food," which provides "strategic insight to the local culture" (P09). Even still, regardless of having formal training in agricultural systems, some soldiers (S02, P09, R18) could identify its prominent link from combat deployment experience in the Middle East or Afghanistan.

Security

Physical security and physical safety served as primary concerns for three soldiers in the U.S. Army 5th Group (Airborne; L01, S02, B19). Agriculture intersects several prominent elements that U.S. Army members have assessed frequently (L01, S02, R04, S10, G11, D12, N15, S16, P17, R18): political, military, economic, social, information, and infrastructure. "Families are desperate to provide for their families"

(S02), which leaves families making the tough call on how they can provide the next meal (S02). Furthermore, understanding motivations and decisions family members must make as a result of food insecurity is important to community assessment because sometimes these tough decisions can involve violence (L01, N15).

P17 recalled his experience with agricultural assessments in Yemen and Syria. "Both dynamics were extremely different," he said. For example, in places of Yemen, food can be used as a weapon, and access to food indicated access to power. Similarly, "in northern Syria, near the Euphrates River, food systems are very strong" (P17). Even though soldiers may not have used a specific agricultural assessment framework, food systems were inherently woven into their understanding of key dynamics. Often, "agriculture [was] an indicator of the wealth of the economy" in a community as strong agricultural systems indicated strong economies, "especially at a household level" (R04).

Sometimes evaluating the conditions of individuals who attended community markets gave insight to how strong or capable individuals were in a community (S02, S10). Soldiers would sometimes pay close attention to people with "thicker body conditions" in markets as individuals who "looked like they had access to appropriate nutrients" were sometimes also the "symbols of power" in the communities (D12). G11 recounted similar experiences by connecting these observations with security concerns. Sometimes "individuals of power were allies" and other times, they were "ones to watch" for security efforts because they had "access to resources" that average community members did not have (G11). Simply observing the body condition of the people soldiers interacted with gave them an insight into if nutritional requirements were

being met in the households and communities (P03, R04), which served as an indication of wealth or power when correlated with other factors. “We knew that if we were noticing these nutritional-driven elements, our adversaries might also” (S02). Such observations and indicators have the potential to “create a security risk” (S02).

Security was supported by agriculture’s connection to (a) established trade routes and (b) power.

Trade Routes. Established trade routes, whether on land, river, or sea, are important to understanding the movement of food (P17) and are good indicators of how other goods might move. If a community or household grew enough food to provide for the family and still have a surplus, they would likely sell their products at a local market (R08, P17) or transport them using common trade routes (R08, A13). P03 recalled that established trade routes “tell us more about understanding our local populace’s habits” than other considerations because other items of interest to the U.S. Department of Defense, such as “drugs, narcotics, people, and in some cases, weapons,” likely travel on the same routes. “If people are smuggling vegetables or other products, they had the capability or the likelihood of smuggling other items, too” (P14). Evaluating trade routes, often inhabited primarily by agricultural products, was also one of the best indicators of power and influence in the areas (S10, G11, R18).

Monitoring established trade routes also provided insight to cultural behaviors as they often explain community dynamics (P09, B19). Evaluating cultural patterns and tendencies through the movement of food products helped S02 build relationships “by, with, and through” indigenous populations. “The success of our job depends on our

ability to translate knowledge and relate to our community members," S02 added. Relationships with community members can be enhanced by studying human behavior (G11). Trade routes allowed soldiers (R08, P14) to analyze patterns using the movements of humans and goods, which gave valuable insight to the community's or tribe's tendencies (N15). Staying aware of these tendencies supported soldiers' security efforts in the region (P14).

Power. Soldiers reflected on the influence of power in communities to help them understand their potential security threats (L01, L05). "As we prepared for our deployment, if we understood where the power was, we could also understand where major players might serve as an influence" (L05). Identifying where the power resided in the communities could be accomplished by analyzing the sources of wealth or influence. Because "most wars are economic" (L05) and food systems are a "key element to the Middle Eastern economy" (D12), agriculture can play a valuable role in identifying wealth and power relationships, "especially in Iraq and Syria." In other places, such as Yemen, P17 recounted that agricultural laborers were low on the social-class system and were likely not landowners. "Land ownership was a symbol of power" that soldiers used to guide identifying key players in the region (P17).

Second- and Third-Order Effects

Second- and third-order effects appear as the impact or aftermath caused by a development or combat decision (L01, C07, S16, R18). Often, decisions made in conflict zones are well-informed and executed with good intent; however, the impacted results do not always go as planned (R04). "If we don't evaluate an action through all

perspectives, [such as a] political, social, cultural, or conflict lens, …we might make a decision that could hurt people's lives or livelihoods more than we intended" (S10). All decisions have an impact and create a sequence of second- and third-order effects as a result of those decisions (L01). Although some unintended effects were positive, second- and third-order effects had a negative influence more times than not. The most prominent subthemes to second- and third-order effects occurred through development efforts (P03, L05, S10, D12) and relationships (S02, R08, S10, G11).

Development. One example of a developmental decision that was made with good intent but had negative second- and third-order effects was paving Highway 1, known as Ring Road, in Afghanistan (P03, L05, S10, D12). The U.S. and allied nations paved Highway 1 to ease transport between the major cities and connect isolated areas to "improve food insecurity and access to goods" (D12). Sadly, after the U.S. and allied nations removed most troops from Afghanistan, the adversaries quickly regained control of the road, which also gave them access to the major cities in the country. L01 recalled that "we built infrastructure, like Highway 1, to improve lives in that area, but when placed in the hands of the wrong people, it benefits the adversary."

Developmental decisions related to structures or buildings were also used to assess agricultural infrastructure through a second- and third-order effects lens (R04). For example, the U.S. and its allies "built an icehouse" in an Afghanistan province "to help community leaders improve the shelf life of food," but when the soldiers left the area, "it became a pre-built haven for the Taliban" (P06). Buildings and roads (S10,

G11) provide examples of obvious potential second- and third-order considerations because they will likely remain after soldiers leave.

Relationships. Not only did soldiers use physical developments to evaluate second- and third-order effects in conflict zones, but they also assessed the impact of relationships with community leaders or households (S02, R08, S10, G11). S10 described his experience building relationships with families when the U.S. would move into an area or region for the first time. “We had to be cautious building relationships with households or families” because sometimes relationships with the U.S. would place a target on the family. On the other hand, in some cases, U.S. relationships evolved with the local populace, which developed into a loyalty for a temporary time. “I have been in the military long enough to witness people we helped out of poverty fight against us with the adversary because we no longer had their loyalty” (P06). Evaluating the second- and third-order effects related to previous relationships, such as P06’s example, helps soldiers become more prepared for interacting with and trusting local populace.

Second- and third-order effects related to gender also played a prominent role in assessing agricultural dynamics in a community (A13, P17). In Afghanistan, females were often the ones who tended the fields. But, male U.S. soldiers had to be aware of building relationships with them because it might have negative second- and third-order effects for their households, the communities, and the soldiers (A13, B19). To overcome this challenge, the U.S. Army created women engagement teams, P17 explained, who were a group of female special operators who worked with women to improve their lifestyles through improving their food production teams. Assessing relationship

influence in households, communities, and provinces helped the U.S. soldiers be aware of important connections to agricultural systems. However, accessible knowledge was not always enough (L01, P03, P06, C07, S10, D12, A13, S16, R18).

RO2.2: Determine USASOC Support/Training Needs for Conducting Agricultural Assessments in Conflict Zones

After identifying the assessment strategies U.S. Special Forces soldiers used to understand agricultural or food systems, I sought to determine the support or training they needed to most effectively conduct agricultural assessments in conflict zones. Three prominent themes emerged as the support and/or training soldiers need when conducting agricultural assessments—*basics of food production*, *supply chain relationships,* and *food (in)security variables related to conflict zones* (see Table 11). Each theme had subthemes supported by exemplary statements or units of data discussed in the narrative.

Table 11

Summary of Themes and Subthemes for RO2.2

Theme and Subtheme	Frequency
Basics of Food Production	63
Harvest	22
Infrastructure	34
Food Supply Chain Basics	36
Transportation Needs	18
Food (In)Security Variables Related to Conflict Zones	24

Note. The subtheme frequencies for the *basics of food production* and *food supply chain basics* themes do not equal the total theme's frequencies because soldiers made additional statements that did not fit the subthemes.

Basics of Food Production

To be successful at the fundamental level, soldiers expressed the need to understand the basics of food or agricultural production (L01, S02, P03, P06, C07, R08, S10, G11, D12, P14, N15, S16, R18). Because most U.S. Army Special Forces soldiers lack agricultural experience and backgrounds, soldiers "simply need the basics" (S02). Soldiers requested two items: (a) a curricular or training support framework to outline the basics of agricultural production (e.g., crop identification, soil types, pest management, fertilizer, harvest season, irrigation needs, and yield; L01, S02, R18); and (b) an overview of how agricultural elements could be influenced by conflict zones (L01, S02, P03, R08, S10, G11, D12, P14, R18). D12 claimed that U.S. Army soldiers needed to understand the "holistic picture" of agricultural systems in conflict zones. He added that "one way to do this could be to provide a training regarding the basics of food systems" that would be "culturally-relevant" and "related to the entire value chain."

Many soldiers expressed that they typically have minimal knowledge of the food system in the countries they deploy to, so they lack knowledge of the types of questions they should ask to elicit information (P03, G11, D12, P14). "Any quick guide or resource for basic information" would be helpful when speaking "to local people about their food production" (P14). For example, P03 "did not grow up around agriculture." Therefore, he would frequently seek soldiers who were familiar with agriculture to help explain basic food systems because their "mission is often critically-related to simply knowing the basics of food systems" (P03).

Harvest. Beyond the basics of food production is the essential dynamic specially related to harvest (R04, C07, A13, P17). Because harvest is connected to economic and nutritional gain for community members and households, it also creates the greatest physical security risk related to agricultural production (R04, A13). P17 explained that he was not familiar with "saffron" until he deployed to Afghanistan and became aware of the "possible transportation risks during harvest season." Because saffron is lucrative, "it can become an easy security target" (P17). Saffron was not the only crop that caused physical security risks, however. R04 recalled "witnessing a convoy" of grain trucks get attacked for the produce it was carrying. "After that experience, I quickly learned what crops were growing in the region and familiarized myself with harvest season. No one tells you in training that food production can be dangerous" (R04).

Water and Infrastructure. Fundamental to agricultural production in the Middle East and Afghanistan is the need to understand water and infrastructure (P03, L05, S10, B19). Water and waterways are the lifeblood of the Middle East (R08, G11). Irrigation needs for different crops, including how much water to use and which tools or machines can maximize crop yields, should also be considered (B19).

Soldiers should be aware of basic infrastructure needs rather than seeking "high-tech" technology (G11), which should include being aware of simple, rudimental agricultural practices (R08). In many places in the Middle East and Afghanistan, complex machines would be too advanced for the local populace and would not be effective tools (S10), which B19 noted repairing diesel water pumps as an example. For several years, the U.S. and partners installed water pumps periodically through parts of

Iraq to help with irrigation (D12, P14); however, when the pumps broke, the local populace did not have the parts or the money to repair the equipment so the monetary resources were wasted (P03).

Food Supply Chain Basics

Beyond the basics of agricultural production (e.g., food production, water, and infrastructure), soldiers expressed the need to understand the movement of food from production to distribution through the supply chain (S02, R04, L05, S10, G11, D12, P14). P14 explained that the U.S. Army Special Forces should know the differences in "short-term versus long-term" food system timelines and movement because food supply chain and market prices in competing areas are valuable to thinking about food (in)security holistically (L05). Another key to understanding the supply chain is knowing when to leverage additional partners and experts related to food production (G11). When using a "whole-of-government approach" (N15), partners who are more-informed experts, such as the U.S. Department of State, NGOs, and other public and private entities, play a key role in the supply chain (S10). Transportation needs play a valuable role as a subtheme for supply chain basics and is outlined below.

Transportation Needs. Transportation systems are critical for soldiers to understand the movement of food products (G11, P14, P17, R18). Clearly, transport routes play a vital role in moving food products from a "seed to a product and from a farm to a household" (S16). However, in some cases, families can sell their products to a market for an income (R18). Although products are transported to the markets, food shelf life becomes a consideration for food (in)security in the community (S10). If a

truck transporting food items is “delayed because of an explosion or disruption in the road,” families might not gain access to the food they need to survive (P09). For these reasons, products that have a longer shelf life can be more useful in areas of conflict (S10). Because transportation plays a key role in the supply chain, G11 requested region-specific training to help create a “holistic view of the dynamics of the supply chain” as it relates to other specific populations or tribes. Finally, P06 and R08 requested that elements in the curricular framework include details recovering the transport of food products, seeds, and goods.

Food (In)Security Variables Related to Conflict Zones

Just as soldiers formerly used second- and third-order effects to understand and assess existing agricultural systems, soldiers requested curricular elements regarding food (in)security variables related to conflict zones (L01, P03, R04, C07, P17, B19). L01 expanded on his request for food (in)security variables by explaining that because assessment is “key to their job,” they are constantly seeking to understand if variables have “causal effects” on other dynamics in conflict. “If we knew more of the variables surrounding food (in)security, we might be able to save lives” both in conflict and development (L01).

Agricultural production can also be connected to variables surrounding political actors, military influence, and social elements (S10, B19). Therefore, understanding the interconnectedness of these elements as they relate to food systems will be vital (B19). L01 stated that “my job and safety depend on my success of building relationships with the local populace,” and establishing food security while maintaining political and social

stability in the targeted location are ways soldiers can accomplish this. However, soldiers (R08, D12, R18) expressed that the need to investigate food (in)security variables through a conflict lens as food (in)security in conflict poses a unique threat to the safety and security of individuals involved.

In conclusion, USASOC soldiers requested agricultural assessments that targeted the *basics of food production*, *supply chain relationships,* and *food (in)security variables related to conflict zones.* Using themes, subthemes, and exemplary statements from USASOC soldiers in research question two, I identified variables for research question three. These variables were used in a Q sort in RQ3 to gain perspectives of curricula and training framework elements and metrics needed when conducting agricultural assessments in conflict zones.

RQ3: What Perspectives of Curricular and Training Framework Elements and Metrics are Desired when Conducting Agricultural Assessments in Conflict Zones?

I conducted a Q sort (Watts & Stenner, 2012) to identify the perspectives of curricula and training framework elements and metrics needed to conduct agricultural assessment in conflict zones. I answered research question three using two research objectives: RO3.1) identify what variables used to describe food (in)security best support the development of agricultural assessments in conflict zones; and RO3.2) develop a conceptual model outlining variables to develop curricular and training frameworks for agricultural assessments in conflict zones.

RO3.1: Identify what Variables used to Describe Food (In)Security Best Support the Development of Agricultural Assessments in Conflict Zones

I conducted a Q sort and analyzed the data using the PQ method software. I used a Principal Component Analysis (PCA) to calculate an unrotated factor matrix (see Table 12) and used a Kaiser-Guttman Criterion (Kaiser, 1958) to identify the four factors with Eigenvalues above 1 that warranted further investigation. To minimize standard error and maximize reliability, I removed four factors with Eigenvalues below 1. I interpreted the four extracted factors as *agricultural fundamentalists, power analysts, culturalists,* and *practitioners.*

Table 12

Unrotated Factor Loading Scores

Sort	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
B01	0.72	0.15	-0.24	-0.15	0.17	0.02	-0.38	0.38
S02	0.73	-0.22	-0.34	0.19	0.12	0.05	0.18	0.28
S03	0.53	-0.49	-0.17	0.33	-0.33	-0.28	0.26	0.10
W04	0.79	0.39	-0.06	0.24	0.07	0.19	-0.22	-0.04
P05	0.62	-0.22	0.61	-0.14	0.13	-0.17	0.01	0.10
C06	0.64	-0.30	0.33	-0.41	-0.34	-0.02	-0.06	-0.03
M07	0.24	0.71	0.17	-0.35	-0.19	0.22	0.34	0.14
D08	0.80	0.18	-0.18	-0.05	0.03	-0.39	-0.06	-0.23
B09	-0.75	0.26	0.10	0.38	0.11	-0.09	-0.12	0.21
G10	0.38	-0.61	-0.11	-0.10	0.34	0.51	0.01	-0.05
R11	0.16	-0.07	0.75	0.49	-0.26	0.21	-0.06	0.01
D12	0.57	0.21	0.34	0.02	0.59	-0.20	0.22	0.10
J13	0.68	0.32	-0.21	0.27	-0.17	0.19	0.28	-0.15

Table 12 Continued

Sort	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
T14	0.89	0.14	0.03	0.14	0.09	0.01	-0.26	-0.18
Eigenvalues	5.76	1.74	1.50	1.02	0.92	0.74	0.63	0.43
% Variance Explained	41	12	11	7	7	5	4	3
% Variance Cumulative	41	53	64	71	78	82	86	89

Note. I extracted factors 1–4 as their Eigenvalues were above 1.0. I did not extract factors 5–8 as their Eigenvalues were below 1.0. Cumulatively, the removed factors (5–8) accounted for 29% of the total variance.

The four factors I extracted had low-to-moderate correlations between each other (see Table 13). Cumulatively, the four factors explained 71% of the variance at the $p < .05$ level. Factor 1 and Factor 2 had the strongest relationship with a correlation of 0.49. However, Brown (1993) suggested on a scale of 0.00 to 1.00, where 0.00 shows no relationship, a correlation of 0.49 is still acceptable. Low correlations between factors represent dissimilar values, which showcase unique perspectives.

Table 13

Factor Intercorrelation

Factor	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	—			
Factor 2	0.49	—		
Factor 3	0.11	0.24	—	
Factor 4	0.03	0.22	0.05	—

Factor Rotation

I performed a Varimax rotation on the four extracted factors using PQMethod software. Defining factors emerged as significant factor loadings of ±0.50 or higher (Van Exel & de Graaf, 2005). Eleven of the 14 sorts loaded the four rotated factors at the ±0.50 significant level (see Table 14). Five sorts defined Factor 1, three sorts defined Factor 2, one sort defined Factor 3, and three sorts defined Factor 4. One sort negatively defined Factor 2, and one other sort negatively defined Factor 4. Negative sorts define the opposite of the factor. Thus, the sorts that negatively defined Factor 2 (B09) and Factor 4 (M07) indicated they align with the opposite view of the rotated factor.

Although only one sort loaded on Factor 3, after considering R11's unique demographic experience, I opted to keep Factor 3 as the sort's experience was unique enough to explain an exclusive perspective that other sorts might not represent.

Table 14

Rotated Factor Solution

Sort	Factor 1	Factor 2	Factor 3	Factor 4
B01	**0.68X**	0.35	-0.19	0.02
S02	0.65	0.23	-0.07	0.50
S03	0.36	0.19	0.11	**0.69X**
W04	**0.89X**	0.09	0.19	-0.06
P05	0.19	**0.72X**	0.51	0.03
C06	0.19	**0.84X**	0.14	0.07
M07	0.35	0.16	-0.02	**-0.75X**
D08	**0.76X**	0.33	-0.08	0.03
B09	-0.43	**-0.72X**	0.18	-0.21
G10	0.06	0.46	-0.08	**0.56X**
R11	0.01	0.04	**0.91X**	0.06
D12	0.45	0.33	0.37	-0.17
J13	**0.83X**	-0.01	0.07	0.04
T14	**0.81X**	0.35	0.22	0.09
No. of Defining Sorts	5	3	1	3
% Variance Explained	31	18	10	12

Table 14 Continued

Sort	Factor 1	Factor 2	Factor 3	Factor 4
% Variance Cumulative	31	49	59	71

Note. Factor loadings (> .50) are bolded and marked with an X to indicate defining sorts for each factor.

Reliability of Factor Solution

The four-factor solution yielded reliability coefficients higher than 0.80. Factor 1 had the highest composite reliability score of 0.952, and Factor 3 had the lowest reliability score of 0.80, which was deemed reliable and acceptable (Brown, 1993; see Table 15).

Table 15

Reliability of Factor Solution

	Factor 1	Factor 2	Factor 3	Factor 4
Composite Reliability	0.95	0.92	0.80	0.92

Note. All reliability scores were deemed acceptable for the study.

Factor Scores

I used the PQMethod software to calculate factor scores, or *z* scores, for each statement in the maintained factor. Field (2009) defined *z* scores as a standardized measure of the distance a statement lands from the average, or center of the distribution. Using *z* scores for each factor, I generated factor arrays to illustrate how the Q set statements would be arranged for each loading (Van Exel & de Graaf, 2005). I placed

the “Most Desirable” statements on the far right of the array representing *z* scores of +4 and the “Least Desirable” statements on the far left representing scores of -4.

Interpretation of Factors

I interpreted the four factors using the factor arrays arranged by *z* scores, which illustrated statements describing the “Most Desirable” variables when creating a curricular or training framework for USASOC soldiers to the “Least Desirable” statements. I interpreted the statements individually and holistically within each factor. Finally, after evaluating the factor arrays and *z* scores, I triangulated qualitative comments made by the participants during the Q sorts.

Distinguishing Statements

Distinguishing statements are significant perspectives at the $p < .05$ level. Distinguishing statements occur when the scores of participants who load on one factor are statistically significantly different than the scores of other participants who loaded on other factors (Coogan & Herrington, 2011). Distinguishing statements help describe the varying perspectives of the stakeholders.

Factor 1: Agricultural Fundamentalists. Factor 1 had an Eigenvalue of 5.76 and accounted for 31% of the variance. Five participants significantly associated with Factor 1. They were four males and one female with an average age of 61 years. All four had experience working with non-governmental organizations in developing nations, had contract experience working with the private sector in developing nations, and had experience writing food (in)security curriculum for local populaces. At the time of the

interview, two participants worked for USAID and one worked for a private consulting firm writing food (in)security curricula for agricultural educators in Uganda.

Factor 1 had six distinguishing statements (see Table 16). See Appendix O for the complete factor array for Factor 1. Desirable statements associated with Factor 1 included *food crops for human consumption* (SN = 12, FA = +4, z = 1.53) and capability of water infrastructure (SN = 29, FA = +3, z = 1.46). Statements negatively associated with Factor 1 included *power structure influence* (SN = 6, FA = -2, z = -1.31) and *generational differences* (SN = 4, FA = -3, z = -1.40).

Table 16

Distinguishing Statements for Factor 1: Agricultural Fundamentalists

No.	Distinguishing Statement	Array Position	z Score
12	Food crops for human consumption (e.g., wheat, potatoes).	4	1.53
29	Capability of water infrastructure (i.e., cost associated with water systems).	3	1.46
18	Pest management.	1	0.60
1	Cultural context of agricultural food products.	-1	-0.42
6	Power structure influence (e.g., governmental, political regimes) in agricultural production.	-2	-1.31*
4	Generational differences (i.e., disparity of youth to elders in communities) in production.	-3	-1.40

Note. Distinguishing statements are statically significant at $p < .05$. *Denotes statistical significance at $p < .01$.

A person who aligns with the *agricultural fundamentalist* viewpoint prioritizes basic agricultural production as the most desirable curricular element. A person in this factor likely believes achieving a stable food supply is vital to assessing food (in)security. *Agricultural fundamentalists* associate food crops and water infrastructure as essential building blocks of the basics of food (in)security assessment priorities. One participant (B01) illustrated this viewpoint by stating the most fundamental element of a curricular or training framework for USASOC soldiers would be "basic agricultural production and water." *Agricultural fundamentalists* claim it is vital to evaluate fundamental human needs in the household and community by assessing members' nutritional needs and caloric intake. Integral to nutritional needs for sustenance is water capability, especially for an agricultural assessment framework in the Middle East.

Factor 2: Power Analysts. Factor 2 had an Eigenvalue of 1.74 and accounted for 18% of the variance. Three participants significantly associated with Factor 2, one of which had a significantly negative association. Two were male and one female with an average age of 48 years. Each of the three participants had experience working with the U.S. military prior to their current positions. One participant served in the U.S. Marine Corps, one served in the U.S. Army, and one volunteered on a provincial reconstruction team in Afghanistan with the U.S. Army. All three participants had experience developing educational programs to help indigenous populations regain food security after conflict.

Factor 2 had two distinguishing statements (see Table 17). See Appendix P for the complete factor array for Factor 2. Distinguishing statements for Factor 2 included

land ownership (SN = 5, FA = +4, z = 1.72). A distinguishing "least desirable" statement related to Factor 2 was *food product shelf life* (SN = 27, FA = -3, z = -1.45).

Table 17

Distinguishing Statements for Factor 2: Power Analysts

No.	Distinguishing Statement	Array Position	z Score
5	Land ownership (i.e., how can an individual use the land to produce food products).	4	1.72*
27	Food product shelf life (i.e. how long the food can be stored before it spoils).	-3	-1.45*

Note. Distinguishing statements are statically significant at $p < .05$. *Denotes statistical significance at $p < .01$.

A person who aligns with the *power analyst* viewpoint perceives food (in)security to be directly related to power dynamics and political influence. These people recognize that food (in)security assessment tools in conflict zones are different than food (in)security assessment tools in under normal conditions. P05 and C06 supported this viewpoint by stating that understanding who owns the land in conflict zones should be just as important of an assessment variable for the U.S. Army as crop type because most often the laborers do not own the land or the crop. *Power analysts* prioritize personal security and safety in assessment metrics and then evaluate agricultural production and water systems.

Factor 3: Culturalists. Factor 3 had an Eigenvalue of 1.50 and accounted for 10% of the variance. One participant significantly associated with Factor 3. This participant was male, 63 years old, and had experience building an agricultural education

program in Yemen in the early 1990s. Although only one participant aligned with Factor 3, he was the only participant whose agricultural development experience was more than 25 years ago during Operation Desert Storm. He was also the only participant with development experience in Yemen, which emerged as the most food-insecure nation in the world in 2018 (FAO & WFP, 2018b).

Factor 3 had seven distinguishing statements (see Table 18). See Appendix Q for the complete factor array for Factor 3. A distinguishing statement for Factor 3 included *cultural context of agricultural food products* (SN = 1, FA = +4, z = 1.84). A distinguishing "least desirable" statement related to Factor 3 was *transportation systems for agricultural harvests/exports* (SN = 39, FA = -4, z = -1.84).

Table 18

Distinguishing Statements for Factor 3: Culturalists

No.	Distinguishing Statement	Array Position	z Score
1	Cultural context of agricultural food products.	4	1.84
22	Food prices in regional markets.	3	1.38
21	Domestic agricultural trade relationships/dynamics.	2	0.92*
23	Foreign agricultural trade relationships/dynamics.	2	0.92*
20	Cash crop influence in local economy.	-2	-0.92
34	Livestock herd management.	-2	-0.92
39	Transportation systems for agricultural harvests/exports.	-4	-1.84

Note. Distinguishing statements are statically significant at $p < .05$. *Denotes statistical significance at $p < .01$.

A person who aligns with the *culturalist* viewpoint prioritizes the cultural context of agricultural food products and food prices in regional markets. These individuals likely recognize that nations and communities are guided by different cultures and norms. For *culturalists*, food (in)security assessment metrics should be adapted to each region and culture. R11 supported this viewpoint by recognizing that the success of the development project he worked on in Yemen hinged on understanding the dynamics in the region to build rapport with the local populace. *Culturalists* believe priorities will changed based on the region where the assessment will occur.

Factor 4: Practitioners. Factor 4 had an Eigenvalue of 1.02 and accounted for 12% of the variance. Three participants significantly associated with Factor 4, one of which had a significantly negative association. Two participants were male, and one participant was female with an average age of 73 years. Each of the three participants had more than 25 years of international agricultural development experience and all three developed agricultural education programs in developing nations with non-governmental organizations and through the private sector.

Factor 4 had 10 distinguishing statements (see Table 19). See Appendix R for the complete factor array for Factor 4. Distinguishing "most desirable" statements for Factor 4 were *food crops for human consumption* (SN = 12, FA = +4, z = 2.29) and *farm machinery/equipment maintenance* (SN = 38, FA = +4, z = 1.53). Distinguishing "least desirable" statements for Factor 4 were *soil types* (SN = 28, FA = -3, z = -1.17) and *environmental influence/sustainability of crops/livestock* (SN = 26, FA = -3, z = -1.94).

Table 19

Distinguishing Statements for Factor 4: Practitioners

No.	Distinguishing Statement	Array Position	*z* Score
12	Food crops for human consumption (e.g., wheat, potatoes).	4	2.29
38	Farm machinery/equipment maintenance.	4	1.53*
16	Oil crops for consumption or industrial uses (e.g., cottonseed, corn).	3	1.29*
39	Transportation systems for agricultural harvests/exports.	3	0.95
14	Industrial and secondary crops for various personal and industrial uses (e.g., rubber, tobacco).	1	0.40*
17	Ornamental crops for landscape gardening (e.g., dogwood, azalea).	1	0.38
37	Agricultural product export maps.	-1	-0.09
29	Capability of water infrastructure (i.e., cost associated with water systems).	-2	-0.84
28	Soil types.	-3	-1.17
26	Environmental influence/sustainability of crops/livestock.	-3	-1.94*

Note. Distinguishing statements are statically significant at $p < .05$. *Denotes statistical significance at $p < .01$.

A person who aligns with the *practitioner* viewpoint believes desirable assessment metrics should not only include the basics of crop or food production but should also include assessment priorities for equipment and machines. *Practitioners* view assessment priorities through a practical lens by associating food production yields

with access to machinery and equipment. Sorts (S03, G10) who aligned with the *practitioner* viewpoint expressed the importance of helping households meet immediate nutritional or sustenance needs by identifying strategies to increase access to food and maintain a stable supply. S03 supported this factor by stating that "our first concern should be how to get food back on the table if there has been a disruption in production." *Practitioners* operate in the zone of immediacy when evaluating assessment priorities. Only after immediate and fundamental needs are met do *practitioners* believe that soldiers or individuals working in agricultural development can place focus elsewhere.

Similarities among perspectives. Although the four factors were different, they had similarities, or consensus, relative to the factor arrays (see Table 20). Consensus statements do not distinguish any particular factor because participants ranked each statement similarly. Of the 39 statements, 10 statements were statistically significant consensus statements relative to the factor array. Each of the four factors had consensus with "veterinary care" (SN = 36; $FA_1 = -1$; $FA_2 = -1$; $FA_3 = 0$; $FA_4 = -1$) as a neutral assessment priority. However, the four factors had consensus with the "typical diet within households" (SN = 7; $FA_1 = 3$; $FA_2 = 3$; $FA_3 = 2$; $FA_4 = 2$) being a more desirable assessment priority and "climate change and its effect on agricultural products" (SN = 25; $FA_1 = -4$; $FA_2 = -4$; $FA_3 = -3$; $FA_4 = -4$) being a lesser desirable assessment priority.

Table 20

Q Sort Values for Statements Sorted by Consensus Versus Disagreement

		Factor Arrays			
No.	Q Set Statements	1	2	3	4
36**	Veterinary care.	-1	-1	0	-1
7**	Typical diet within households (i.e., nutritional demands for regions).	3	3	2	2
25**	Climate change and its effect on agricultural products.	-4	-4	-3	-4
10**	Feed crops for livestock consumption (e.g., oats, alfalfa).	0	0	-1	0
31*	Maintenance of water infrastructure systems (i.e., irrigation canals, water pumps, etc.).	1	1	1	0
35*	Poultry production management.	1	0	0	2
11	Fiber crops for cordage and textiles (e.g., cotton, hemp).	-1	-1	-1	1
30*	Impact of irrigation techniques on soil/ground.	0	0	1	-2
9*	Common pests associated with crops.	1	0	-1	2
20*	Cash crop influence in local economy.	0	0	-2	0
18	Pest management.	1	-2	-1	-1
34*	Livestock herd management.	1	1	-2	1
15	Nutrient requirements for growing different plants.	3	0	2	-1

Table 20 Continued

No.	Q Set Statements	Factor Arrays			
		1	2	3	4
37	Agricultural product export maps.	-3	-3	-3	-1
3	Gender roles in agricultural production.	-2	1	0	-2
28	Soil types.	1	0	0	-3
5	Land ownership (i.e., how can an individual use the land to produce food products).	0	4	0	2
22	Food prices in regional markets.	0	-1	3	-1
32	Water infrastructure (i.e. what type of watering system the plant needs, such as flood irrigation, drip irrigation, spray, etc.).	4	2	1	-1
13	Harvest seasons for crops.	2	3	-1	0
14	Industrial and secondary crops for various personal and industrial uses (e.g., rubber, tobacco).	-2	-2	-3	1
19	Plant/animal identification.	3	3	-1	1
29	Capability of water infrastructure (i.e., cost associated with water systems).	3	1	1	-2
1	Cultural context of agricultural food products.	-1	2	4	1
26	Environmental influence/sustainability of crops/livestock.	0	0	0	-3
2	Cultural context of agricultural production/crops/etc.	-1	3	4	0
33	Water usage (i.e. how much water the plant needs and how often it should be irrigated).	2	-2	1	-2

Table 20 Continued

No.	Q Set Statements	Factor Arrays			
		1	2	3	4
21	Domestic agriculture trade relationships/ dynamics.	-1	-2	2	-3
12	Food crops for human consumption (e.g., wheat, potatoes).	4	2	0	4
17	Ornamental crops for landscape gardening (e.g., dogwood, azalea).	-4	-3	-2	1
38	Farm machinery/equipment maintenance.	-1	-1	-2	4
23	Foreign agricultural trade relationships/ dynamics.	-3	-3	2	-3
39	Transportation systems for agricultural harvests/exports.	0	-1	-4	3
24	Agricultural products and their relationships to the energy sector.	-3	-4	1	0
16	Oil crops for consumption or industrial uses (e.g., cottonseed, corn).	-2	-1	-3	3
27	Food product shelf life (i.e. how long the food can be stored before it spoils).	2	-3	3	0
4	Generational differences (i.e., disparity of youth to elders in communities) in production.	-3	1	3	3
6	Power structure influence (e.g., governmental, political regimes) in agricultural production.	-2	4	3	3
8	Typical geographic or region where agricultural systems are produced.	2	2	-4	-4

Note. *Denotes statistical significance at $p < .05$. **Denotes statistical significance at $p < .01$

Three statements were polarizing among the factors. Three factors—*power analysts*, *culturalists*, and *practitioners*—associated "generational differences (i.e., disparity of youth to elders in communities) in production" (SN = 6; FA_1 = -2; FA_2 = 4; FA_3 = 3; FA_4 = 3) as a desirable statement, whereas *agricultural fundamentalists* viewed it as a lower assessment priority. Three factors—*power analysts*, *culturalists*, and *practitioners*—associated "power structure influence (e.g., governmental, political regimes) in agricultural production" (SN = 4; FA_1 = -2; FA_2 = 4; FA_3 = 3; FA_4 = 3) as a desirable assessment priority, which *agricultural fundamentalists* viewed it as a lower priority. Finally, two factors— *agricultural fundamentalists* and *power analysts*—ranked "typical geographic or region where agricultural systems are produced" (SN = 8; FA_1 = 2; FA_2 = 2; FA_3 = -4; FA_4 = -4) as a moderately desirable statement, whereas *culturalists* and *practitioners* prioritized it as a least desirable assessment priority.

RO3.2: Develop a Conceptual Model Outlining Variables to Develop Curricular and Training Frameworks for Agricultural Assessments in Conflict Zones

Using the factor personas and interviews from the Q method study, I developed a conceptual model outlining viewpoints associated with agricultural assessment priorities in conflict zones (see Figure 17). The model represents the viewpoints of individuals with extensive experience in international agricultural development.

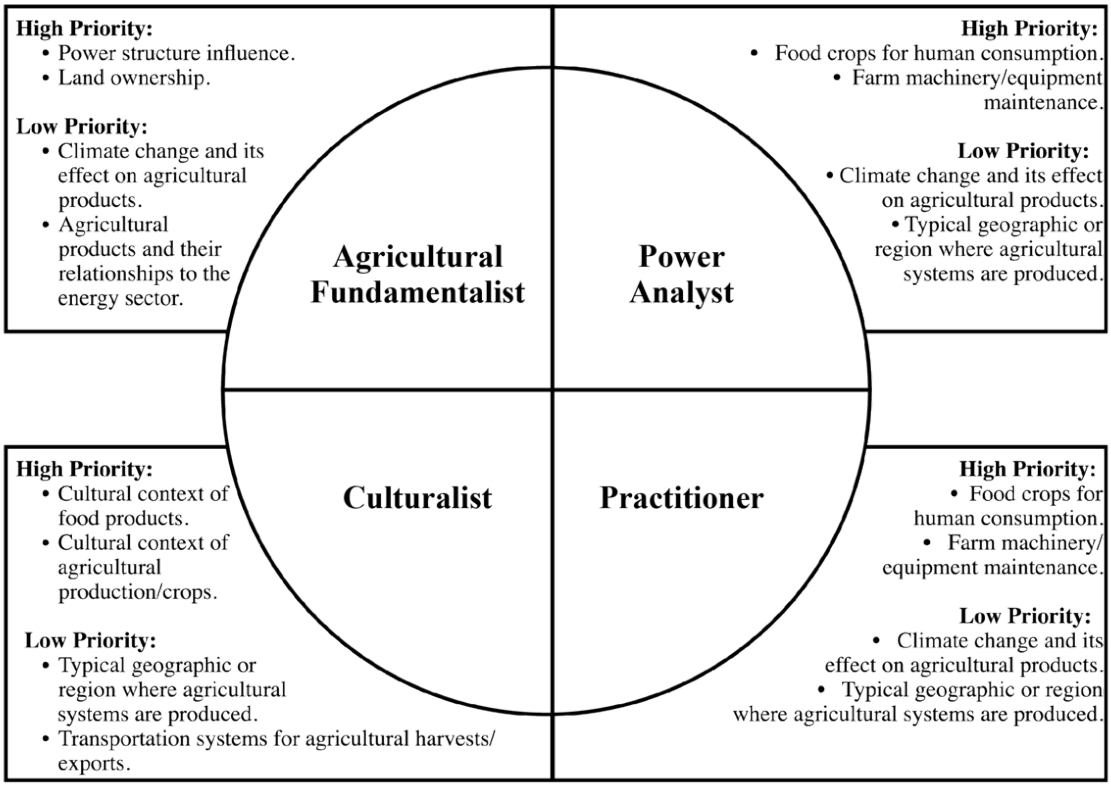


Figure 17. Viewpoints associated with agricultural assessment priorities to address food (in)security in conflict zones.

Conflict zones present a unique dynamic for agricultural assessment needs, especially in international settings. As a result, simply assessing agricultural issues related to general food (in)security is not enough. Agricultural experts articulated the importance of evaluating cultural contexts and power dynamics when conducting assessments in conflict zones. These viewpoints also illustrate the need for differing perspectives when conducting agricultural assessments in conflict zones. When conducting agricultural assessments in conflict zones (see Figure 8), key organizations likely have differing assessment priorities based on their short-term or long-term lens. Therefore, it is be beneficial to develop a specific conceptual model for USASOC

soldiers to investigate the relationship of food (in)security using existing operational assessment priorities. Such a model will help prevent personal security threats as they relate to food (in)security challenges in conflict zones.

Summary

In summary, I outlined the findings for my exploratory sequential mixed methods study using three phases—integrative literature review, qualitative semi-structured interviews, and a Q sort. These findings led to establishing a framework to advance curricular and training support for agricultural assessment in conflict zones. In the final chapter, I discuss the conclusions and recommendations that emerged from these findings and direct the final steps of the study.

CHAPTER V
CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS

Exploratory sequential mixed methods studies are designed to explain a phenomenon using a series of research steps (Creswell & Creswell, 2018). Each step lays the foundation for the subsequent step, which will eventually lead to a comprehensive model or framework. I used three sequential phases (integrative literature review, semi-structured interviews, and a Q sort) to guide the development of a framework to advance USASOC curricular and training support for agricultural assessment in conflict zones, particularly in the Middle East and Afghanistan.

In the first phase, for research question one, I conducted an integrative literature review (Torraco, 2005) to identify the existing curricular and training frameworks used to study food security and conduct agricultural assessments in conflict zones. Using five research objectives, I developed a conceptual model illustrating prominent variables in the communication, education, and political science literature (2009–2019) that influence food (in)security in conflict zones.

In the second phase, for research question two, I conducted qualitative, semi-structured interviews (Merriam & Tisdell, 2016) with U.S. Army 5th Group Special Forces (Airborne) soldiers to identify the current needs of USASOC soldiers when conducting agricultural assessments in conflict zones. Using two research objectives, I identified existing USASOC support/training strategies used when conducting agricultural assessments and determined additional curricular needs.

In the third phase, for research question three, I conducted a Q sort (Watts & Stenner, 2012) with experts in international agricultural development to identify perspectives of curricula and training framework elements and metrics desired when conducting agricultural assessment in conflict zones. Using two research objectives, I identified which food (in)security variables best supported agricultural assessments in conflict zones and developed a conceptual model illustrating assessment priorities to address food (in)security in conflict zones. Following Creswell and Creswell's (2018) guidance for exploratory sequential mixed methods, I combined the findings from each of the three phases into a final USASOC curricular and training support framework to guide agricultural assessment in conflict zones.

Conclusions

Food (in)security plays a key role in conflict zones. In certain places, food (in)security can be synonymous with armed conflict (FAO & WFP, 2018a), which creates a need for individuals working in conflict zones to understand the dynamics of food (in)security as it relates to the stability of a community or host-nation. The findings from my study (RQ1, RQ2, RQ3) suggest that, beyond such dynamics, there is a need for understanding food (in)security's relationship with the operational conflict dimensions in a community (e.g., physical, military, economic, social, information, and infrastructure). Even though FAO (2008) outlined the key variables of food (in)security as access to food, availability of food, utilization of nutrients, and sustainability over time, my findings suggest additional variables (e.g., access to information and education [RQ1], second- and third-order effects [RQ2], and fundamentals of agricultural

production [RQ1, RQ2, RQ3]) can influence food (in)security. Different stakeholders also vary agricultural assessment priorities based on their scope and purview (e.g., agricultural fundamentalists, power analysts, culturalists, and practitioners [RQ3]). As a result, my findings suggest a need for conceptualizing food (in)security's role in conflict zones and a need for developing a framework for USASOC soldiers to cross-reference with existing operational considerations when conducting agricultural assessments in conflict zones.

Model for Agricultural Assessment in Conflict Zones

Agricultural assessment in conflict zones presents a new dynamic that requires additional considerations beyond other agricultural assessments used in international development. The findings of the study described herein support Hildebrand's (2016) suggestion to develop effective mission assessments or analysis tools that include a cross-section of operational and civil considerations. Due to the relationship between food (in)security and conflict, adding an agricultural assessment framework designed to interact with operational dimensions, such as political, military, economic, social, infrastructure, and information, could lead to a deeper understanding of civil considerations key to a human's basic needs.

To capture key themes from the literature (RQ1), from interviews with U.S. Army 5th Group Special Forces (Airborne) soldiers (RQ2), and from Q sort interviews with individuals with extensive experience in international agricultural development (RQ3), I developed the agricultural assessment framework addressing food (in)security priorities in conflict zones (see Figure 18). The primary elements in the conceptual

model support Maslow's (1943, 1954, 1970a, 1970b, 1993) hierarchy of needs addressing the fundamental importance of biological and physiological demands on the body. Without an agricultural system's capability for providing sustenance through efficient agricultural production, food security and nutritional demands cannot be met.

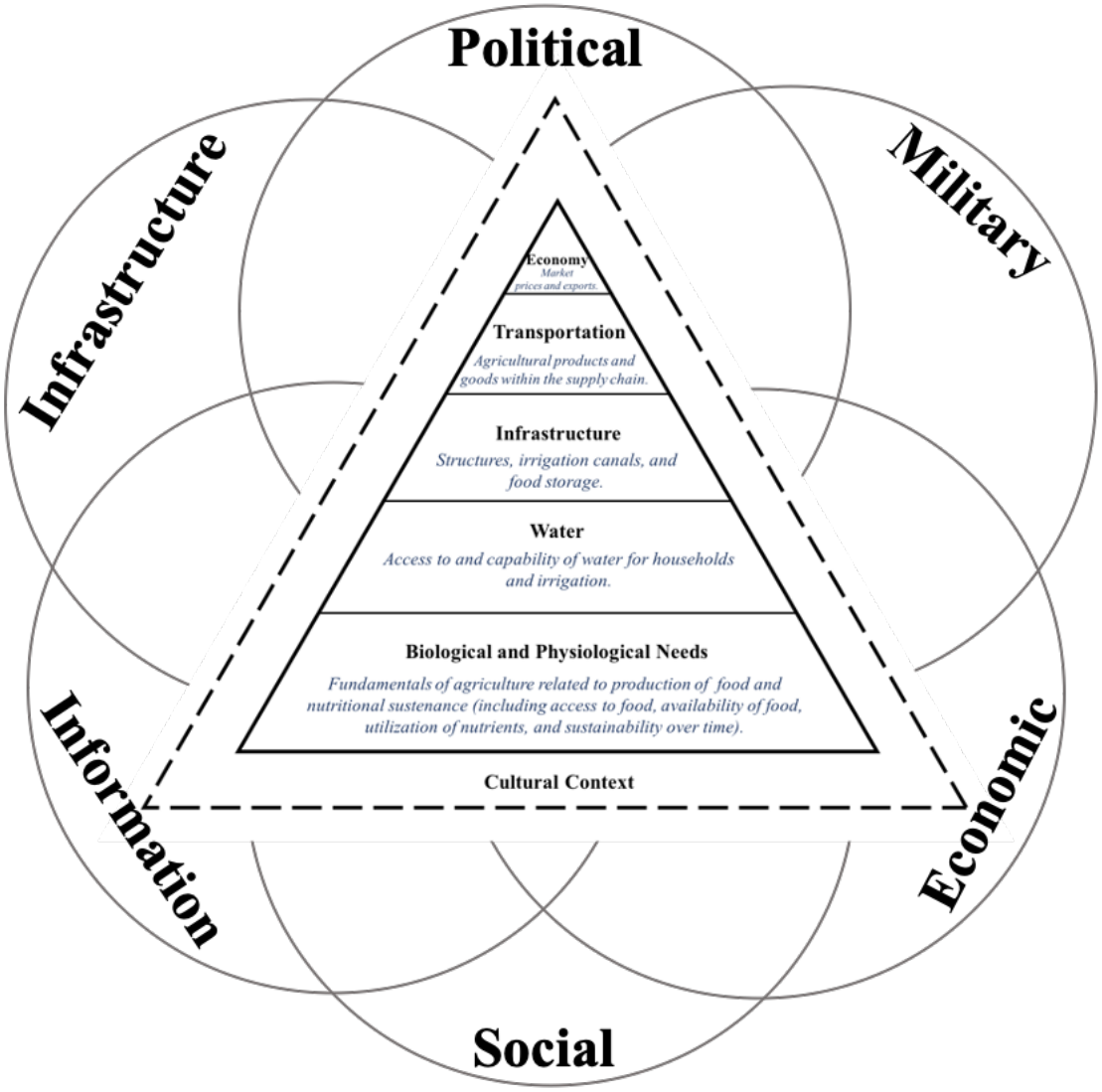


Figure 18. Agricultural assessment framework addressing food (in)security priorities in conflict zones.

Operational Considerations in Conceptual Model

Using food (in)security literature published in the communication, education, and political science categories of the SSCI databases, I identified seven phenomena describing food (in)security variables in conflict zones. In the communication database, I identified *message delivery* and *message reception*. In the education database, I identified *agricultural production* and *anthropological/social issues.* Last, in the political science database, I identified *political influence*, *economics/policy*, and *anthropological/social issues*.

Researchers (Daugbjerg & Feindt, 2017; Essex, 2014; Esteban Montes et al., 2009; Ferretti, 2019; Fielding & Shortland, 2010; Jones et al., 2017; Koren & Bagozzi, 2017; Wischnath & Buhaug, 2014) have highlighted unique challenges to food (in)security as it relates to conflict zones. In these studies (RQ1), food (in)security sat at the nexus of the political, economic, social, and cultural dimensions (Katsos, 2017; Wischnath & Buhaug, 2014). This intersection positions food (in)security variables at the center of other USASOC assessment dimensions, such as political, economic, and social dimensions, which suggests a need for further investigation into food (in)security's relationship in conflict.

Three prominent themes emerged as existing support or training strategies used by soldiers in the U.S. Army 5th Special Forces Group (Airborne) when conducting agricultural assessments (RQ2)—*rapport, security,* and *second- and third-order effects.* Although USASOC soldiers did not use specific assessments designed for agriculture or food systems, they were aware of the inherent connection of food (in)security to areas of

conflict through the indirect strategies above. To more directly investigate food (in)security variables' connection to conflict, USASOC soldiers (RQ2) expressed a need for understanding the *basics of food production*, *supply chain relationships,* and *food (in)security variables related to conflict zones.*

When applying the findings of the study described herein to existing USASOC assessment frameworks, I found that the food (in)security variables aligned at the intersection of the operational dimensions (e.g., political, military, economic, social, information, and infrastructure) outlined in the PMESII framework (U.S. Joint Force Command, 2006; see Figure 19). As the RQ3 findings highlighted, *agricultural fundamentalists*, *power analysts*, *culturalists*, and *practitioners* prioritize agricultural assessment variables differently based on their backgrounds, experiences, and visions. Therefore, adding assessment priorities for different stakeholder priorities will be valuable to gaining a holistic view of food (in)security in a household, community, or host nation. The operational dimensions outlined in the PMESII framework illustrate the complex nature of conducting assessments in conflict zones because of the extensive list of items soldiers need to understand the framework (Katsos, 2017). The viewpoints associated with agricultural assessment priorities in conflict zones also support the *U.S. Government Global Food Security Strategy* report (USAID, 2016) that stated, "Food security is not just an economic and humanitarian issue; it is also a matter of security" (p. iii). Members of an Operational Detachment-Alpha (ODA) Team likely have different elements they are assessing that align with their scope and focus. The same could be true for food (in)security as a key element missing previously was an

assessment of food (in)security's interaction with each of the operational dimensions, which is evident in Figure 19.

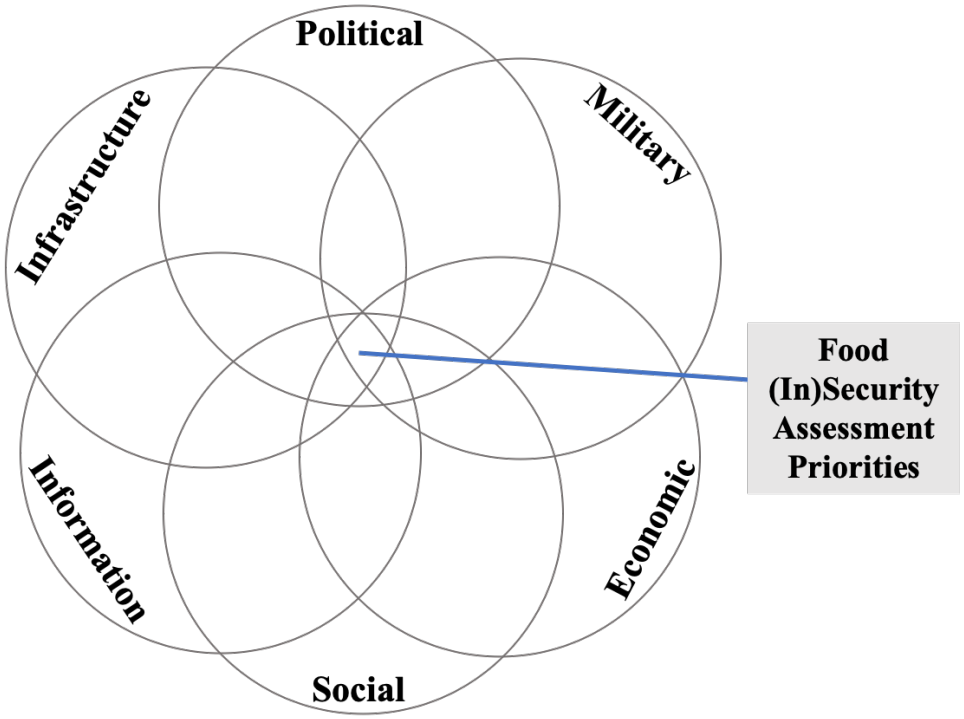


Figure 19. Operational considerations outlined by the PMESII framework supported by findings from RQ1, RQ2, and RQ3.

When the six operational values (e.g., political, military, economic, social, information, and infrastructure; U.S. Joint Force Command, 2006) are assessed using food (in)security variables (RQ1, RQ2, RQ3), USASOC soldiers can complete community assessments with an added element of basic human biological and physiological needs. Hartley (2017) and Hillson (2009) supported the need to conduct community assessments while also investigating basic human needs in areas of conflict because considering basic human needs would add a deeper understanding of the nature of conflict in the area and its impact on the local populace. The intersection of the

operational PMESII dimensions and the civil consideration of food (in)security serve as the foundation of the conceptual model outlining food (in)security's role in conducting agricultural assessments in conflict zones.

Food (in)security has unique ties to multiple dimensions beyond simply having food on the table (RQ3). FAO (2008) defined four key dimensions of food (in)security—availability of food, access to food, utilization of nutrients, and stability over time. Yet, empirical studies (RQ1) described additional factors that play a role in securing a stable food source in a household or community. I identified additional factors (RQ2, RQ3) to develop a conceptual model outlining assessment priorities as they pertain to food (in)security. The concepts in the model were biological and physiological needs, water, infrastructure, transportation, and the economy/market (see Figure 20). The primary elements in the conceptual model support Maslow's (1943, 1954, 1970a, 1970b, 1993) hierarchy of needs addressing the fundamental importance of biological and physiological demands on the body. Without efficient agricultural production and basic water infrastructure, nutritional needs cannot be met to provide food security in a household, community, or host-nation. Beyond biological needs and water, food security also depends on strong capabilities in infrastructure, transportation, and the economy. Each of these elements promotes stability in a household and a community. In some situations, a family might be able to yield enough produce to sell at a market.

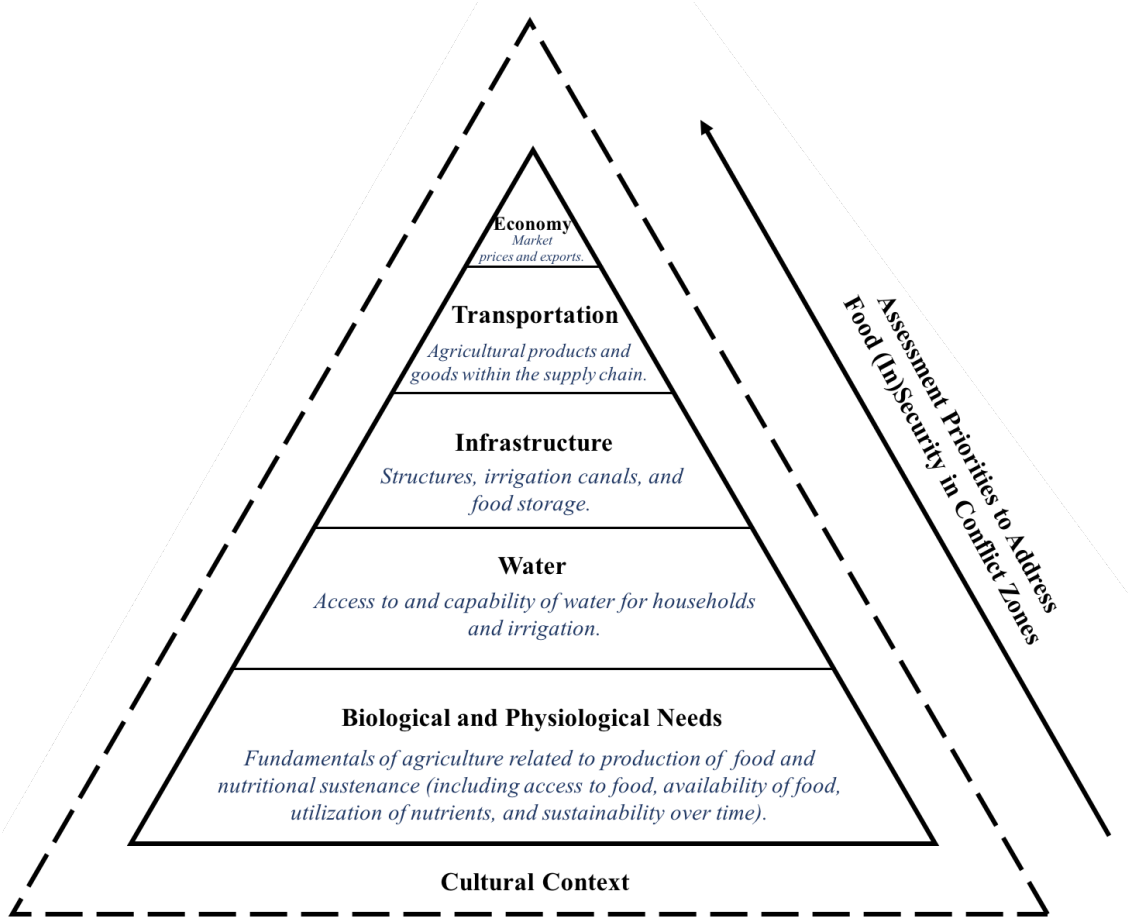


Figure 20. Agricultural assessment priorities to address food (in)security in conflict zones.

FASCOPE/PMESII Framework

The ASCOPE/PMESII Framework is used as the primary form of agricultural assessment from the U.S. Army Special Forces to evaluate the relationship(s) between civil considerations (Areas, Structures, Capabilities, Organizations, People, and Events [ASCOPE]) and operational considerations (Political, Military, Economic, Social, Information, and Infrastructure [PMESII]). The ASCOPE/PMESII Framework is also at an intersection of operational and tactical mission analysis tools (Hildebrand, 2016) and

is a practical implementation of the conceptual model for agricultural assessment and food (in)security priorities outlined in the assessment priorities model above. Differing members of a U.S. Army Special Forces ODA Team provide expertise to various elements in the framework, which supports the need for addressing different stakeholder needs (RQ3). Integrating food (in)security as a new civil consideration (FASCOPE; see Figure 21 and Appendix S) expands civil assessment considerations that interact dynamically with PMESII dimensions.

FASCOPE / PMESII

	P Political	M Military	E Economic	S Social	I Information	I Infrastructure
F **Food Security**	Food – Political (Land ownership, destination of food surpluses, taxes on food products, safety inspections)	Food – Military (Motivations of adversary(ies) with food, export prices, armed transport for narcotics, fertilizer)	Food – Economic (Household and exports, market prices, succession plans, cost of seeds and storage)	Food – Social (Planting, harvest, availability of food within community markets, transportation)	Food – Information (Access to agricultural education, extension, USAID and/or development resources for seeds)	Food – Infrastructure (Water capabilities, irrigation patterns, machines/machinery, food storage, transport maps)
A **Areas**	Areas – Political (District Boundary, Party affiliation areas)	Areas – Military (Coalition / LN bases, historic ambush/IED sites)	Areas – Economic (bazaars, shops, markets)	Areas – Social (parks and other meeting areas)	Areas –Information (Radio/newspapers/ TV where people gather for word–of–mouth)	Areas – Infrastructure (Irrigation networks, water tables, medical coverage)
S **Structures**	Structures – Political (town halls, government offices)	Structures – Military / Police (police HQ, Military HHQ locations)	Structures –Economic (banks, markets, storage facilities)	Structures – Social (Churches, restaurants, bars, etc.)	Structures – Information (Cell / Radio / TV towers, print shops)	Structures – Infrastructure (roads, bridges, power lines, walls, dams)
C **Capabilities**	Structures – Infrastructure (roads, bridges, power lines, walls, dams)	Capabilities – Military (security posture, strengths and weaknesses)	Capabilities – Economic (access to banks, ability to withstand natural disasters)	Capabilities – Social (Strength of local & national ties)	Capabilities – Info (Literacy rate, availability of media / phone service)	Capabilities – Infrastructure (Ability to build / maintain roads, walls, dams)
O **Organization**	Organizations – Political (Political parties and other power brokers, UN,)	Organizations – Military (What units of military, police, insurgent are present)	Organizations – Economic (Banks, large land holders, big businesses)	Organizations –Social (tribes, clans, families, youth groups, NGOs / IGOs)	Organizations – Info (NEWS groups, influential people who pass word)	Organizations – Infrastructure (Government ministries, construction companies)
P **People**	People – Political (Governors, councils, elders)	People – Military (Leaders from coalition, LN and insurgent forces)	People – Economic (Bankers, landholders, merchants)	People – Social (Religious leaders, influential families	People – Info (Media owners, mullahs, heads of powerful families)	People – Infrastructure Builders, contractors, development councils)
E **Events**	Events – Political (elections, council meetings)	Events – Military (lethal/nonlethal events, loss of leadership, operations, anniversaries)	Events – Economic (drought, harvest, business open/close)	Events – Social (holidays, weddings, religious days)	Events – Info (IO campaigns, project openings, CIVCAS events)	Events – Infrastructure (road / bridge construction, well digging, scheduled maintenance)

Figure 21. FASCOPE/PMESII Framework to use when conducting agricultural assessments in conflict zones. This model is adapted from the original ASCOPE/PMESII Framework.

Food (in)security variables have a unique relationship to the operational PMESII variables in conflict situations (RQ1, RQ2, RQ3). Simply assessing FAO's (2008) basic food (in)security needs of access to food, availability of food, utilization of nutrients, and sustainability over time is not enough. Likewise, the original ASCOPE/PMESII Framework was not comprehensive enough to assess for the basic human needs guided by Maslow (1943). Ensuring basic human needs are met, households and communities can move closer to having access to a more secure, stable, and sustainable food supply. Assessing food (in)security variables in conflict zones better prepares U.S. soldiers to understand local agricultural elements, to develop rapport with the local populace, and to establish safe and secure environments for individuals living in and working in conflict zones. Due to the unique dynamic food (in)security plays in households, communities, and host-nations, assessing the relationship between the civil considerations of FASCOPE and the operational dynamics of PMESII will increase critical assessment capabilities in conflict areas.

Example TRADOC Curricular Framework Elements

The content discovered in the three phases of my study described herein guides the development of the learning objectives and outcomes for a proposed curricular framework. The learning objectives are based on the development of FASCOPE/PMESII Framework, which I developed using emergent themes from the literature review (RQ1), conversations with USASOC soldiers (RQ2), and Q sort interviews with agricultural experts with international agricultural development experience (RQ3). The framework is grounded using elements to ensure physical security in the region(s), and I developed the

outline using Hollingsworth and Ybarra's (2018) EDI model for preparing, presenting, and assessing adult lessons.

As a result, many of the learning objectives apply food (in)security to physical security risks as they are of high concern in conflict zones. Because of Vygotsky's (1962) zone of proximal development, I know there are some elements the instructor cannot account for, especially in areas of conflict zones. As a result, some of the content in the proposed lessons will require that the learner's knowledge be a central component to the success of the curricula and will be facilitated to best prepare soldiers to understand the relationships between food (in)security and their mission. Guided by the EDI model, the curricula outlines instruction supporting food (in)security's relationship to agricultural assessments in conflict zones (see Table 21).

Table 21

Sample Outline for a USASOC Curricular Framework

Topic: Plant Identification

Unit: Cash Crops Influencing Local Economies

Learning Objective(s): USASOC soldiers will be able to

1) List common cash crops in the _____ province in Afghanistan.
2) Identify sprout and mature plant features based on observation.
3) Evaluate harvest season for each crop.
    a. Compare to timelines for other large events, influx of people in the region, etc.
4) Diagram common water resources and irrigation infrastructure needed for cash crop.
5) Identify vulnerabilities in the water or transportation systems connected to each crop.

Table 21

Sample Outline for a USASOC Curricular Framework

6) List cash common cash crops.
7) Identify key plant features for identification.
8) Connect harvest season with other influx of people for physical and economic security.
9) Map common water infrastructure features.
10) Identify vulnerabilities in the water systems.

Potential Assessment(s) (both content and application):

1) Plant identification.
2) Presentation on vulnerabilities in the area based on cash crop influence.
3) Compare economic value of different cash crops.

Note. Adapted using dissertation findings (RQ1, RQ2, RQ3).

Recommendations

Developing one of the first agricultural assessment frameworks for USASOC soldiers to use when conducting agricultural assessments in conflict zones comes with unknowns. These unknowns can be addressed by implementing eight fundamental recommendations for practice, research, and theoretical and conceptual frameworks modification.

Practice

First, I recommend developing a food (in)security field manual for USASOC soldiers. This field manual should expand discussion on priority agricultural assessment variables outlined in the FASCOPE/PMESII operational matrix to include the specific assessment interactions with food (in)security at each operational level (i.e., political, military, economic, social, information, and infrastructure). This manual should serve as

a reference guide for USASOC soldiers and briefly outline fundamental agricultural variables and their relation to FASCOPE/PMESII. Several soldiers (RQ2) expressed the need for a quick, easy-to-reference guide that could be carried in a field pouch if, or when, a situation arises. The reference guide should outline (a) the food (in)security variables' interactions with the operational PMESII values; (b) the factors influencing how food (in)security can positively or negatively impact U.S. and allied forces; and (c) the relevance to how each factor could impact U.S. and allied forces.

Second, I recommend disseminating the FASCOPE/PMESII Framework to soldiers in the U.S. Army 5th Special Forces Group (Airborne) to pilot in pre-combat deployment training where unconventional warfare is key to their mission directive. Because the U.S. Army 5th Special Forces Group (Airborne) was the population of interest, they should be the first to vet the process prior to using in the Middle East and Afghanistan. Using food (in)security elements related to unconventional warfare, I recommend pairing their feedback with additional studies in varying populations to investigate the effectiveness of the framework in practice.

Third, I recommend submitting a course proposal to the U.S. Army John F. Kennedy Special Warfare Center and School (USAJFKSWCS) to train soldiers to use the FASCOPE/PMESII when conducting agricultural assessments in conflict zones. Using the U.S. Army's *Special Warfare Academic Handbook* (USAJFKSWCS, 2019) as a guide, I recommend submitting a proposal for a one-week Special Forces Agricultural Assessment (SFAA) course with up to two iterations per year. Soldiers can complete the coursework to be trained in assessment as it relates to the agricultural industry (see

Figure 22). I developed the course scope and description in Figure 22 based on the study's findings outlining the need to train USASOC soldiers to conduct agricultural assessments in conflict zones.

Assessment and Selection

Special Forces Agricultural Assessment (SFAA) AC RC A S SOF O W E

Course Number: _____ *Location:* Fort Bragg, N.C. *Clearance:* None
Class Size: 40 *Iterations:* 2 per year *Course Duration:* 1 week

Prerequisites: (NOTE: See ATRRS for class dates and other course prerequisites.)

Scope: The SFAA course is designed to connect agricultural assessment skills to the U.S. Army Special Forces (ARSOF) pillar of strengthening *ingenious approach*. SFAA uses an individual-focused assessment process designed to educate soldiers on common needs and vernacular in agriculture. Select skills align with the indigenous approach capability by addressing challenges to regional stability by engaging individuals influenced by agricultural production and business.

Course Description: Food security plays a significant role in evaluating political and economic situations, which influences the ability to build a holistic assessment for community infrastructure as it pertains to agriculture. ARSOF soldiers specialize in working by, with, and through indigenous populations. Agricultural expertise in food, fiber, energy, and natural resource systems contribute to the success of developing relationships with indigenous populations and provide a framework for assessing food security. SFAA uses three key dimensions guided by the U.S. Special Operations Command (USSOCOM) Design Way (SDW) model—1) define the problem; 2) appreciate the context; 3) develop an approach—to assess agricultural systems in areas of conflict. The conceptual model of applying agricultural assessment to SDW and ARSOF attributes guide the process of assessing the issue, applying the context, and developing an assessment.

Figure 22. SFAA course proposal to train USASOC soldiers to conduct agricultural assessments in conflict zones. The course proposal is based on existing course descriptions in the USAJFKSWCS (2019) *Special Warfare Academic Handbook*.

Research

To disseminate the highest quality curricular framework (i.e., FASCOPE/PMESII Framework) and conceptual model (i.e., agricultural assessment framework addressing food (in)security priorities in conflict zones), I have three primary research recommendations to be addressed through a quasi-experimental study, factor analysis, and qualitative case study.

First, I recommend implementing a series of research studies using FASCOPE/PMESII Framework to evaluate the effectiveness of the variables and the interactions between the civil component of food (in)security and the operational component associated with PMESII. The findings from RQ1 show a prominent presence

for food (in)securities interaction with political influences, economics, and social elements. However, there is a deficit in the literature investigating food (in)security's role with military, information, and infrastructure dimensions specifically how they relate to agricultural assessments in conflict zones. To address this need, I recommend conducting a quasi-experimental study using the FASCOPE/PMESII Framework. From the findings of my study, I know food (in)security has a direct relationship with PMESII elements. However, I am unclear of the actual relationship. Conducting quasi-experimental studies would be one step to investigate causal relationships between food (in)security variables and the operational PMESII variables in a control group and treatment group. Due to the potential magnitude of using the FASCOPE/PMESII Framework on the U.S. Department of Defense and the U.S. Army Special Forces, validating the framework will be vital.

Second, the conceptual framework used to guide my study outlines factors that drive hunger and poverty in areas of conflict zones. I recommend an additional study that investigates the relationships of each of those underlying factors as they relate to food(in)security and stability in a community by performing a factor analysis on the new framework. If soldiers in the U.S. Army Special Forces can become aware of prominent conflict triggers caused by food (in)security, U.S. soldiers can engage the appropriate partners to address these concerns before they create an unstable environment.

Third, assessment needs vary based on the region. In the Middle East and Afghanistan alone, there are several countries, regions, and provinces where agriculture and community needs vary. I recommend identifying prominent food (in)security

variables that could influence an agricultural assessment metric in differing regions by conducting a qualitative case study starting with the top three most food (in)secure nations in the Middle East to gain a holistic perspective of agricultural assessment needs in different regions. I then recommend creating country profiles using information from the LDCs list as countries on the LDC list have faced severe structural and social challenges as a result of economic or environmental shocks. I recommend accessing data from the past 10 years and identifying themes influencing instability and source of food (in)security. Identifying and comparing themes from LDCs could lead to a standard and validated assessment metric to identify instability variables caused by food (in)security.

Theoretical and Conceptual Frameworks

The highlighted food (in)security variables in Figure 18 emerged from an integrative ligature review, interviews with USASOC soldiers, or from a Q sort interview with agricultural experts. Adding those variables is a starting point to developing the FASCOPE/PMESII Framework for assessing food (in)security in conflict zones. In addition to adding the identified variables to the framework, I recommend scanning U.S. military code and other government documents to investigate additional variables and connections to the operational dimensions of PMESII. Then, the U.S. Army could pilot the FASCOPE/PMESII Framework in pre-combat deployment training environments to assess the relationship of food (in)security with operational dimensions (e.g., political, military, economic, social, information, and infrastructure). Following a pilot with a pre-combat deployment training and revisions based on the pilot study, the

U.S. Army should adopt the FASCOPE/PMESII Framework as a training doctrine to be disseminated through TRADOC.

Second, I recommend updating Maslow's (1943, 1993) hierarchy of needs theory to include a layer of consideration to use when assessing human needs in conflict zones. Maslow (1943, 1993) highlighted a personal security consideration at the secondary level of his models; however, personal security risks add unique challenges to how humans interact in areas of conflict. In some cases, personal security risks could influence the ability to meet basic food (in)security needs, which merits investigating if it should be considered a higher priority than the secondary level. It appears that Maslow's (1943, 1993) models are written for the developed world with low physical security threats. I recommend investigating how the hierarchy of needs can be addressed in under-developed countries and areas of conflict. Similarly, how does Maslow's (1943) hierarchy of needs interact in varying levels of conflict? For example, I recommend investigating how it would guide studies in areas of emerging-, current-, and post-conflict nations.

Implications

Adding food (in)security considerations to assessments conducted by USASOC soldiers in conflict zones has several implications. First, the FASCOPE/PMESII Framework is the first mission analysis tool designed to include civil considerations specifically addressing agricultural issues related to food (in)security. Because food security is directly linked to political, economic, and social stability, an imbalance of the food system, whether at the household level or the community level, could disrupt

stability in the region. Implementing a metric that prioritizes assessing requirements to meet a humans' basic human needs is vital to understanding potential motivators that could interfere with security in conflict zones, such as adversaries incentivizing populations by exchanging work for food or food crop prices being too low to compete with narcotic production. Furthermore, providing U.S. Army Special Forces soldiers with an assessment framework conceptualized by individuals with extensive experience in agricultural development gives unique insight into a region's food production, infrastructure, supply chain movement, and economic fundamentals.

Second, the U.S. Army Special Forces are the leaders in unconventional warfare. Guided efforts related to building rapport "by, with, and through" indigenous populations, the U.S. Department of Defense cannot afford to lose opportunities to connect with the local populace. Clearly, humankind would not survive without agriculture as every human requires food and water resources. However, in addition to biological or physiological needs, agriculture is also the foundation to most economies and social structures in conflict regions, especially in the Middle East and Afghanistan. Establishing a framework for assessing food (in)security will be a transformational addition to unconventional warfare training and preparation for future deployments by helping USASOC soldiers understand the universal language of food.

The U.S. has several entities and allied partners across the world who conduct agricultural and community development (see Figure 8). In the past, individuals and organizations who focus in international development prioritize intermediate-to-long-term decisions in communities or host-nations. For example, the U.S. government relied

on USAID, NGOs, faith-based organizations, public institutions, and other public and private partners to lead agricultural assessments and development efforts because food production was not considered an immediate threat to physical security. In some cases, the U.S. Army Civil Affairs/Psychological Operations Command conduct agricultural assessments, but unless guided by unconventional warfare missions, the U.S. Army Special Forces have not traditionally been trained to conduct agricultural assessments. However, the FASCOPE/PMESII Framework posits that agricultural and food (in)security variables should be considered when soldiers first gather information in areas of active conflict. Because most international assessments in conflict zones are initially led by U.S. Army Special Forces, the FASCOPE/PMESII Framework could advance long-term agricultural development efforts by understanding food (in)security earlier.

Last, increasing awareness of international food and agricultural systems is a prominent step for global stability. Equipping U.S. soldiers with an agricultural assessment framework not only prepares them to be more effective and safe special operators, but it also sets a precedence for other armed forces and humanitarian organizations around the world to view stability efforts in a new strategic light. Led by efforts through USAID, the U.S. Department of State serves as a conduit for promoting diplomacy, advocacy, and policy in areas of conflict. Intentionally preparing agricultural assessment materials for members of the U.S. Department of Defense through the U.S. Army Special Forces may humanize the U.S. military in the eyes of nations around the world. At the same time, agricultural assessment frameworks will serve as a strategic

development tool to better prepare U.S. soldiers to live out the U.S. Department of Defense's (2020b) primary mission to "deter war and ensure our nation's security" by assessing the most critical human need of food security.

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APPENDIX A
ASCOPE/PMESII FRAMEWORK

ASCOPE/PMESII

	P Political	M Military	E Economic	S Social	I Information	I Infrastructure
A Areas	Areas - Political (District Boundary, Party affiliation areas)	Areas - Military (Coalition / LN bases, historic ambush/IED sites)	Areas - Economic (bazaars, shops, markets)	Areas - Social (parks and other meeting areas)	Areas –Information (Radio/TV/newspapers/where people gather for word-of-mouth)	Areas – Infrastructure (Irrigation networks, water tables, medical coverage)
S Structures	Structures - Political (town halls, government offices)	Structures - Military / Police (police HQ, Military HHQ locations)	Structures - Economic (banks, markets, storage facilities)	Structures - Social (Churches, restaurants, bars,	Structures - Information (Cell / Radio / TV towers, print shops)	Structures - Infrastructure (roads, bridges, power lines, walls, dams)
C Capabilities	Capabilities - Political (Dispute resolution, Insurgent capabilities)	Capabilities - Military (security posture, strengths and weaknesses)	Capabilities - Economic (access to banks, ability to withstand natural disasters)	Capabilities - Social (Strength of local & national ties)	Capabilities - Info (Literacy rate, availability of media / phone service)	Capabilities - Infrastructure (Ability to build / maintain roads, walls, dams)
O Organizations	Organizations - Political (Political parties and other power brokers, UN,)	Organizations - Military (What units of military, police, insurgent are present)	Organizations - Economic (Banks, large land holders, big businesses)	Organizations - Social (tribes, clans, families, youth groups, NGOs / IGOs)	Organizations - Info (NEWS groups, influential people who pass word)	Organizations - Infrastructure (Government ministries, construction companies)
P People	People - Political (Governors, councils, elders)	People - Military (Leaders from coalition, LN and insurgent forces)	People - Economic (Bankers, landholders, merchants)	People - Social (Religious leaders, influential families	People - Info (Media owners, mullahs, heads of powerful families)	People - Infrastructure Builders, contractors, development councils)
E Events	Events - Political (elections, council meetings)	Events - Military (lethal/nonlethal events, loss of leadership, operations, anniversaries)	Events - Economic (drought, harvest, business open/close)	Events - Social (holidays, weddings, religious days)	Events - Info (IO campaigns, project openings, CIVCAS events)	Events - Infrastructure (road / bridge construction, well digging, scheduled maintenance)

APPENDIX B
INSTITUTIONAL REVIEW BOARD APPROVAL

DIVISION OF RESEARCH

TEXAS A&M UNIVERSITY

EXEMPTION DETERMINATION

(Common Rule –Effective January, 2018)

August 02, 2019

Type of Review:	IRB Amendment
Title:	Enabling the Enablers: Investigating USASOC Curriculum and Training Support for Agricultural Assessment in Conflict Zones
Investigator:	Holli Archer (with Shannon Norris-Doctoral Student)
IRB ID:	IRB2019-0130M
Reference Number:	095773
Funding:	Internal (Student Project)
Documents Reviewed:	1. IRB Application (Human Research) - (Version 1.4) Show details of this item 2. Phase 3 - IRB2019-0130 - Simple Survey Consent_Information Sheet_Revised_07.09.2019 (English) - (Version 3.0 Approved on 08/02/2019) 3. Phase 2 - IRB2019-0130 - Simple Survey Consent_Information Sheet_Revised_07.09.2019 (English) - (Version 3.0 Approved on 08/02/2019) - You already viewed this item Show details of this item 4. 20190729 RPAR Appr Norris - (Version 1.0) 5. AHRPO_Approval Email_7.30.19 - (Version 1.0) 6. 20150928 CDR Permission Memo_Norris (signed by COL Dyke) - (Version 1.0) - 7. _Cline_TAMU HRPP Email_07.09.2019 - (Version 1.0) - 8. AHRPO_Correspondence Attachment_6.25.19 - (Version 1.0) 9. AHRPO_Correspondence Email_6.25.19 - (Version 1.0) 10. CW2 Lindsey Email_06.24.2019 - (Version 1.0) Show details of this item 11. AHRPO_Correspondence_6.13.19 - (Version 1.0) Show details of this item 12. Phase 3 - IRB2019-0130 - Social - Behavioral Consent_Recruitment Email_Revised - (Version 2.0 Approved on 08/02/2019) 13. Phase 2 - IRB2019-0130 - Social - Behavioral Consent_Follow-up Interviews_Recruitment Email_Revised - (Version 2.0 Approved on 08/02/2019) 14. Phase 2 - IRB2019-0130 - Social - Behavioral Consent_Recruitment

750 Agronomy Road, Suite 2701
1186 TAMU
College Station, TX 77843-1186

Tel. 979.458.1467 Fax. 979.862.3176
http://rcb.tamu.edu

	Email_Revised - (Version 2.0 Approved on 08/02/2019) - 15. Phase 3 - IRB2019-0130 - Demographic Survey_Revised - (Version 2.0 Approved on 08/02/2019) 16. Phase 2 - IRB2019-0130 - Demographic Survey_Revised - (Version 2.0 Approved on 08/02/2019) -
Review Category	Category 2: Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: ii. Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation.

Dear Dr. Archer and Ms. Norris,

The HRPP determined on 06/12/2019 that this research meets the criteria for Exemption in accordance with 45 CFR 46.104. As part of this Exemption we noted that the study must go through the Army Human Research Protection Office (AHRPO) for administrative review prior to commencing any research activities.

The HRPP has reviewed and approved the changes to the study requested by the AHRPO on 8/2/2019. The study continues to meet the criteria for Exemption per 45 CFR 46.104.

This determination applies only to the activities described in this IRB submission and does not apply should any changes be made. If changes are made you must immediately contact the IRB. You may be required to submit a new request to the IRB.

Your exemption is good for three (3) years from the Approval Start Date. Thirty days prior to that time, you will be sent an Administrative Check-In Notice to provide an update on the status of your study.

If you have any questions, please contact the IRB Administrative Office at 1-979-458-4067, toll free at 1-855-795-8636.

Sincerely,
IRB Administration

APPENDIX C
U.S. ARMY RESEARCH PROTECTION ADMINISTRATION REVIEW

DEPARTMENT OF THE ARMY
OFFICE OF THE SURGEON GENERAL
7700 ARLINGTON BOULEVARD
FALLS CHURCH, VA 22042-5140

DASG-HRPO 29 July 2019

MEMORANDUM FOR Shannon L. Norris, MS, 604 Corregidor Dr., Unit B, College Station, TX 77840-4299

SUBJECT: Research Protections Administrative Review (RPAR) for Texas A&M University (TAMU) Institutional Review Board (IRB) Study #2019-0130M, *Enabling the enablers: Investigating USASOC curriculum and training support for agricultural assessment in conflict zones*, Principal Investigator (PI): Hollie Archer, PhD

1. Review Outcomes

The Army Human Research Protections Office (AHRPO) RPAR of the above-referenced activity is complete. RPAR review is required to ensure that Department of Defense (DOD)-supported research involving human subjects is compliant with DOD requirements in DOD Instruction (DODI) 3216.02.

DOD-supported research involving human subjects is defined as research involving human subjects for which the DOD is providing at least some of the resources, including but not limited to funding, facilities, equipment, personnel (investigators or other personnel performing tasks identified in the research protocol), access to or information about DOD personnel for recruitment, or identifiable data or specimens from living individuals. It includes both DOD-conducted research involving human subjects (intramural research) and research conducted by a non-DOD institution.

The TAMU IRB determined that this project meets the criteria for exempt research IAW 45 CFR 46.104(d)(2)(ii): *Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) when any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation.* AHRPO *concurs* with this determination.

2. Requirements

Substantive Changes to the Protocol: This determination was made based on the information provided. Any modification to this activity that may alter this determination must be submitted for re-evaluation before said changes are implemented.

DASG-HRPO

SUBJECT: Research Protections Administrative Review (RPAR) for Texas A&M University (TAMU) Institutional Review Board (IRB) Study #2019-0130M, Enabling the enablers: Investigating USASOC curriculum and training support for agricultural assessment in conflict zones, Principal Investigator (PI): Hollie Archer, PhD

DOD (Military) Personnel as Subjects: Service members shall follow their command policies regarding the requirement to obtain command permission to participate in research involving human subjects while on-duty. Additionally, a Service member's ability to perform his or her military duties may be affected by participating during off-duty time (i.e., on leave or during non-duty hours). Therefore, Service members shall follow their Component and command's policies for approving off-duty employment or activities.

Superiors (e.g., military and civilian supervisors, unit officers, and noncommissioned officers (NCOs)) are prohibited from influencing the decisions of their subordinates (e.g., junior enlisted personnel and equivalent civilians) regarding participation as subjects in research.

Superiors of Service members (e.g., unit officers, senior NCOs, and equivalent civilians) in the chain of command shall not be present at any human subject recruitment sessions or during the consent process in which members of units under their command are afforded the opportunity to participate as human subjects. When applicable, the superiors so excluded shall be afforded the opportunity to participate as human subjects in a separate recruitment session.

Notification: You must immediately notify AHRPO of the occurrence of any of the following:

- The knowledge of any pending, on-going or completed compliance inspection/visit by the Office for Human Research Protections of the U.S. Department of Health and Human Services, or other government agency concerning this activity; the issuance of inspection reports, FDA Form 483, warning letters, or actions taken by any regulatory agencies including legal or medical actions;

- Suspension or termination of this activity by the institution, the sponsor, or any regulatory agency;

- Substantiated unanticipated problems involving risks to subjects or others (UPIRTSO) related to this activity; and

- Substantiated serious or continuing noncompliance related to this activity.

3. Other Consideration

Given that this activity will collect or elicit individuals' attitudes, opinions, behavior and related demographic, social, and economic data, it was determined that additional review and approval (separate and distinct from AHRPO RPAR) with regard to

DASG-HRPO

SUBJECT: Research Protections Administrative Review (RPAR) for Texas A&M University (TAMU) Institutional Review Board (IRB) Study #2019-0130M, Enabling the enablers: Investigating USASOC curriculum and training support for agricultural assessment in conflict zones, Principal Investigator (PI): Hollie Archer, PhD

information collections is not required since your subject matter, subject numbers and subject pool meet the exclusion criteria IAW current information collections requirements. Note that any changes to your research may alter this determination.

4. Caution

Do not construe this memorandum as IRB approval, DOD Institutional approval, or other DOD support agreement. This review confirms only that the above-referenced activity is compliant with the requirements identified in DODI 3216.02.

5. Point of Contact (POC)

The AHRPO POC for questions regarding this memorandum is the undersigned who can be reached at 703-681-5778 or daisy.hernandezlausell.civ@mail.mil.

DAISY HERNANDEZ LAUSELL, MPA, CIP
Research Ethics and Compliance Officer
Army Human Research Protections Office

APPENDIX D
RESEARCH ACCESS PERMISSION FROM COLONEL JOHN DYKE

DEPARTMENT OF THE ARMY
HEADQUARTERS, 5TH SPECIAL FORCES GROUP (AIRBORNE)
BUILDING 6106, TENNESSEE AVENUE
FORT CAMPBELL KY 42223-6214

REPLY TO ATTENTION OF
AOSO-SFA

July 10, 2019

MEMORANDUM FOR SHANNON NORRIS, ADDRESS: 604 CORREGIDOR DRIVE, UNIT B, COLLEGE STATION, TX 77840, EMAIL: shannon.norris@tamu.edu, PHONE: (575) 590-0030

SUBJECT: Research Access Permission

Name of Researcher: Shannon Norris (Project Director), Dr. Holli R. Leggette Archer
Title of Protocol: "Enabling the Enablers: Developing USASOC Curricula and Training Support for Agricultural Assessment in Conflict Zones"
Protocol Number: IRB2019-0130M, FWA00000092
Date of Protocol: June 13, 2019

1. References:

a. Title 32 Code of Federal Regulations, Part 219, Protection of Human Subjects

b. Department of Defense (DOD) Instruction 3216.02, Protection of Human Subjects and Adherence to Ethical Standards in DOD-Supported Research

c. Army Regulation 70-25, Protection of Human Subjects in Research

2. Approval. I hereby approve the request for support described below.

3. Scope. I give permission for **5th Special Forces Group (Airborne), Fort Campbell, KY** to provide support to the above referenced research via access to the following installation assets and/or personnel: **Soldiers assigned to 5th Special Forces Group (Airborne) who may voluntarily participate in the research on active Army time**.

4. Conditions of approval for research involving human subjects: If this activity is research involving human subjects, this approval is provided on the condition of, and with the understanding that, the researcher's institution will:

a. Provide to my command any human research protection program-related support necessary to implement and oversee the above referenced activity.

b. Obtain and comply with the terms of its Federal Assurance for the Protection of Human Research Subjects for this DOD supported research involving human subjects (if applicable).

c. Inform me via my point of contact below regarding any relevant unanticipated problem involving risk to subjects or others, or serious or continuing noncompliance.

d. Obtain publication clearance review from my command before publishing or otherwise releasing findings from this research to members of the public (e.g., via abstracts).

5. Affirmation. By endorsing this request, I affirm I have determined the above-referenced activity is mission critical and will be worth the time/cost of Army support. I acknowledge that my office

assumes responsibility for ensuring the portion of the activity supported by my area of responsibility meets all applicable regulatory requirements.

6. POC. The action officer is CW2 Richard A. Lindsey, richard.lindsey@socom.mil, (931)237-0216.

John Dyke
COL, SF
Deputy Commander, 5th SFG(A)

Attachment: Institutional Review Board Approval
Letter for Above Referenced Study

APPENDIX E
PARTICIPANT RECRUITMENT EMAIL FOR RESEARCH QUESTION 2

(4/10/2019)

TEXAS A&M UNIVERSITY HUMAN RESEARCH PROTECTION PROGRAM

RECRUITMENT EMAIL

Recruitment Email:

Hello,

You are invited to participate in a research study to develop the best practices for agricultural assessments in conflict zones. You were selected as a research participant because of your experience serving in the United States Army and experience conducting agricultural and/or community assessments in conflict zones.

The research study— Enabling the Enablers: Developing USASOC Curricula and Training Support for Agricultural Assessment in Conflict Zones—is conducted by Shannon Norris, doctoral research assistant at Texas A&M University. Participation in this research study is voluntary, and your information will remain confidential. Please see the attached information sheet for details about the study. If you are interested in participating in the research, you will agree to participate prior to completing the demographic survey and interview.

If you have questions or concerns, contact Shannon Norris at shannon.norris@tamu.edu or 1-979-845-7557 or the Texas A&M Institutional Review Board (IRB) at irb@tamu.edu or 1-979-458-4067.

Please respond back with a simple **"Yes"** if you are willing to participate in this study, and then, a researcher will follow-up with you to schedule an interview.

Thank you for your consideration to participate in study to develop curricula for agricultural assessment in conflict zones.

Very Respectfully,

Shannon

Shannon Norris
Project Director, Texas A&M University
Phone: 979-845-7557
Email: shannon.norris@tamu.edu

IRB NUMBER: IRB2019-0130M
IRB APPROVAL DATE: 08/02/2019

APPENDIX F
SEMI-STRUCTURED INTERVIEW QUESTIONS FOR RESEARCH QUESTION 2

(4/10/2019)

TEXAS A&M UNIVERSITY HUMAN RESEARCH PROTECTION PROGRAM

INTERVIEW QUESTIONNAIRE

Semi-Structured Interview Questionnaire:

1. Describe your experience with agriculture.
2. To date, what type of formal agricultural training have you had?
3. To date, what type of informal agriculture training have you had?
4. Describe the type of training that would be the most helpful regarding agricultural assessment?
5. Think back to the communities you have completed assessments in prior to now. Describe what type of community or agriculture infrastructure would have been helpful to know prior to deployment.
6. At what point do you see power structures in the communities influencing future agricultural assessment?
7. To what extent do you see training for different agricultural practices valuable for your missions abroad.
8. What additional resources would help you be more successful with agricultural assessment in conflict zones?
9. What type of relationship do you see food insecurity and conflict? Do you believe they are related? Why or why not?

10. Would you like to receive a copy of your transcribed audio file? If so, please provide your email address.

IRB NUMBER: IRB2019-0130
IRB APPROVAL DATE: 06/12/2019

APPENDIX G
PARTICIPANT INFORMATION SHEET FOR RESEARCH QUESTION 2

(4/10/2019)

TEXAS A&M UNIVERSITY HUMAN RESEARCH PROTECTION PROGRAM
INFORMATION SHEET

Title of Research Study: *Enabling the Enablers: Developing USASOC Curricula and Training Support for Agricultural Assessment in Conflict Zones*

Investigator: Shannon L. Norris, Dr. Holli Archer Leggette

Why am I being asked to take part in this research study?

You are invited to participate in this study because we are trying to learn more about best practices for agricultural assessments in conflict zones.

You were selected as a possible participant in this study because you have experience serving in the United States Army and have experience conducting agricultural and/or community assessments in conflict zones. You must be 18 years of age or older to participate.

Why is this research being done?

As conflict drives food insecurity and as food insecurity drives conflict, it is vital to update food security assessments. Strengthening the evaluation frameworks for agricultural assessment and development could provide strategic insight to successful recovery and stability of communities influenced by conflict. Without access to accurate and updated data, governmental agencies and humanitarian stakeholders cannot meet the needs of vulnerable people, and hunger and conflict will persist. Analyzing, investigating, and developing training support and curricular frameworks to strategically enable the U.S. Army Special Operations Command (USASOC) and Intelligence Community to complete agricultural assessments in conflict zones is a vital component to address global food security and national defense.

The interview is designed to understand different components involved with performing a community assessment in a conflict area and determine what curricula framework would best fit the needs of the stakeholders after the interviews are complete. The research is being conducted to fulfill completion requirements for obtaining an advanced degree at Texas A&M University. The investigators are not affiliated with the U.S. Department of Defense, and the research is not conducted by the DOD.

How long will the research last?

The interviews will last approximately 50–60 minutes.

IRB NUMBER: IRB2019-0130M
IRB APPROVAL DATE: 08/02/2019

INFORMATION SHEET

What happens if I say "Yes, I want to be in this research"?

If you decide to participate, please complete the brief demographic survey and answer the interview questions to the best of your ability.

What happens if I do not want to be in this research?

Your participation in this study is voluntary. You can decide not to participate in this research and it will not be held against you. You can leave the study at any time.

Is there any way being in this study could harm me?

Participation in the study involves minimal risk; whereas, the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. There is no risk of discomfort or harm associated with this study. You can skip any question you do not wish to answer, or exit the interview at any point.

What happens to the information collected for the research?

Your name and email address will be stored separately from your survey data. All information will be kept on a password protected computer and is only accessible by the research team.

The aggregate results of the research study may be published, but no one will be able to identify you. Aggregate results of the study, as well as a curricular framework for agricultural assessment in conflict zones, will be shared with USASOC at the end of the study to help with future USASOC agricultural preparedness training.

Who can I talk to?

Please feel free to ask questions regarding this study. You may contact Shannon Norris if you have additional questions or concerns at shannon.norris@tamu.edu or 979-845-7557.

You may also contact the Human Research Protection Program at Texas A&M University (which is a group of people who review the research to protect your rights) by phone at 1-979-458-4067, toll free at 1-855-795-8636, or by email at irb@tamu.edu for:

- additional help with any questions about the research
- voicing concerns or complaints about the research
- obtaining answers to questions about your rights as a research participant
- concerns in the event the research staff could not be reached
- the desire to talk to someone other than the research staff

APPENDIX H
DEMOGRAPHIC SURVEY FOR RESEARCH QUESTION 2

P2: Enabling the Enablers: Developing USASOC Curricula for Agricultural Assessment

Start of Block: Default Question Block

Q1 Thank you for participating in this research study, "Enabling the Enablers: Developing USASOC Curricula and Training Support for Agricultural Assessment in Conflict Zones."

You were selected to participate because of your experience serving in the United States Army and experience conducting agricultural and/or community assessments in conflict zones. Participation in this research study is voluntary, and your information will remain confidential.

Please answer the following questions.

Page Break

IRB NUMBER: IRB2019-0130M
IRB APPROVAL DATE: 08/02/2019
Page 1 of 6

Q2 Do you consent to participating in this study?

- ○ Yes, I agree to participating in this study. (1)
- ○ No, I do not wish to participate in this study. (2)

Skip To: Q10 If Q16 = No, I do not wish to participate in this study.

Page Break

Q3 What year were you born?

_____

Q4 To which gender do you most identify?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary (3)
- ○ Prefer to self-describe: (4) _____
- ○ Prefer not to respond (5)

Q5 What is your race / ethnicity? (*please select all that apply*)

- ☐ White / Caucasian (1)
- ☐ Black or African American (2)
- ☐ Hispanic / Latino (3)
- ☐ American Indian or Alaska Native (4)
- ☐ Asian (5)
- ☐ Native Hawaiian or Pacific Islander (6)
- ☐ Other: (7) _____

Q3 What year were you born?

_____

Q4 To which gender do you most identify?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary (3)
- ○ Prefer to self-describe: (4) _____
- ○ Prefer not to respond (5)

Q5 What is your race / ethnicity? (*please select all that apply*)

- ☐ White / Caucasian (1)
- ☐ Black or African American (2)
- ☐ Hispanic / Latino (3)
- ☐ American Indian or Alaska Native (4)
- ☐ Asian (5)
- ☐ Native Hawaiian or Pacific Islander (6)
- ☐ Other: (7) _____

Q6 What is the highest level of school you have completed or the highest degree you have received?

- ○ Less than high school degree (1)
- ○ High school diploma or equivalent (e.g., GED) (2)
- ○ Some college but no degree (3)
- ○ Associate degree (4)
- ○ Bachelor degree (5)
- ○ Masters degree (e.g., M.S., M.A.) (6)
- ○ Doctoral or professional degree (e.g., Ph.D., professional degree) (7)

Q7 How long have you served in the United States Army?

_____
_____
_____
_____
_____

Q8 What is your rank / title?

_____
_____
_____
_____
_____

Q9 Prior to serving in the United States military, did you have experience working in production agriculture?

- ○ Yes (1)
- ○ No (2)

Q10 What type of production agriculture were you involved with? (Please list all that apply; e.g., row crops, equine, beef, greenhouse production, aquaculture, etc.)

_____

_____

_____

_____

_____

Page Break

Q11 Thank you for participating in this study!

Please return to Shannon Norris for the next part of the study.

End of Block: Default Question Block

APPENDIX I
PARTICIPANT RECRUITMENT EMAIL FOR RESEARCH QUESTION 3

(4/10/2019)

TEXAS A&M UNIVERSITY HUMAN RESEARCH PROTECTION PROGRAM

RECRUITMENT EMAIL

Recruitment Email:

Hello,

You are invited to participate in a research study to develop the best practices for agricultural assessments in conflict zones. You were selected as a research participant because of your experience and/or interest in international agriculture.

The research study— Enabling the Enablers: Developing USASOC Curricula and Training Support for Agricultural Assessment in Conflict Zones—is conducted by Shannon Norris, doctoral research assistant at Texas A&M University. Participation in this research study is voluntary, and your information will remain confidential. Please see the attached information sheet for details about the study. If you are interested in participating in the research, you will agree to participate prior to completing the demographic survey and interview.

If you have questions or concerns, contact Shannon Norris at shannon.norris@tamu.edu or 1-979-845-7557 or the Texas A&M Institutional Review Board (IRB) at irb@tamu.edu or 1-979-458-4067.

Please respond back with a simple **"Yes"** if you are willing to participate in this study, and then, a researcher will follow-up with you to schedule an interview.

Thank you for your consideration to participate in study to develop curricula for agricultural assessment in conflict zones.

Very Respectfully,

Shannon

Shannon Norris
Project Director, Texas A&M University
Phone: 979-845-7557
Email: shannon.norris@tamu.edu

IRB NUMBER: IRB2019-0130M
IRB APPROVAL DATE: 08/02/2019

APPENDIX J
PARTICIPANT INFORMATION SHEET FOR RESEARCH QUESTION 3

(4/10/2019)

TEXAS A&M UNIVERSITY HUMAN RESEARCH PROTECTION PROGRAM
INFORMATION SHEET

Title of Research Study: *Enabling the Enablers: Developing USASOC Curricula and Training Support for Agricultural Assessment in Conflict Zones*

Investigator: Shannon L. Norris, Dr. Holli Archer Leggette

Why am I being asked to take part in this research study?

You are invited to participate in this study because we are trying to learn more about best practices for agricultural assessments in conflict zones.

You were selected as a possible participant in this study because you have a background and/or an interest in food security, agricultural assessment, or international agricultural development. You must be 18 years of age or older to participate.

Why is this research being done?

As conflict drives food insecurity and as food insecurity drives conflict, it is vital to update food security assessments. Strengthening the evaluation frameworks for agricultural assessment and development could provide strategic insight to successful recovery and stability of communities influenced by conflict. Without access to accurate and updated data, governmental agencies and humanitarian stakeholders cannot meet the needs of vulnerable people, and hunger and conflict will persist. Analyzing, investigating, and developing training support and curricular frameworks to strategically enable the U.S. Army Special Operations Command (USASOC) and Intelligence Community to complete agricultural assessments in conflict zones is a vital component to address global food security and national defense.

The q-sort is designed to understand different components involved with performing a community assessment in a conflict area and determine what curricular framework would best fit the needs of the stakeholders after the interviews are complete. The research is being conducted to fulfill completion requirements for obtaining an advanced degree at Texas A&M University. The investigators are not affiliated with the U.S. Department of Defense, and the research is not conducted by the DOD.

How long will the research last?

The q-sort interviews will last approximately 50–60 minutes.

INFORMATION SHEET

What happens if I say "Yes, I want to be in this research"?

If you decide to participate, please complete the brief demographic survey and sort the q sort statements to the best of your ability.

What happens if I do not want to be in this research?

Your participation in this study is voluntary. You can decide not to participate in this research and it will not be held against you. You can leave the study at any time.

Is there any way being in this study could harm me?

Participation in the study involves minimal risk; whereas, the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. There is no risk of discomfort or harm associated with this study. You can skip any question you do not wish to answer, or exit the interview at any point.

What happens to the information collected for the research?

Your name and email address will be stored separately from your survey data. All information will be kept on a password protected computer and is only accessible by the research team.

The aggregate results of the research study may be published, but no one will be able to identify you. Aggregate results of the study, as well as a curricular framework for agricultural assessment in conflict zones, will be shared with USASOC at the end of the study to help with future USASOC agricultural preparedness training.

Who can I talk to?

Please feel free to ask questions regarding this study. You may contact Shannon Norris if you have additional questions or concerns at shannon.norris@tamu.edu or 979-845-7557.

You may also contact the Human Research Protection Program at Texas A&M University (which is a group of people who review the research to protect your rights) by phone at 1-979-458-4067, toll free at 1-855-795-8636, or by email at irb@tamu.edu for:

- additional help with any questions about the research
- voicing concerns or complaints about the research
- obtaining answers to questions about your rights as a research participant
- concerns in the event the research staff could not be reached
- the desire to talk to someone other than the research staff

APPENDIX K
DEMOGRAPHIC SURVEY FOR RESEARCH QUESTION 3

P3: Enabling the Enablers: Developing USASOC Curricula for Agricultural Assessment

Start of Block: Default Question Block

Q1 Thank you for participating in this research study, "Enabling the Enablers: Developing USASOC Curricula and Training Support for Agricultural Assessment in Conflict Zones."

You were selected to participate because of your experience and/or interest in international agricultural development. Participation in this research study is voluntary, and your information will remain confidential.

Please answer the following questions.

Page Break

IRB NUMBER: IRB2019-0130M
IRB APPROVAL DATE: 08/02/2019

Q2 Do you consent to participating in this study?

- ○ Yes, I agree to participating in the study. (1)
- ○ No, I do not wish to participate in the study. (2)

Skip To: Q10 If Q15 = No, I do not wish to participate in the study.

Page Break

Q3 What year were you born?

_____

Q4 To which gender do you most identify?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary (3)
- ○ Prefer to self-describe: (4) _____
- ○ Prefer not to respond (5)

Q5 What is your race / ethnicity? (*please select all that apply*)

- ☐ White / Caucasian (1)
- ☐ Black or African American (2)
- ☐ Hispanic / Latino (3)
- ☐ American Indian or Alaska Native (4)
- ☐ Asian (5)
- ☐ Native Hawaiian or Pacific Islander (6)
- ☐ Other: (7) _____

Q6 What is the highest level of school you have completed or the highest degree you have received?

- ○ Less than high school degree (1)
- ○ High school diploma or equivalent (e.g., GED) (2)
- ○ Some college but no degree (3)
- ○ Associate degree (4)
- ○ Bachelor degree (5)
- ○ Masters degree (e.g., M.S., M.A.) (6)
- ○ Doctoral or professional degree (e.g., Ph.D., professional degree) (7)

Q7 Do you have experience working in production agriculture?

- ○ Yes (1)
- ○ No (2)

Q8 What type of production agriculture are/were you involved with? (Please list all that apply; e.g., row crops, equine, beef, greenhouse production, aquaculture, etc.)

_____

_____

_____

_____

_____

Q9 Please describe your experience with international agriculture.

_____

_____

_____

_____

_____

Page Break

Q10 Thank you for participating in this study!

Please return to Shannon Norris for the next part of the study.

End of Block: Default Question Block

APPENDIX L
Q SORT CONDITION SHEET FOR RESEARCH QUESTION 3

Q Sort Condition of Instruction

Condition of Instruction: *What are the most desired curricular elements for USASOC soldiers conducting agricultural assessments in conflict zones?*

Thank you for taking part in my dissertation.

This is the last of three phases for my doctoral study, which is a Q sort evaluating the most desirable curricular elements for USASOC soldiers to use when conducting agricultural assessments in conflict zones. The first phase outlined key agricultural assessment metrics and variables used in areas facing emerging-, current-, and post-conflict situations involving stages of food (in)security using an integrative literature review. The second phase included seeking needs and desires of soldiers within the 5th Special Forces Group (Airborne) who have conducted agricultural assessments in conflict zones in the U.S. Central Command, consisting of the Middle East and Afghanistan, using semi-structured interviews. This third phase is intended to force participants who have a background in international agriculture to sort the elements that emerged from the previous two phases in order of desirability. The target area to focus the agricultural assessment framework is the U.S. Central Command. Using information from each of these phases, I will build an agricultural assessment framework to support soldiers within the U.S. Army Special Operations Command.

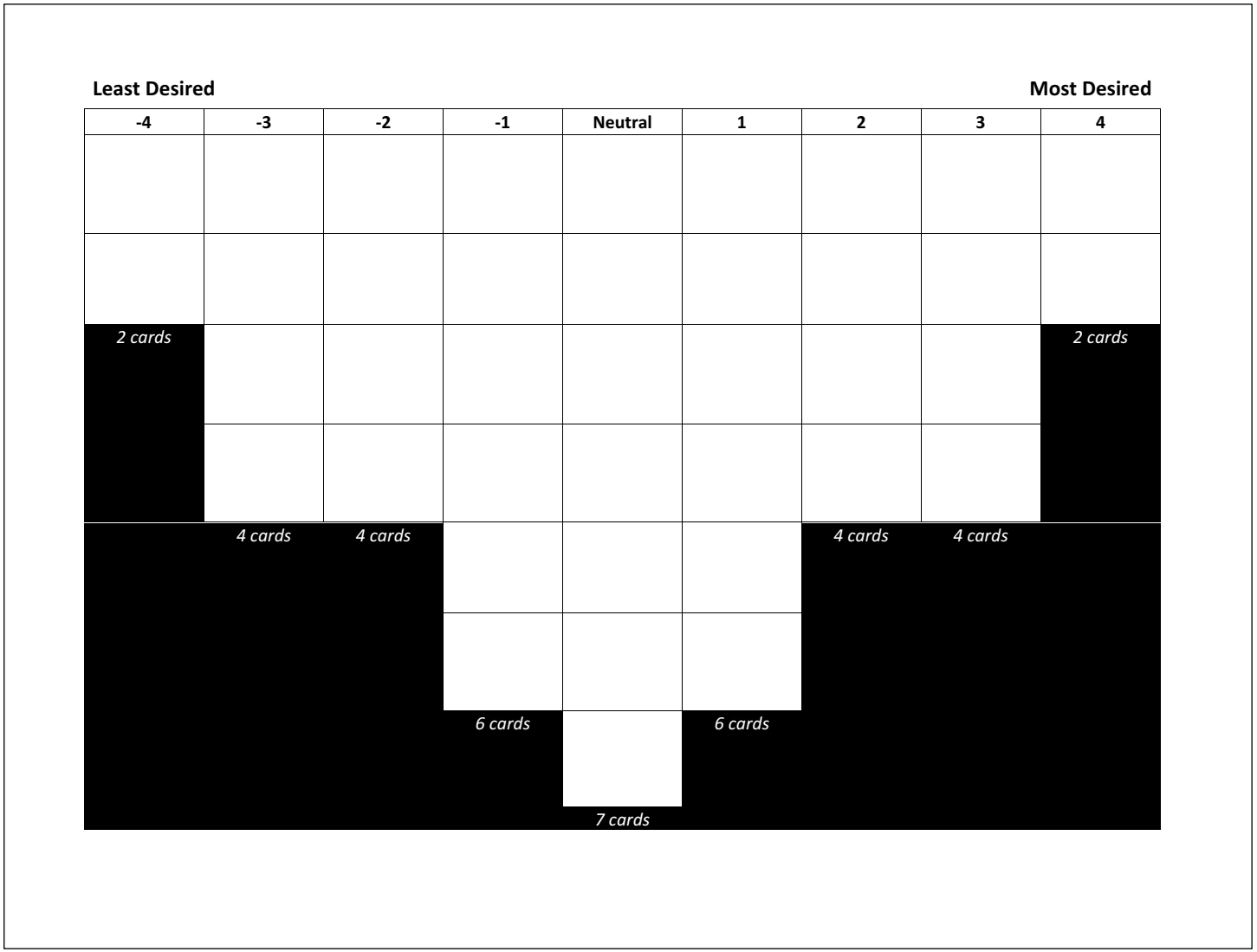
I purposively selected Q participants based on your experience conducting agricultural assessments within conflict zones (emerging, current, or post), primarily within the Middle East and Afghanistan. As a participant, you will be given statements to rank on a foam board from "least desirable "elements" to "most desirable assessment elements."

Please discuss the statements aloud so I can take notes on your thought process(es) throughout the interview. Thank you again for participating in this study. Your insight will have the ability to impact the U.S. Department of Defense in ways agriculturists have not been able to in the past.

To start:

1. Review and agree the study's consent form.
2. Complete the demographic questionnaire.
3. Read each statement aloud and discuss which elements stand out as desirable or not desirable when conducting agricultural assessments in areas of conflict.
4. Place the cards on the foam board and rank the statements that are the most desirable to you on the right and the cards that are the least desirable on the left side of the foam board.
5. The cards within each column are equally weight, and neutral statements are not considered unimportant.
6. After placing all of the cards, discuss your strategy from the beginning of the foam board (most desirable) to the end (least desirable).
7. Look at your foam board and describe your view of food (in)security's relationship or role with conflict.
8. If you could add any other element or variable to the concourse to consider when developing an assessment framework, what would you add? Why?

APPENDIX M
Q SORT FOAM BOARD FOR RESEARCH QUESTION 3



APPENDIX N
Q SORT PARTICIPANT RESPONSE SHEET FOR RESEARCH QUESTION 3

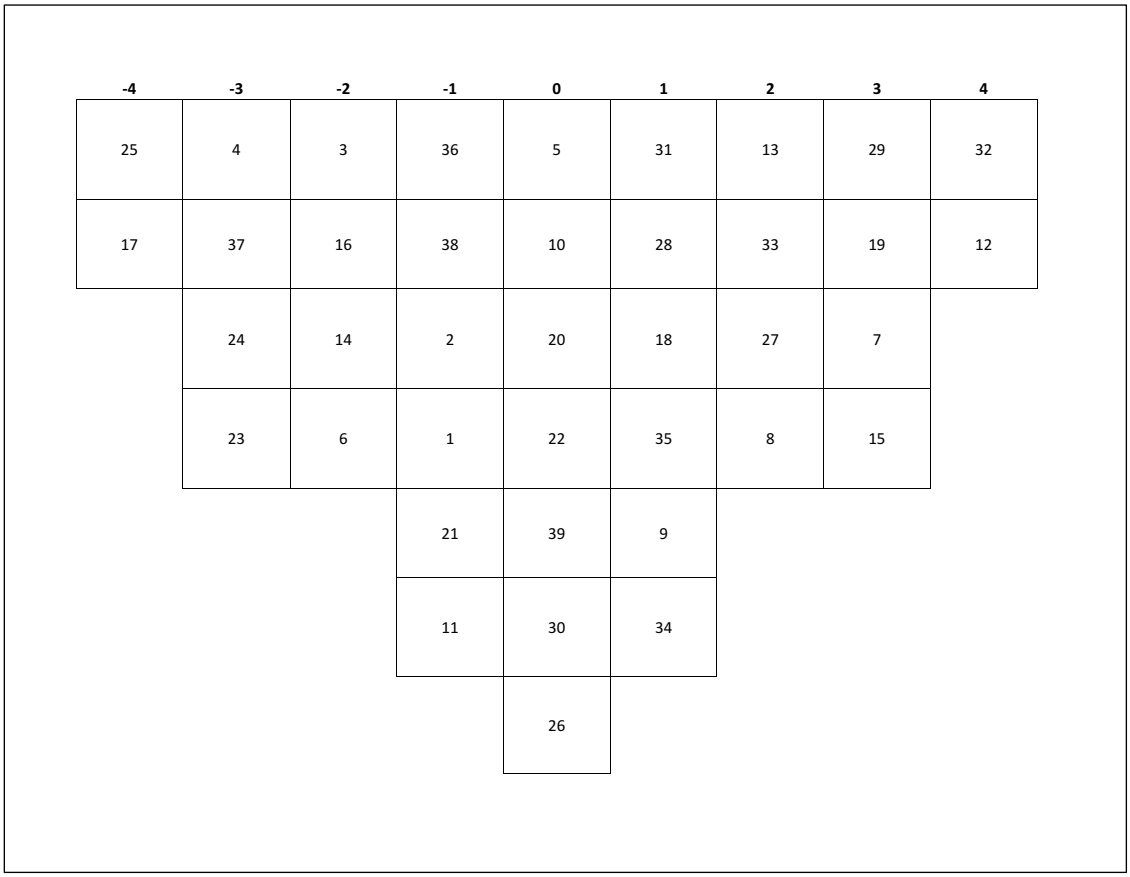
Participant No. _____

What are the most desired curricular elements for USASOC soldiers conducting agricultural assessments in conflict zones?

Least Desired **Most Desired**

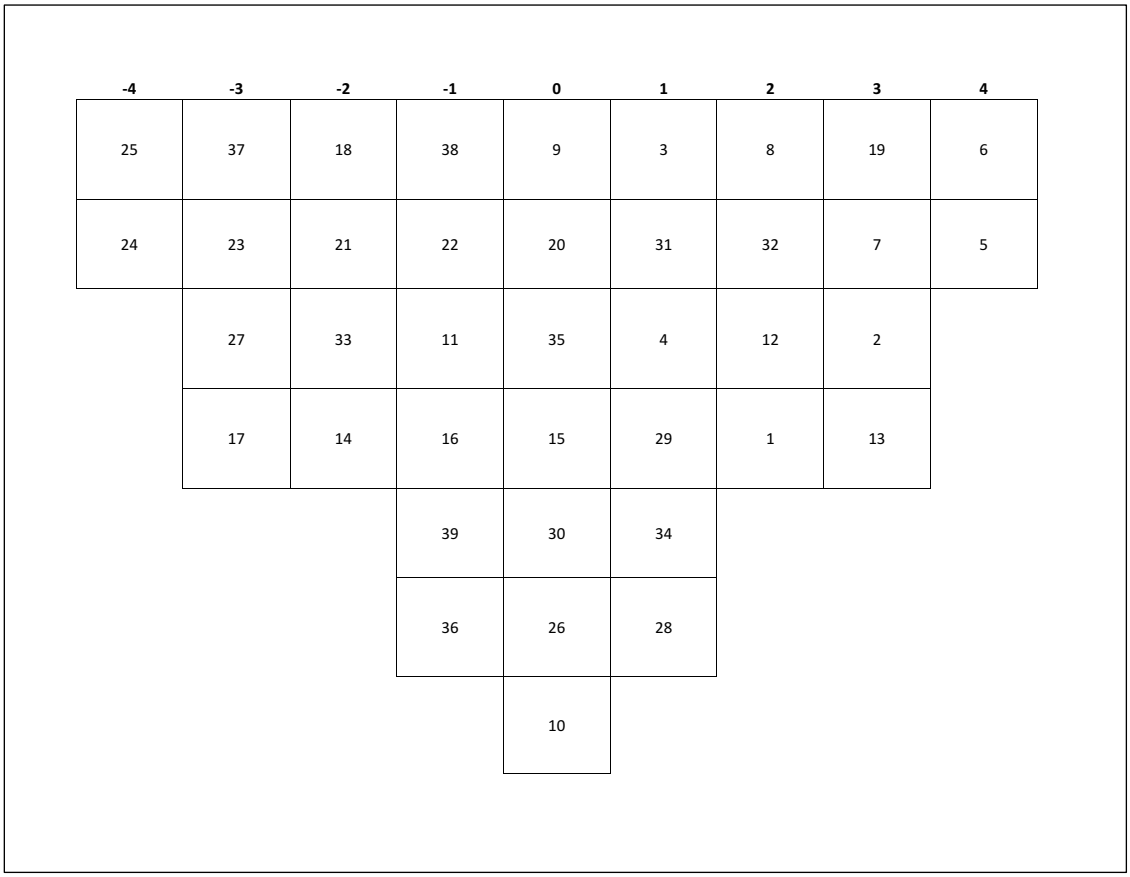
-4	-3	-2	-1	Neutral	1	2	3	4
2 cards								*2 cards*
	4 cards	*4 cards*				*4 cards*	*4 cards*	
			6 cards		*6 cards*			
				7 cards				

APPENDIX O
FACTOR ARRAYS FOR FACTOR 1



-4	-3	-2	-1	0	1	2	3	4
25	4	3	36	5	31	13	29	32
17	37	16	38	10	28	33	19	12
	24	14	2	20	18	27	7	
	23	6	1	22	35	8	15	
			21	39	9			
			11	30	34			
				26				

APPENDIX P
FACTOR ARRAYS FOR FACTOR 2



APPENDIX Q
FACTOR ARRAYS FOR FACTOR 3

-4	-3	-2	-1	0	1	2	3	4
8	14	20	11	5	24	7	4	1
39	25	34	18	26	29	15	6	2
	37	17	19	3	30	21	22	
	16	38	9	28	31	23	27	
			13	12	32			
			10	35	33			
				36				

APPENDIX R
FACTOR ARRAYS FOR FACTOR 4

-4	-3	-2	-1	0	1	2	3	4
25	28	30	37	2	14	9	4	12
8	23	3	15	27	34	35	16	38
	21	29	36	10	17	7	6	
	26	33	22	24	19	5	39	
			32	20	1			
			18	13	11			
				31				

APPENDIX S
FASCOPE/PMESII FRAMEWORK

FASCOPE / PMESII

	P **Political**	M **Military**	E **Economic**	S **Social**	I **Information**	I **Infrastructure**
F **Food Security**	Food – Political (Land ownership, destination of food surpluses, taxes on food products, safety inspections)	Food – Military (Motivations of adversary(ies) with food, export prices, armed transport for narcotics, fertilizer)	Food – Economic (Household and exports, market prices, succession plans, cost of seeds and storage)	Food – Social (Planting, harvest, availability of food within community markets, transportation)	Food – Information (Access to agricultural education, extension, USAID and/or development resources for seeds)	Food – Infrastructure (Water capabilities, irrigation patterns, machines/machinery, food storage, transport maps)
A **Areas**	Areas – Political (District Boundary, Party affiliation areas)	Areas – Military (Coalition / LN bases, historic ambush/IED sites)	Areas – Economic (bazaars, shops, markets)	Areas – Social (parks and other meeting areas)	Areas –Information (Radio/newspapers/ TV where people gather for word–of–mouth)	Areas – Infrastructure (Irrigation networks, water tables, medical coverage)
S **Structures**	Structures – Political (town halls, government offices)	Structures – Military / Police (police HQ, Military HHQ locations)	Structures –Economic (banks, markets, storage facilities)	Structures – Social (Churches, restaurants, bars, etc.)	Structures – Information (Cell / Radio / TV towers, print shops)	Structures – Infrastructure (roads, bridges, power lines, walls, dams)
C **Capabilities**	Structures – Infrastructure (roads, bridges, power lines, walls, dams)	Capabilities – Military (security posture, strengths and weaknesses)	Capabilities – Economic (access to banks, ability to withstand natural disasters)	Capabilities – Social (Strength of local & national ties)	Capabilities – Info (Literacy rate, availability of media / phone service)	Capabilities – Infrastructure (Ability to build / maintain roads, walls, dams)
O **Organization**	Organizations – Political (Political parties and other power brokers, UN,)	Organizations – Military (What units of military, police, insurgent are present)	Organizations – Economic (Banks, large land holders, big businesses)	Organizations –Social (tribes, clans, families, youth groups, NGOs / IGOs)	Organizations – Info (NEWS groups, influential people who pass word)	Organizations – Infrastructure (Government ministries, construction companies)
P **People**	People – Political (Governors, councils, elders)	People – Military (Leaders from coalition, LN and insurgent forces)	People – Economic (Bankers, landholders, merchants)	People – Social (Religious leaders, influential families	People – Info (Media owners, mullahs, heads of powerful families)	People – Infrastructure Builders, contractors, development councils)
E **Events**	Events – Political (elections, council meetings)	Events – Military (lethal/nonlethal events, loss of leadership, operations, anniversaries)	Events – Economic (drought, harvest, business open/close)	Events – Social (holidays, weddings, religious days)	Events – Info (IO campaigns, project openings, CIVCAS events)	Events – Infrastructure (road / bridge construction, well digging, scheduled maintenance)