

BULLETIN

OF THE
AGRICULTURAL AND MECHANICAL COLLEGE
OF TEXAS

N. S. Vol. 2

OCTOBER, 1914

No. 2



EXTENSION SERVICE

MONEY CROPS IN PLACE OF COTTON

BY

- E. J. KYLE, Dean of the School of Agriculture and Professor of Horticulture.
J. OSCAR MORGAN, Professor of Agronomy.
J. C. BURNS, Professor of Animal Husbandry.
J. W. RIDGWAY, Professor of Dairy Husbandry.
W. F. PROCTOR, State Agent of the United States Department of Agriculture in Demonstration Work.
B. YOUNGBLOOD, Director of Texas Agricultural Experiment Stations.
A. B. CONNOR, Assistant Director of Experiment Stations and Agronomist in Charge.
T. J. CONWAY, Experiment Station Poultry Husbandman.
H. M. ELIOT, Rural Organizer.
CLARENCE OUSLEY, Director of Extension Service.

Published quarterly by the Agricultural and Mechanical College
of Texas

Entered as second class matter August 7, 1913, at the postoffice at College
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MONEY CROPS IN PLACE OF COTTON.

Sources of revenue, without large outlay, under plans for reduced acreage of cotton:

Grain, peas, peanuts and forage, arranged in separate schedules for each distinct section of the state;

Vegetables and fruits in season as suited for each section;

Dairying, hog raising and poultry raising; with

Acreage allotment for diversification on a fifty-acre farm; with

Suggestions for organizations and bulk marketing, without which efforts at diversification are apt to fail of profit; and with

Recommendations for cooperation between business men and farmers for their mutual welfare.

It is the purpose of this publication to call the attention of Texas farmers to practical money crops and sources of revenue which may be substituted in part for cotton. There is no intention to exclude cotton, though under conditions now prevailing (October, 1914, with the European war promising to be continued for many months) cotton offers no hope of profit except with a greatly reduced output in 1915 and successful financing to hold a large part of the present crop. The presumption is that cotton will constitute some part of the State's production in 1915, and the effort of the Extension Service of the Agricultural and Mechanical College is to offer the advice of both scientific and practical men, based upon experience and demonstration, in plans for partial substitution.

The particular purpose is to make suggestions for the present emergency and to propose crops and variations that will not require new investment or expensive equipment. With most farmers the question now is, not what they would like to do if they could inaugurate plans of ideal mixed farming, but what they can do under the temporary financial embarrassment of the present cotton situation.

The State is divided for this study into seven sections, and each section of more or less uniform conditions of soil and climate is treated as a separate unit, for what may be done in one section may not be done in another. For further information and suggestion a schedule of apportioned acreage in diversified agriculture is submitted for a farm of fifty acres in each of the four main divisions of Texas—east, west, north, and south.

These several suggestions and schedules do not include all money crops and sources of revenue possible in Texas; in many communities farmers are practicing diversified farming, and in many sections there are money crops other than cotton. In such cases no advice is needed at this time. The effort here is to emphasize crops about which cotton farmers generally are not informed in detail except as such crops are grown incidentally in a small way.

Most important of all to be remembered and to be provided is the marketing of these new crops. Cotton marketing is easy; the Southern farmer for generations has handled his product under a well established and more or less uniform system and has not felt the need of organized effort; he has deemed it sufficient to make credit arrangements with his banker, merchant or landlord, if he needed credit, and has known that he could sell his cotton any day in the year. But in the marketing of these other products much more is necessary. The individual farmer, acting independently of his neighbors, will be apt to fail of profit if he undertakes to market vegetables, fruits, peas, peanuts, etc., in small volume. Therefore, a condition precedent to success in diversified farming for profit is organization—organization in each neighborhood or county for an agreed total acreage of a given crop in order to attract the attention of buyers; organization for discussion and instruction in cultivation, harvesting and packing, and organization for selling the product in bulk to the best advantage and in markets where a demand may be ascertained. In other States where diversified farming is successfully practiced organizations of the kind described are successfully operated and in fact constitute the chief element of profit. There are in the United States more than 10,000 farmers' co-operative associations successfully conducting the business of their members, and whatever failures there may have been are due in most cases to essential fault in the plan of organization or in the conduct of the business. What farmers can do elsewhere farmers can do here.

Present farmers' organizations may be utilized for this purpose, and other organizations may be readily formed if leading men in each neighborhood will take the initiative. The Permanent Warehouse Act, which will go into effect December 22, 1914, affords all the legal machinery necessary for responsible organization and management of marketing associations, which may be also credit associations, to handle any particular product or all the products of a group of farmers, whether cotton, peas, peanuts, vegetables, seeds, live stock or poultry. In all such activities the commercial clubs and chambers of commerce of the cities and towns can be of great benefit to the farmers, for they are already trained in organization and promotion. The Bryan Commercial Club is now promoting an extensive association among the farmers of Brazos county for diversification and marketing, and the effort promises handsome results for the prosperity of Bryan and Brazos county. The Extension Service of the College and the Board of Warehouse Supervisors (to be organized under the Permanent Warehouse Act) may be commanded for advice and assistance.

The public generally should understand that it is no easy matter to inaugurate diversified farming throughout the State in a single season. Farmers who for many years have cultivated cotton as their principal money crop have formed habits difficult to overcome; the system of rural credit and the system of farm tenantry are based largely upon cotton, and a cotton farmer cannot change the methods, habits, and equipment of a lifetime in a day or a month. No more could a dry goods merchant dispose of his stock and become a grocery merchant in a week. Moreover, the change to diversified farming or to stock farming requires more or less new investment which cotton farmers are not

now prepared to make. The present situation and the proposed remedy, therefore, involve much more than fine theories, ideal visions, and legislative benevolence. Our bankers and merchants should lend a hand by modifying their methods and by endeavoring to offer accommodations to suit new agricultural undertakings. Our farmers should put themselves in an open state of mind to consider suggestions, and should resolve, with such assistance as may be offered and with such co-operation as they may devise among themselves, to work out their own salvation. They have the intelligence and the ability to do so, in spite of their present embarrassment, and it would be a reflection upon their manhood to assume that they will not soon emerge from this trial stronger, wiser and better equipped for the business of farming.

This bulletin is prepared jointly by the following heads of departments at the Agricultural and Mechanical College in consultation, and their further advice may be obtained in detail upon application to the Director of Extension Service:

E. J. Kyle, Dean of School of Agriculture, and Professor of Horticulture.

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A. B. Connor, Assistant Director of Experiment Stations and Agronomist in Charge.

T. J. Conway, Experiment Station Poultry Husbandman.

H. M. Eliot, Rural Organizer.

Correspondence with any of the foregoing or with the undersigned is cordially solicited.

CLARENCE OUSLEY,
Director of Extension Service.

NOTE.—The Extension Service is now preparing, and will publish about January 1, 1915, a bulletin on Peas and Peanuts, which will discuss methods of cultivation, modes of preservation, feeding value and machinery for crushing peanuts. The issue will be limited, and will be sent only to those who request it.

STATE BY SECTIONS.

Based upon careful observation and demonstration the State is divided for the purposes of this study into seven sections of more or less uniformity of soil and climate but with variations which, of course, the individual farmer will recognize in his own location and from his own point of view. The accompanying map will indicate the divisions clearly.

Section 1 begins on the north in Fannin county and runs east with Red River to Bowie county; thence south along the State line to Orange county; thence southwestward through Orange, Jefferson, Chambers, Harris, Fort Bend, Wharton, and Jackson; thence northward through Lavaca, Fayette, Bastrop, Lee, Milam, Falls, Limestone, Navarro, Ellis, Kaufman, Hunt, and Fannin.

Section 2 begins at Orange, runs southward on the State line, and southwestward on the coast line to the junction of Calhoun and Refugio.

Section 3 begins at Montague runs eastward with Red River to Fannin; thence southward along the west line of Section 1 to Jackson; thence southward and westward through Victoria, Refugio, Goliad and Bee; thence northward through Wilson, Bexar, Comal, Blanco, Mills, Comanche, Eastland, Palo Pinto, and Jack, to the point of beginning.

Section 4 begins in Sherman county, runs eastward with the State line and southward with the State line to Childress; thence eastward with Red River to Montague; thence southward and westward to Comanche; thence northward and westward through Eastland, Callahan, Shackelford, Haskell, Knox, Cottle, Motley, Hall, Briscoe, Armstrong, Randall, Potter, and Moore, to the point of beginning.

Section 5 takes Dallam to Sherman county, thence southward and eastward to the line of Section 4 and further southward from Comanche to Bexar; thence due westward to Val Verde on the Rio Grande; thence northward and westward through Val Verde, Crockett, Upton, Midland, Ector, and Winkler; thence north with the State line to Dallam.

Section 6 begins at Val Verde on the Rio Grande, runs east to Bexar; thence south and east in a curved line to Refugio; thence southward with coast and northwestward with the Rio Grande to the point of beginning.

Section 7 consists of the extreme western projection from the western line of Section 5 to the Rio Grande.

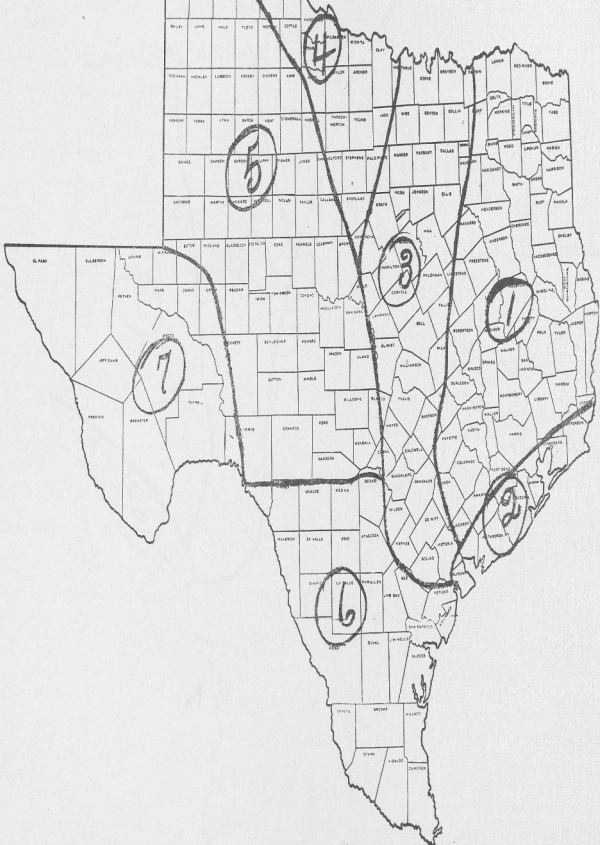
SECTION NO. 1.

Corn:

Plow land in the fall. Give tillage to keep weeds down and to absorb moisture. Plant February 20th to March 15th. Thin to approximately one stalk per square yard.

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OLNEY	SMITH	CARROLL	SMITH	WHELAN
HOPKINS	BRIDGES	LAMARCA	SMITH	COLLIER
PARSON	CLARK	BURDICK	SMITH	SMITH
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Bur Clover, Bermuda and Rescue Pastures:

For pasture and waste lands.

Plow the land, harrow and sow broadcast bur clover and rescue grass seed as early as possible and not later than November 15th, using ten pounds of seed of each per acre. Follow with a smoothing harrow to cover seed. In April and May following season, after rescue grass and bur clover have seeded, disk land and plant one pound Bermuda grass seed per acre. If Bermuda sod is available, plow the land and plant sod 18 inches apart on side of every furrow, covering with succeeding furrows instead of using seed.

Peanuts for Seed and Hay:

Prepare land as for corn. Plant Spanish variety on or after April 1st in rows 36 inches apart with plants 7 to 9 inches apart in the row, using two bushels of unhulled seed per acre. Plant by hand or by use of community planter, which can be bought for \$15.

Cowpeas for Planting Seed:

Prepare land as for corn. New Era, Groit and Whippoorwill are good varieties. Plant on or after April 1st, in rows 36 inches apart with plants 3 inches apart in the row. Cultivate as for cotton; pick seed early, thrash with flail or with a community pea-huller, which can be bought for \$25.

Sudan for Hay:

Prepare land as for corn. Plant soon after April 1st, using corn planted with special plate (holes 1-16 inch), in rows 36 inches apart, using three pounds of seed per acre. Cultivate as for cotton. Harvest when first in full head. Nitrogen fertilizer will pay when applied to this hay crop.

Oats and Barley:

Plant not later than November 20th, broadcast or in close drills, using six pecks to the acre. Red Rust Proof oats and Tennessee winter barley are good varieties. Early plantings will give winter grazing.

Silage Crops:

Prepare land as for corn. Sumac or Red Top sorghum is the heaviest yielding silage crop, and is, therefore, recommended in preference to corn and other crops. Plant on or after April 1st, in cultivated rows $3\frac{1}{2}$ feet apart, using ten to fifteen pounds per acre. Fertilize with an equal mixture of cotton seed meal and acid phosphate at the rate of 300 pounds per acre.

Alfalfa (Valley Lands):

Provide good drainage and prepare firm seed bed, free from grass and weeds. Plant as early after this date as possible but not later

than December 15th. Use twelve or fifteen pounds of Texas, Oklahoma or Kansas grown seed per acre. Do not graze first season.

Silage Crops and Cowpeas after Small Grain:

Sorghum and June corn are good silage crops after small grain. Cowpeas, peanuts, and soybeans can also be grown after small grain for seed, hay, pasture or green manure.

Truck Crops (Berries and Fruits):

Truck crops, strawberries, dewberries and blackberries and similar crops may be grown advantageously by every farmer for home use. See article on "Home Garden."

SECTION NO. 2.

Rice:

Rice farming should be practiced in connection with the production of other crops.

Silage Crops:

See instructions Section No. 1.

Bur Clover and Bermuda Pastures:

See instructions Section No. 1.

Corn:

Plow land in fall. Bed land to facilitate drainage. Plant in March, using plenty of seed. Thin to one and one-half or two stalks per square yard.

Peanuts:

See instructions Section No. 1.

Cowpeas:

See instructions Section No. 1.

Sudan for Hay:

See instructions Section No. 1.

Barley and Oats for Pasture:

See instructions Section No. 1.

Japanese Cane (for Forage):

Prepare land as for corn, planting double layers in furrow, allowing stalks to overlap, covering with a plow. Plant in rows 5 feet apart and cultivate as for sugar cane.

Truck Crops (Berries and Fruits):

See instructions Section No. 1.

SECTION NO. 3.**Wheat (Except in Lower Section):**

Where land is now prepared, plant Turkey Red or Mediterranean types. Use a drill when possible. Seed at five pecks per acre. Early seeding will furnish early pasture. Late pasturing should not be practiced.

Oats:

See instructions Section No. 1.

Barley:

See instructions Section No. 1.

Corn:

See instructions Section No. 1.

Grain Sorghums (Limited Way):

See instructions Section No. 4.

Bur Clover, Bermuda and Rescue Pastures:

See instructions Section No. 1.

Silage Crops:

Prepare land as for corn. Sumac or Red Top sorghum is the heaviest yielding silage crop, and is, therefore, recommended in preference to corn and other crops. Plant on or after April 1st, in cultivated rows, 3½ feet apart, using ten to fifteen pounds per acre.

Sudan For Hay (Seed in a Limited Way):

Prepare land as for corn. Plant soon after April 1st, using corn planter with special plate (holes 1-16 inch), in rows 36 inches apart, using three pounds of seed per acre. Cultivate as for corn. Harvest when first in full head for hay. If grown for seed, delay harvest until first seed begin to shatter.

Cowpeas (for Seed and Hay):

See instructions Section No. 1.

Peanuts:

See instructions Section No. 1.

Alfalfa (Valley Lands):

See instructions Section No. 1.

Silage Crops and Cowpeas after Small Grain:

See instructions Section No. 1.

Truck Crops (Berries and Fruits):

See instructions Section No. 1.

SECTION NO. 4.

Grain Sorghums for Feed and Seed:

Prepare land in the fall, cultivate to keep down weeds and to absorb rainfall. Plant dwarf milo or feterita soon after April 1st, in rows 42 inches apart in the row. Cultivate well and in the same manner as for corn.

Sweet Sorghums for Seed and Forage:

Prepare land as for grain sorghums. Plant Sumac or Amber varieties soon after April 1st, in rows 42 inches apart, with plants 6 to 8 inches apart in the row. Cultivate as for grain sorghums.

Oats—Barley (Limited Way):

See instructions Section No. 1.

Wheat:

See instructions Section No. 3.

Silage Crops:

See instructions Section No. 1.

Sudan for Hay and Seed:

See instructions Section No. 3.

Alfalfa for Seed, Pasture and Hay:

Prepare land early so as to conserve moisture and establish a firm seedbed. Plant as early in the fall as possible, not later than November 1st, using twelve to fifteen pounds of seed per acre. Use Texas, Oklahoma or Kansas grown seed. Do not pasture first season.

Broom Corn:

Preparation of land and planting should be same as for grain sorghums. Uniform stands produce uniform brush.

Stock Melons:

Plant same as watermelons.

Cowpeas:

See instructions Section No. 1.

Truck Crops (Berries and Fruits):

See instructions Section No. 1.

SECTION NO. 5—FARMING DISTRICTS.

Grain Sorghums for Seed and Feed:

See instructions Section No. 4.

Silage Crops:

See instructions Section No. 1.

Sweet Sorghums for Seed and Forage:

See instructions Section No. 4.

Sudan for Hay and Seed:

See instructions Section No. 4.

Broom Corn:

See instructions Section No. 4.

Stock Melons:

See instructions Section No. 4.

Alfalfa (Limited Way):

See instructions Section No. 4.

Cowpeas (Limited Way):

See instructions Section No. 1.

Truck Crops (Berries and Fruits):

See instructions Section No. 1.

SECTION NO. 6—FARMING DISTRICTS.

Grain Sorghums for Seed and Feed:

See instructions Section No. 4.

Sweet Sorghums for Seed and Forage:

See instructions Section No. 4.

Silage Crops:

See instructions Section No. 1.

Sudan for Hay and Seed:

See instructions Section No. 4.

Cowpeas:

See instructions Section No. 1.

Barley and Oats (Limited Way):

See instructions Section No. 1.

Alfalfa (Limited Way):

See instructions Section No. 4.

Bur Clover, Bermuda Pastures:

See instructions Section No. 1.

Truck Crops (Berries and Fruits):

See instructions Section No. 1.

SECTION NO. 7—FARMING DISTRICTS.

Alfalfa for Seed, Hay and Pasture:

See instructions Section No. 1.

Grain Sorghums for Seed and Feed:

See instructions Section No. 4.

Silage Crops:

See instructions Section No. 1.

Sweet Sorghums for Seed:

See instructions Section No. 4.

Barley for Pasture:

See instructions Section No. 1.

Oats for Pasture:

See instructions Section No. 1.

Sudan for Hay and Seed:

See instructions Section No. 4.

Truck Crops:

See instructions Section No. 1.

Plan for Diversifying an Average Farm of 50 Acres in East Texas.

Plan for farmer who owns and lives on his farm.

20 acres corn and peas.

5 acres of fall oats.

5 acres of peanuts.

5 acres of field peas.

10 acres of cotton.

1 acre sweet potatoes.

1 acre Irish potatoes.

2 acres in Sudan grass.

$\frac{1}{2}$ acre in home garden.

$\frac{1}{2}$ acre in rape.

50 acres.

Number of animals which should be kept on such farm:

3 head of work stock (preferably mares).

2 milch cows, or more.

1 sow.

10 or 15 pigs.

100 young laying hens.

Plan for tenant farmer.

20 acres corn and peas.

3 acres of fall oats.

6 acres of peanuts.

6 acres in field peas.

10 acres in cotton.

1 acre sweet potatoes.

$\frac{1}{2}$ acre Irish potatoes.

1 acre in Sudan grass.

$\frac{1}{2}$ acre in home garden.

2 acres in tomatoes or other truck crop to suit.

50 acres.

Number of animals which should be kept on such farm.

2 or 3 good work stock (preferably mares).

1 or 2 milch cows.

1 sow.

5 to 10 pigs.

50 to 100 young laying hens.

Plan for Diversifying an Average Farm of 50 Acres in West Texas.

Plan for farmer who owns and lives on his farm.

25 acres grain sorghums.

10 acres fall oats.

5 acres cotton.

5 acres Sudan grass.

2 acres peanuts.

1 acre cowpeas.

1 acre sweet and Irish potatoes.

1 acre home garden.

50 acres.

Number of animals which should be kept on such farm.

3 work animals (preferably mares).

5 milch cows.

5 sows.

30 to 50 pigs.

100 young laying hens.

For tenant farmer.

20 acres grain sorghums.

10 acres fall oats.

10 acres cotton.

5 acres Sudan grass.

1 acre sweet and Irish potatoes.

1 acre home garden.

2 acres peanuts.

1 acre cowpeas.

50 acres.

Number of animals which should be kept on such farm.

3 work animals (preferably mares).

1 or more milch cows.

2 sows.

10 to 30 pigs.

100 young laying hens.

Plan for Diversifying an Average Farm of 50 Acres in South Texas.

For farmer who owns and lives
on his farm.

- 15 acres corn and peas.
- 5 acres oats.
- 10 acres cotton.
- 5 acres Sudan grass.
- 5 acres peanuts.
- 5 acres Irish and sweet potatoes.
- 5 acres garden and truck crops.

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50 acres.

Number of animals which
should be kept on such farm.

- 3 work animals (preferably
mares).
- 5 cows.
- 3 sows.
- 10 to 30 pigs.
- 100 young laying hens.

For tenant farmer.

- 15 acres corn and peas.
- 5 acres fall oats.
- 10 acres cotton.
- 2 acres Sudan grass.
- 5 acres peanuts.
- 5 acres cowpeas.
- 4 acres sweet and Irish potatoes.
- 4 acres truck crops and home
garden.

—
50 acres.

Number of animals which
should be kept on such farm.

- 3 work animals (preferably
mares).
- 1 or more cows.
- 1 sow.
- 10 pigs.
- 100 young laying hens.

Plan for Diversifying an Average Farm of 50 Acres in North Texas.

For farmer who owns and lives
on his farm.

- 20 acres fall wheat.
- 5 acres fall oats.
- 10 acres corn and peas.
- 5 acres cotton.
- 5 acres grain sorghums.
- 2 acres Sudan grass.
- 1 acre rape.
- 1 acre sweet and Irish potatoes.
- 1 acre home garden.

—
50 acres.

Number of animals which
should be kept on such farm.

- 3 work animals (preferably
mares).
- 2 or more milch cows.
- 2 sows.
- 10 to 20 pigs.
- 100 young laying hens.

For tenant farmer.

- 15 acres fall wheat.
- 5 acres fall oats.
- 10 acres corn and peas.
- 10 acres cotton.
- 3 acres grain sorghums.
- 2 acres Sudan grass.
- 2 acres peanuts.
- 1 acre cowpeas.
- 1 acre sweet and Irish potatoes.
- $\frac{1}{2}$ acre rape.
- $\frac{1}{2}$ acre home garden.

—
50 acres.

Number of animals which
should be kept on such farm.

- 3 work animals (preferably
mares).
- 1 or 2 cows.
- 1 sow.
- 10 to 15 pigs.
- 100 young laying hens.

THE HOME GARDEN.

If every farmer in the State of Texas had a first-class home garden, consisting of the different vegetables in season, and if he would can the surplus with an inexpensive home canner, there would be very little talk of hard times among our rural population. Raising the home vegetable garden is quite different from trucking or raising vegetables on a large scale for marketing. Growing vegetables for the market is practiced only where the soil and climate are favorable and the transportation and marketing of the produce easy. Market gardening generally requires expensive equipment, considerable ground and a large force of labor, in proportion to the acreage. For these reasons only a few farmers can profitably be market gardeners; but every farmer can and should have a home garden.

There is little doubt that the farmer gets a larger return from the time and land devoted to vegetable gardening than from any other expenditure on the farm, provided it is properly maintained. The home garden is valuable not only because it produces food stuff worth so much money, but also because it furnishes at nearly all seasons of the year fresh green foods that are necessary for the best health and working efficiency.

The garden should be located on well drained soil near the home. A sandy loam soil is preferable, but if this is not available, almost any soil can be made to produce good vegetables with proper treatment. A liberal application of barnyard manure is the most important factor in building up and maintaining the fertility of the garden soil. Sufficient manure is produced on nearly every farm to keep the garden soil in a high state of fertility.

The following vegetables can be grown during the spring on practically every farm in all the sections outlined in this bulletin:

Group 1.—Cabbage, onions, beets, lettuce, radishes, Irish potatoes, turnips, carrots, mustard, spinach, peas, early corn, asparagus.

Group 2.—Tomatoes, beans, butter beans, sweet potatoes, egg plant, okra, peppers, cucumbers, cantaloupes and watermelons.

These vegetables are listed in two groups, No. 1 containing all those that can stand considerable cold weather and can be planted from February 10th to 20th in Central Texas; to the south they can be planted earlier; to the north and west they should be planted later. Those in Group 2 are killed by frost and should not be planted in the open until danger of frost is past in the section in which they are to be grown.

By constructing a hotbed 6x12 feet and using a layer of 24 inches of fresh horse or mule manure to furnish bottom heat, one can start the following plants so as to have them come on from two to three weeks before their normal season:

Cabbage, tomatoes, peppers, egg plants, and where paper or wooden bands are used, cantaloupes, cucumbers and watermelons. As a rule it will be necessary to irrigate the vegetables listed above when grown

in Sections 5, 6, and 7, and very often better results will be gotten if water can be applied in parts of Section 4.

On account of the length of the season in Sections 1, 2, 3, and 4, a very successful fall garden can often be grown, consisting of such crops as Irish potatoes, onions, radishes, beets, lettuce, cabbage, cauliflower, mustard, turnips, and spinach.

In connection with the home garden, blackberries and dewberries can very often be grown with great success in all of the sections listed, with the probable exception of Section 7. In Section 1 and the northern part of Section 2, strawberries can very often be produced in abundance.

In planting small fruits as listed above, one should not expect a full crop until the second year.

Not only should there be a home garden on every one of our farms, but the home canner should be brought into use, if the farm is to be properly organized from an economical standpoint. A home canner with a capacity of from three to eight hundred cans per day can be purchased for from \$18 to \$30. If properly managed it will more than pay for itself in one season.

The following vegetables and small fruits can be put up successfully with a home canner:

Tomatoes, beans, okra, okra and tomatoes mixed, sweet potatoes, beets, strawberries, dewberries, and blackberries.

Lima beans are excellent for canning, if put up just before they begin to harden.

It is doubtful if the Texas farmer can undertake anything that will do more, with as little time and money invested, to reduce the high cost of living than to put in from one to five acres of truck and some small fruit, use what he can during the growing season and can the surplus for winter.

NOTE.—For detailed instruction as to growing different vegetables, write to the Director of the Experiment Station for bulletin on Truck Gardening.

THE DAIRY COW.

Can the dairy cow help to solve the present problem confronting the Texas farmer, namely, the problem of producing a ready marketable farm product in view of the prospective reduction in cotton acreage? Decidedly she can, because dairying, even on a limited basis, is quick, it is safe, and it is profitable. There is no other animal on the farm that will give quicker returns on an investment than a dairy cow. Feed that is consumed in the evening or at night is converted into milk the following morning, and the milk, or its products, may be marketed before noon of the same day and for *cash*.

There is an unlimited demand for all kinds of dairy products in Texas. Seventy-nine creameries, operating in various sections of the State, afford an easily accessible market for butter fat. Local towns and cities must be supplied with whole milk and cream, and the ice cream factories must depend upon the dairy farmer for their raw material. Statistics would indicate that Texas spends something like \$8,000,000 annually for dairy products that are produced outside of the State. Think of that, Mr. Farmer, and consider the possibilities of supplying some of that demand.

Dairying is a safe business because the dairyman is assured of a market for his product, and with the dairy cow the element of risk is reduced to a minimum. There has never been a year in the history of the State of Texas when it was not possible, by proper cultural methods, to grow feeds for dairy cows. Forage and grain crops of different varieties can be successfully grown in all sections of the State, and good pasture can be had during nine or ten months of the year. Our mild winters make it possible to use the most inexpensive housing, which greatly aids in producing a cheap product. Cotton seed meal, the basal grain ration for dairy cows, will be cheaper in the future on account of the limited export trade. The man who is feeding dairy cows will reap the benefit of this low price, and in addition help to provide a home market for this valuable feed. Provide a good pasture for a few dairy cows, feed them intelligently and one need not fear the result. The old dairy cow is most appreciative of good treatment and will show this appreciation at the pail. She never worries over wars or panics but chews her cud quietly and continually produces human food.

Dairying is profitable because a dairy cow will take a dollar's worth of hay and grain and convert it into more pounds of human food than will any of the other farm animals. This has been demonstrated time and again. The consuming public is fast appreciating the food value of dairy products and instead of using milk and butter as a beverage or a luxury is beginning to use them as foods. This means increased demand for dairy products.

Milk at 9 cents a quart is equivalent to :

$\frac{3}{4}$ -pound round steak—cost 22 cents.

2 pounds salt cod—cost 40 cents.

2 pounds chicken—cost 60 cents.

$1\frac{1}{2}$ pounds ham—cost 45 cents.

1 quart oysters—cost 30 cents.

4 pounds cabbage—cost 40 cents.

One good dairy cow, properly fed and cared for, will produce, in one year, products worth approximately \$100. Against these receipts is a feed cost of \$52.50, leaving a profit of \$47.50 to pay for labor, interest, etc. In addition the farmer has provided a home market for his farm crops and assured himself of a steady cash income.

The equipment necessary to supply cream to the creamery is neither expensive nor elaborate. A hand separator (which can be obtained on very reasonable terms and paid for as the business advances), a few cans and pails, is all the equipment needed. Incidentally, in the majority of cases, this method of disposing of the dairy product is the most satisfactory. Less labor and equipment is required and the price received is usually more satisfactory than when the butter is made on the farm.

By starting in on a small scale and gradually increasing the number, as well as the producing qualities, of the individuals in the herd, a large number of farmers will find dairying a satisfactory solution of the present problem.

The Agricultural and Mechanical College is preparing a circular for distribution which deals more specifically with many of the phases of dairying touched on in this article. It will contain a list of the creameries that are in operation in the State, with their location, and in addition many other helpful suggestions as to how dairying should be conducted. *Write for one.*

POULTRY.

The necessity for poultry on all Texas farms needs no argument. They are of service to the farmer, because of the extent to which they can be kept on the land occupied by crops, not only without damaging the crops, but with benefit to them, and improvement to the land. They supply the table with fresh eggs and fresh, nutritious meat, thereby cutting down markedly the cost of living. Also they provide a little surplus, dependent on the number kept, to sell or exchange for other needed commodities.

Under ordinary conditions a hen will lay 10 dozen, or 120 eggs, a year. A farmer with a flock of 100 hens will thus produce 1200 eggs a year, which, at 20 cents a dozen, equals \$200 income for the year; for 150 hens, \$300, and so on. This \$200 will buy all the flour, sugar, tea and coffee and table necessities for an ordinary family. This shows what possibilities there are even in small flocks.

Texas, with an abundance of crops, including such grains as kaffir, milo and the like, and in the east some of the best leguminous crops, which make excellent winter feeding, is a state of great possibilities in poultry.

The soil and climate are ideal in most sections, so that expensive and elaborate houses are not needed. In fact, in this State only a shelter for the bird is necessary. This shelter need have only a roof and the north side covered. It is well, though, in building a house, to construct one which can be adjusted to meet sudden cold spells. This shelter will mean only a small investment. If birds are already on the farm and used to roaming and roosting in the trees it will be hard to get them accustomed to a house—but always feed them and care for them in the house and soon they will become accustomed to the new quarters and readily make their residence there.

Every farm has a building which could be readily converted into a serviceable and convenient poultry house at a small cost. The house should be well ventilated, dry, and very sanitary, easy to clean and well lighted and not too warm. In cool weather have fowls protected. Locate in a well drained place.

Poultry on a farm consume grasses, grubs, worms, and waste products, and convert them into money. They also supply the land with the richest fertilizer.

Feed properly, if you wish to have healthy, vigorous birds, and give plenty of green range, plenty of pure, fresh water, changed twice daily. Grit, shell and green food should be available at all times.

Kaffir and milo make good poultry feeds. A ration composed of kaffir, milo, beef scraps and about 4 per cent cotton seed meal in a hopper always available, should give very good results. This should be before the birds all day. In the morning a light feed of whole milo, kaffir and cracked corn should be given; again about 5 p. m., when the eggs are collected, a good feed of these whole grains should be given.

Good results have been obtained where the whole grains were all day before the birds. A very good method is to have on the floor of the house about six inches of low grade hay or straw called litter and throw these grains in this and let the birds exercise finding them.

All the common diseases are due to unsanitary management. The dropping board should be cleaned at least once a week, the oftener the better, and each time thoroughly sprayed with a 10 per cent solution of Zenoleum or a mixture of one part of crude carbolic acid and three parts kerosene. The entire house should be thoroughly sprayed every two or three months with this mixture. The litter should be changed whenever it becomes too compact or mixed heavily with droppings. This litter spread on a field makes a very fine fertilizer.

The yards should be spaded often and if the poultry house is near the other buildings containing animals quick lime should be spread about to prevent contamination.

Lice and mites cause poultrymen considerable trouble and do much damage to the birds. Lice remain on the body of the bird both day and night. They are also commonly found on the perches and nests. A solution of one part crude carbolic acid and three parts kerosene makes a very effective spray for the perches and house. The lice are removed from the fowls by dusting the fowls with a home-made lice powder—formulated at Cornell University. It is prepared as follows: $\frac{1}{4}$ pint crude carbolic acid, mixed with $\frac{3}{4}$ pint of gasoline; stir thoroughly into $2\frac{1}{2}$ pounds of plaster of Paris.

The whole is forced through a sieve to break up the lumps and then allowed to dry in the air. When dry it is tightly bottled and will remain effective indefinitely. To apply this powder the fowl is held by the legs with its head down. In this position the feathers fall away from the body and readily receive the powder, making it easy to work it down to the skin by ruffling the feathers with the hand. This treatment is especially recommended for setting hens.

Mites suck the blood at night and return to the perches before morning, remaining there during the day. The mite is killed by a direct application of a burning solution. A solution of $\frac{1}{4}$ pint crude carbolic acid and $\frac{3}{4}$ pint of kerosene has been found very destructive. It is sprayed all over the perches, dropping board and different parts of the house.

Pure bred stock give the best results, in quantity and quality of product. Buy your birds from breeders whose stock is free from bacillary white diarrhea. This is the worst and most dreaded poultry disease. Once introduced into a flock it never leaves until the whole flock is destroyed. This disease is harbored in the body of the hen and transferred directly by her to the developing embryo and resultant chick. Too much care cannot be given to avoid this disease.

Allow males to run with the flock only during the breeding season. In other seasons kill the surplus males and house the valuable males separate from the hens. A fertilized egg germinates very rapidly and destroys an egg intended for market purposes. In a warm climate like Texas this is a matter that is worth much attention. It has been estimated that in some of the Central States the loss from decomposed

eggs due to this cause is from one to three millions of dollars a year. Infertile eggs withstand high temperature and storage excellently.

Producers in localities can very profitably organize co-operative associations for the marketing of their products and the purchasing of their feeds and farm necessities. These co-operative associations are usually composed of farmers and producers who market their small amounts together, making one large shipment of the whole. They sell directly to the consumer and by so doing realize the full value of their products. These associations usually grade and pack the products in an attractive manner. The Experiment Station, through the Extension Department, would be very glad to help organize these co-operative associations and give valuable suggestions to all like associations.

Collect eggs daily.

Supply sufficient nests.

Feed regularly and properly.

Fresh water always available.

Sanitary houses and yards.

Produce infertile eggs.

BEEF CATTLE AND HOGS.

Many people who heretofore have been strictly cotton farmers, in casting about for a system of farming that will yield greater profits, will find the raising of beef cattle and hogs to be among the most profitable lines of business in which they can engage. Beef and pork have commanded excellent prices for some time, and certainly the present world shortage of these products and the increasing demand for them are sufficient indications that strong prices will maintain for a long time to come.

In the production of beef there are two systems that may be practiced. Both call for the growing of feed crops, some of which should be for grazing, some for grain, some for hay and much for silage. Cotton seed meal, cake, and cotton seed, of which the South may always expect to have an abundance, must be used to supplement these home-grown feeds for the best results. Our Experiment Station Bulletins Nos. 153 and 159 give information along this line.

The system to which we may refer first should prove best adapted to those people who have some pasture as well as cultivated land, the plan being to stock the pasture with good grade beef cows on which should be used good, pure-bred beef bulls, and to finish the calves for market when they are about one year old, keeping the best heifer calves, of course, to replace, finally, the old or inferior cows in the breeding herd. It is to be understood, too, that during winter and in times of drouth, when the pasture may not furnish sufficient feed for the breeding cattle, they should be supplied with additional feed for their upkeep. But here let it be said that the constant aim should be to improve the pasture with better grasses that more cattle may be maintained.

The other system of beef production and one that could, no doubt, prove best for people who have little or no pasture, but practically all cultivated land, would be to buy feeder cattle instead of raising them. This, of course, must involve a close study of market conditions, or in other words, the prices of feeder cattle and finished cattle of similar grades. People should strive to obtain the best grade of steers and to get them, of course, at such prices as will insure as much margin as possible between the buying and selling prices.

It does not take a great deal of capital to engage in the hog business. However, some special equipment, such as hog proof fences and small portable houses or cots, is necessary and should be provided along with feed stuffs before making purchases of foundation stock. Pure bred animals, females as well as males, will prove more profitable in the long run even in pork production, though the first cost of such animals will be a little greater than for grades. Hogs multiply rapidly and with only four to six good brood sows and a boar one may have

in a few months a good start in the hog business. It is not advisable to go into it too extensively at the beginning unless one is experienced.

The most profitable method of pork production will be in the growing of forage crops such as oats, wheat, rye, barley, rape, alfalfa, cowpeas, Spanish peanuts, sorghum, stock beets, bur clover, Japan clover, and Bermuda grass, supplementing them with a moderate grain allowance until hogs are six to eight months old, when heavier grain feeding should be practiced for about sixty days in order to finish and harden them for the market. Attempting to raise hogs in pens on grain only is almost certain to result in failure.

THE EFFECT OF THE EUROPEAN WAR UPON NEXT SEASON'S POTATO CROP.

The European nations that are now at war with each other are the greatest potato producing countries in the world. If the war should continue, as it seems certain to do, through next spring, it will undoubtedly be the cause of the Irish potato bringing the highest price that has been known for that product during the past twenty-five years.

Next to rice the potato is the most extensively grown and the most valuable crop in the world. The world's annual yield is now close to six billion bushels. During the year 1912, the nations now at war with each other produced the following yield:

Germany, 1,844,863,000.

Russia, 1,356,724,000.

Austria, 693,779,000.

Belgium, 121,481,000.

France, 552,074,000.

England, including Ireland, Scotland, and Wales, 213,783,000.

These figures show that the warring nations grow about two-thirds of the world's supply of potatoes. If the war continues a large percentage of the seed supply for the spring crop will necessarily have to be consumed for food during the winter and then next spring when planting time comes, those countries will hardly be in a condition to produce more than one-fourth, or at most, one-third of a crop.

All this means that next year will see the smallest crop of Irish potatoes produced in Europe that has been known for the past generation, which, of course, will bring exceptionally high prices, not only in the old country, but in this country as well, because under the stimulus of high prices this country will, undoubtedly, export large quantities. While there are bright prospects in store for those who grow Irish potatoes next spring, it should be borne in mind that this crop cannot be grown successfully on a commercial scale in every section of Texas. In fact, the commercial sections are limited. Wherever it has been already proven that the potato can be grown with profit, a full acreage should be planted. It will not be advisable to plant on a large scale, except in proven sections for the reason that the potato is a special crop and will not do well except on a highly fertilized, sandy or sandy loam soil.

While planting on a commercial scale should be limited to proven areas, everyone who expects to plant a home garden should include the potato.

The Red Triumph is the leading market variety. Either home grown or northern grown seed can be used. The home grown will give a larger yield, but will not mature as early as the northern seed.

It will require from eight to ten bushels to plant an acre. The

tubers should be cut, leaving about two good eyes to the piece, after which slack lime should be sprinkled over them and they should be allowed to stand for at least forty-eight hours, when they should be planted on slight ridges not over two inches deep. If potatoes are planted on sandy soil that will not produce more than 25 bushels of corn per acre, fertilizer should be used at the rate of from four to six hundred pounds per acre. Equal parts of cotton seed meal and acid phosphate is a good fertilizer.

The commercial potato grower who does not plant a full crop of Irish potatoes next season will miss the best opportunity that has presented itself since the industry started in this State and the farmer who does not grow enough potatoes for home use will surely complain of the high cost of living when he comes to pay his potato bill.