COMPARISON OF COMMINGLED BACKGROUNDED FEEDER CATTLE TO NON-BACKGROUNDED COUNTERPARTS

A Senior Honors Thesis

By

ADAM ROBERT GEISTWEIDT

Submitted to the Office of Honors Programs
& Academic Scholarships
Texas A&M University
In partial fulfillment of the requirements of the

UNIVERSITY UNDERGRADUATE
RESEARCH FELLOWS

April 2001

Group: Economics & Political Science

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ABSTRACT

Comparison of Commingled Backgrounded Feeder Cattle

to Non-Backgrounded Counterparts. (April 2001)

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Sales data were collected from Jordan Cattle Auction and ten other auction barns and divided into two groups: 1) Premium (Jordan Cattle Auction), 2) Non-Premium (All other auction barns). Data were collected for 7 selected weeks from November 1999 to November 2000. 17,958 premium cattle were compared to 28,786 non-premium cattle to determine price differences between sex and weight groups. When compared using a $.04 slide, premium cattle received $97.37 and $100.51 more per head for steers and heifers respectively. Standard gross premium was $80.01 and $83.73 more per head for steers and heifers. Average gross premiums received for steers of each 100 LB weight group were as follows: 400-499- $57.72, 500-599-$39.59, 600-699-$55.95, 700-799-$74.62, and 800-899- $58.96. Average gross premiums received for heifers of each 100 LB weight group were as follows: 400-499-$50.83, 500-599-$55.46, 600-699-$49.55, 700-799-$57.43, and 800-899-$43.44. Seasonal trends showed lightweight premium cattle received higher premiums from late winter to early summer when there is more demand for backgrounded cattle. Lower premiums revealed less of a demand for heavy weight backgrounded cattle especially during summer months.

ACKNOWLEDGEMENT

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INTRODUCTION

In recent years, all sectors of the U.S. Beef Cattle Industry have experienced huge losses. Ranchers, cattle feeders, and stocker operators have all suffered from near record low prices, increasing feed and production costs, severe drought, and market inhibiting diseases such as BSE, also known as Mad Cow Disease. In addition, it is estimated that the U.S. Beef Industry incurs between $600 million and $1 billion in economic losses annually due to respiratory diseases. Of this $600 million to $1 billion loss, the Texas Beef Industry accounts for approximately $115 million per year (Grooms, 1995). Some of the diseases included are IBR (infectious bovine rhinotracheitis), BVD (bovine virus diarrhea), PI3 (Para influenza type 3), BRSV (bovine respiratory syncytial virus), *Pasteurella haemolytica* (bacterial pneumonia), Hemophilus somnus (bacterial pneumonia; brain fever), and Clostridial Blackleg (Turner, 1999). Despite all of this, it has been documented through such programs as the Texas A&M Ranch to Rail Program that the incidence of respiratory diseases and the losses incurred can be greatly reduced by properly backgrounding feeder calves.

This thesis follows the style and form of the Journal of Animal Science.

LITERATURE REVIEW

BACKGROUND INFORMATION

Backgrounding of feeder cattle involves a variety of practices including weaning, pre and post weaning vaccinations, nutritional supplementation, castration, dehorning, implanting, and deworming. In short, backgrounding is a complete health management program for reducing sickness and death rate and improving weight gains, all on the ranch. Although the concept of backgrounding has been around since the 1960's, producers, buyers, and veterinarians have often poorly interpreted it. In the past, most buyers have preferred to purchase replacement cattle in thin condition and as cheap as possible, ignoring their immediate health status and prior immunization records, therefore compromising the potential gain and health of the animal (Taylor and Field, 1999). However, a backgrounding program that begins with health maintenance can smooth the transition from a suckling calf to a feedlot steer.

In 1991, Texas A&M started a program known as Ranch to Rail to educate and inform commercial ranchers and purebred breeders on how their cattle fit in the cattle industry (Perkins, 1993). Producers involved in Ranch to Rail have learned that respiratory diseases cost a lot more than just the medical expenses. Cattle that got sick had reduced performance and lower carcass quality grades therefore increasing production costs and decreasing their overall value. Backgrounding data gathered from the Ranch to Rail Program led to the development of Texas A&M Extension's Texas Value Added Calf (TEX-VAC) health management program (McNeill, 1993). Although there are several variations of the TEX-VAC program, there is a set protocol to follow in

regards to weaning, vaccinations, nutritional supplementation, and animal husbandry. This TEX-VAC protocol is the basis for almost all backgrounding programs nation wide.

WEANING

Weaning is a term that is often broadly interpreted but is officially defined as the "process of separating young animals from their dams so that the offspring can no longer suckle" (Taylor and Field, 1999). The actual process of weaning calves is quite simple. Calves should be removed from their dams and held in small pens. Small pens prevent calves from walking long distances along fences, bawling, and searching for their dams, creating extra stress (Turner, 1999). Additionally, weaned cattle should be provided fresh water and a high quality, free choice hay (Turner, 1999). In the U.S., the majority of cattle are born in the spring and weaned in the fall between 6 and 10 months of age (Taylor and Field, 1999). Although weaning age varies with each producer, most average between seven and nine months of age (Grooms, 1995). The age of feeder cattle can greatly affect their ability to develop a strong immune system. Younger cattle are more susceptible to respiratory disease while older cattle have had the opportunity to build antibodies and an immune defense system against those same diseases. Additionally, the weaning age of cattle has a tremendous effect on weaning weight and pounds of calf produced which directly influences the producers overall profit. When selecting replacement cattle at weaning, most purebred producers and some commercial producers use an adjusted 205 day weaning weight to account for the difference in age between cattle and compare weaning weights on a equal basis (Taylor and Field, 1999). There is no single weaning age or weight that fits every producer. It is simply a

judgment call that has to be made by the producer relative to what he or she is trying to accomplish.

VACCINATION METHODS

The TEX-VAC program is designed with the flexibility required for the many different types of producers and ranges from single vaccinations to multiple vaccinations and booster shots. The simplest form is referred to as Vac 24 and is intended for producers who don't have the capabilities to background calves. These producers vaccinate against IBR, PI3, BVD, BRSV, 7-way Blackleg, and *Pasteurella haemolytica* when the calves are worked at two to four months of age (King et al., 1995) (Appendix 1).

Vac 34 is a program for producers who don't have the resources to background calves but can gather the cattle three to four weeks prior to weaning. Like Vac 24, it is a management tool designed to increase the level of resistance prior to weaning so that calves have more immunity as they enter various production channels. VAC 34 includes vaccinating for 7-way Blackleg at branding, and IBR, PI3, BVD, BRSV, and *Pasteurella haemolytica* no later than three to four weeks prior to weaning (King et al., 1995) (Appendix 1). Vaccines used in both Vac 24 and Vac 34 must be labeled "Safe for use in calves nursing pregnant cows" (Grooms, 1995).

The most popular variation of TEX-VAC is VAC 45. In this program, producers have two options, both of which require a minimum 45-day backgrounding period. One is based upon a pre-weaning vaccination followed by revaccination at weaning. The other is based upon vaccination at weaning followed by re-vaccination 14 to 21 days

later. **Pre-Weaning Option:** Producers vaccinate against IBR, PI3, BVD, BRSV, 7-way Blackleg, and *Pasteurella haemolytica* at two to four months of age or three to four weeks prior to weaning and then re-vaccinate at weaning (King et al., 1995) (Appendix 1). **Weaning Option:** Producers vaccinate for 7-way Blackleg at branding and administer IBR, PI3, BVD, BRSV, and *Pasteurella haemolytica* at weaning. The cattle are then re-vaccinated 14 to 21 days later (King et al., 1995) (Appendix 1).

Producers that purchase weaned calves and background them on pasture or in a dry lot situation are a major source of feeder cattle. Vac Pre-Con is designed to help ensure healthy feeder cattle that are backgrounded for at least 45 days prior to shipping. These cattle are vaccinated with a 7-way Blackleg, IBR, PI3, BVD, BRSV, and *Pasteurella haemolytica* upon arrival. They are then revaccinated 14 to 21 days later with everything except the 7-way Blackleg (King et al., 1995) (Appendix 1).

Although not every program is fit for every producer and not every producer is suitable to every program, there are many variations of the VAC program that suit almost any scenario. The TEX-VAC program is a tool and a guideline for producers to work by. As with any program, producers should always remember to practice proper vaccination techniques. All vaccinations should be given in the neck in front of the shoulder. Abscesses or knots can easily be trimmed from this area, but valuable cuts are ruined when vaccinations are given in the rump, or round (Grooms, 1995). Additionally, high quality, subcutaneous vaccines should be used whenever possible (Grooms, 1995).

NUTRITIONAL SUPPLEMENTATION

Nutritional management can also help reduce stress and increase immunity in calves. Nutrient intake plays a major role in the development and function of the immune system, as well as maximizing growth rate and increasing average daily gain. As with vaccination programs, there are many variations of nutrient supplement plans. However, all plans should include providing clean fresh water and "free-choice minerals formulated to eliminate deficiencies in calcium, phosphorus, magnesium, salt, potassium, zinc, copper, manganese, cobalt, selenium, and Vitamins A, D, and E" (Gill, 1995). Development of the immune system begins during fetal development and therefore begins with correct mineral supplementation of the cow (Grooms, 1995). Producers should provide year round, free-choice mineral to cows and calves to prevent deficiencies and increase immunity (Mitchell, 1996).

Most backgrounding programs involve feeding hay and some sort of protein supplement, either grains, concentrates, or a mixture of both. At weaning, high quality hay should be made available in the pen where the calves will be kept. To encourage consumption, grains and (or) concentrates can be placed on top of the hay in the bunk or trough (Gill, 1995). Two options of protein supplementation are available for producers to choose from. Option 1 involves feeding 2 lbs. per head per day of a high percentage crude protein concentrate. Option 2 allows for free choice consumption of a lower percentage crude protein grain or grain mix (oats, wheat, milo, corn, etc.), (Perkins, 1993). In recent years, research has proven the use of limited amounts of high protein (38-44% CP) creep feeds to be more efficient and economical than free-choice, high

grain creeps (Grooms, 1995). As with any animal, good nutrition is of utmost importance for feeder cattle in order to maintain overall health, increase immunity, reduce stress, and improve gains. Additionally, creep feeding during the backgrounding period helps cattle adjust to eating from feed troughs and bunks, and become accustomed to drinking from a nonstream water source (Grooms, 1995).

ANIMAL HUSBANDRY

Good Animal Husbandry includes a variety of practices ranging from dehorning and castration to implanting and deworming. Contrary to the belief of many, certain management chores should be performed when calves are two to four months of age (Grooms, 1995). The most obvious of these is castration and dehorning. Research has shown that castration and dehorning at weaning increase sickness by 30 percent, and reduces gains, efficiency and profit greatly (Mitchell, 1996). Furthermore, "male calves produce higher grading and more tender beef if castrated early, preferably two to three months of age" (Grooms, 1995). Implanting and deworming are two other practices that are sometimes overlooked. Implanting calves can increase gains 10-15 % and return $15-$20 over the cost (approximately $1-$2) of each implant (Grooms, 1995). Internal parasites such as stomach worms and liver flukes can cause detrimental effects to the growth, health, and immunity of feeder calves (Wikse, 1998). By treating for worms and other internal parasites the producers can increase the productivity, efficiency, and profitability of feeder cattle (Grooms, 1995).

ECONOMIC COSTS AND DISADVANTAGES

Even though backgrounding is not a new concept, it has not been a very widespread practice until recently and therefore many producers are not familiar with it. Producers often question how much it costs to background cattle and are skeptical to begin a backgrounding program not knowing the exact costs upfront (Jordan, K., Jordan Cattle Auction, San Saba, TX, personal communication). The basic cash cost of the total program should not be more than $5-$10 per head for vaccine and $20-$25 per head for concentrate feed, to total no more than $35 per head maximum (Grooms, 1995). However, this figure does not include the time, effort, and trouble that accompanies backgrounding and is dependent upon the producer. In order for most backgrounding programs to work, the producer has to be set up to handle cattle at least twice and hold them for 45 days prior to shipment. But in reality, "most producers are not set up or do not have the time to go through a 45 day backgrounding period" (Wolfshohl, 1994). Other factors such as drought and high grain prices can make a huge difference in the expense of a backgrounding program. Therefore, the cost of backgrounding programs can vary greatly with each producer and should be planned accordingly (Jordan, personal communication).

ECONOMIC BENEFITS AND ADVANTAGES

Until recently, the beef industry has been segmented with very little communication between segments. Producers, feeders, and packers constantly made a living off of someone else's mistake (McNeill, 1994). In order to survive and compete with other red meat industries, the beef industry has to become more "economics-driven

and pay incentives to producers for a premium product" (McNeill, 1994). These incentives and potential profit for producers are formed through backgrounding programs in an assortment of ways. Some of these are obvious while others may take time to understand.

Traditional weaning methods involve weaning calves from their dam and selling them in individual lots through a commission company immediately (Thrift, 2000). The increased stress of walking, bawling, and searching for their dam can cause calves to shrink up to 10% of their own body weight (Thrift, 2000). However, producers who use this method of weaning can usually pay for a backgrounding program with what they save on the marketing shrink of a freshly weaned calf (Grooms, 1995). Research has shown that "backgrounded calves don't shrink because a calf that is not walking, bawling, and hunting its mama will go to the trough and eat and get its rest" (Perkins, 1994).

A second advantage of backgrounding programs is the increased flexibility in marketing options. As with almost any free market, the cattle industry experiences highs and lows on a periodic basis. When the market is down and calves are normally sold, backgrounding programs such as Vac 45 allow producers to hold their cattle until the market improves (Perkins, 1994). This option could mean the difference between a producer breaking even or losing money and making a profit.

Possibly one of the most important advantages of backgrounding programs is the option of weaning earlier than the usual seven to nine months without reducing calf sale weight (Grooms, 1995). This can be especially beneficial to young heifers nursing their

first calf or when forage quality or quantity is limited (Turner, 1999). By removing the stress of lactation, dams have more time to restore body fat and increase their overall body condition (Turner, 1999). This increase in body condition should elevate pregnancy rates earlier in the next breeding season (Grooms, 1995).

Two of the most obvious economic benefits of backgrounding programs are increased sale weights and higher sale premiums. It is estimated that backgrounded calves should gain 50-75 lbs during the 45 day backgrounding period and command a premium of $2-$8 per hundredweight (cwt) (Grooms, 1995).

Thrift (2000) conducted a study to evaluate two calf marketing options: selling calves in individual lots through a commission company immediately after weaning, or process-verified, preconditioned and commingled lots for a premium stocker/feeder sale. This project used calves that were all herd mates raised on the same ranch. At the beginning of the project, the cattle were gathered from the pasture and the calves were sorted into traditional weaning and preconditioned groups (Thrift, 2000). Nineteen calves (12 steers and 7 heifers) were randomly selected as the traditional group. These cattle were weighed and transported 85 miles to a commission company where they were sold the following day (Thrift, 2000). The remaining 100 calves (58 steers and 42 heifers) were weighed and processed according to the Vac 45 backgrounding program. After a 52-day backgrounding period, these cattle were transported 127 miles where they were allowed access to feed, water, and hay prior to being weighed and sorted into uniform lots. Upon sorting, the backgrounded calves were sold in a premium stocker/feeder sale. Calves in the traditional marketing option experienced a 5.3%

shrink representative of a revenue loss of $24.09 per head (Thrift, 2000) (Appendix 2). The pay weights of the backgrounded calves averaged 50 lbs. more than their own average weaning weights and 85 lbs. more than the pay weights of the traditional group (Thrift, 2000) (Appendix 2). The backgrounded cattle received an average premium of $4.44 per hundredweight more than the traditional group (Thrift, 2000) (Appendix 2). The combination of a heavier pay weight and a higher price per hundredweight resulted in an increased net return of $72.27 per head for the backgrounded cattle (Thrift, 2000) (Appendix 2).

DATA AND PROCEDURES

DATA

Sale data were supplied on backgrounded feeder cattle consigned in seven Premium Backgrounded Feeder Cattle Sales by Jordan Cattle Auction (JCA) in San Saba, TX. These sales began in November 1999 and continued through November 2000 (Appendix 3). Additionally, sale data were supplied by the USDA Markets News Desk on non-backgrounded feeder cattle sold through 10 other auction facilities with in 200 miles of JCA during the corresponding weeks of the JCA sales (Appendix 3). The JCA data consisted of 17,958 backgrounded feeder cattle (Table 1). The USDA data consisted of 28,786 non-backgrounded feeder cattle (Table 2). Variables pertinent to the analyses were sex of the cattle, month of sale, sale weight of the cattle, and sale price of the cattle. After collection, all data were entered into Microsoft Access, sorted, and analyzed on a basic comparison level of backgrounded versus non-backgrounded cattle. Additional analysis involved sorting and analyzing the data according to the sex and respective weight groups of both backgrounded and non-backgrounded cattle.

Table 1. BACKGROUNDED CATTLE DISTRIBUTION

Month	Steers	Heifers
Total	8964	8994
Nov-99	2042	1708
Jan-00	1974	1785
Mar-00	337	985
Jul-00	967	987
Aug-00	443	406
Sep-00	1522	1274
Nov-00	1679	1849
Avg.	1281	1285

Figure 1. BACKGROUNDED CATTLE DISTRIBUTION

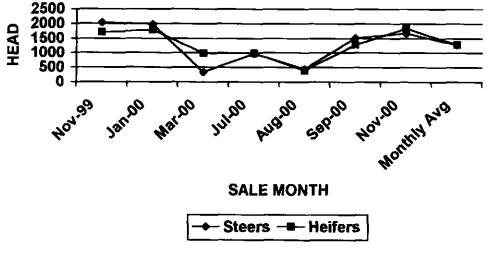
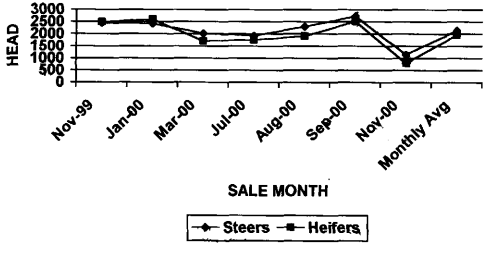


Table 2. NON-BACKGROUNDED CATTLE DISTRIBUTION

Month	Steers	Heifers
Total	14994	13792
Nov-99	2451	2495
Jan-00	2422	2592
Mar-00	2011	1708
Jul-00	1921	1756
Aug-00	2311	1919
Sep-00	2721	2519
Nov-00	1157	803
Avg.	2142	1970

Figure 2. NON-BACKGROUNDED CATTLE DISTRIBUTION



RESULTS AND DISCUSSION

CATTLE DISTRIBUTION

The JCA backgrounded cattle distribution ranged from a low of 849 head in August to a high of 3,759 head in January with a monthly average of 2,566 head (Table 1). The decrease in backgrounded cattle sold from March to August is representative of the supply of feeder cattle during late spring and summer and corresponds with the rest of the beef industry in the Southern United States (Figure 1). Supply of backgrounded steers and heifers was about equal except in March when there was a greater supply of heifers. The majority of these cattle were most likely of replacement quality and were intended to return to production as replacement females.

Distribution of the non-backgrounded cattle ranged from a low of 1,960 head in November 2000 to a high of 5,240 head in September with a monthly average of 4,112 head (Table 2). Again, the decrease in non-backgrounded cattle sold from March to August represents the supply of feeder cattle during this time of the year (Figure 2). However, the decrease of non-backgrounded cattle sold in November 2000 is not representative of feeder cattle supply. This decrease occurred because only seven of the ten USDA auction facilities held sales the corresponding week of the JCA premium sale and therefore the overall numbers were down.

AVERAGE WEIGHTS

Average weights were calculated on all backgrounded and non-backgrounded cattle according to sex and month of sale. The JCA steers average weight ranged from a low of 545 lbs (pounds) in January to a high of 627 lbs in August with a monthly

average of 574 lbs (Table 3). The JCA heifers average weight ranged from a low of 529 lbs in November 2000 to a high of 642 lbs in March with a monthly average of 560 lbs (Table 3). The trend seen in Figure 3 of steers being heavier than heifers corresponds with the rest of the beef industry. However, the March heifers averaged 49 lbs heavier than the March steers. This is indicative of heavier, higher quality heifers that were most likely sold as replacement females to go back into production. Furthermore, because of higher demand and less supply for backgrounded feeder cattle during the summer months, it is expected to see higher average weights for both steers and heifers (Figure 3).

The non-backgrounded steers average weight ranged from a low of 476 lbs in November 2000 to a high of 514 lbs in November of 1999 with a monthly average of 499 lbs (Table 4). The non-backgrounded heifers average weight ranged from a low of 452 lbs in November 2000 to a high of 495 lbs in September with a monthly average of 485 lbs (Table 4). The trend shown in Figure 4 is indicative of the beef industry in that steers are usually either equal to or slightly heavier than heifers. Additionally, Tables 3 and 4 demonstrate that backgrounded steers and heifers averaged 75 lbs more than their non-backgrounded counterparts with a maximum increase of 159 lbs and a minimum increase of 43 lbs on average. This increased sale weight is a direct result of participating in a 45-day backgrounding program and an indirect result of a reduction or elimination of marketing shrink.

Table 3. PREMIUM CATTLE AVG. WEIGHT

Month	Steers	Heifers
Nov-99	575	561
Jan-00	545	538
Mar-00	593	642
Jul-00	618	582
Aug-00	627	577
Sep-00	567	549
Nov-00	568	529
Avg.	574	560

Figure 3. PREMIUM CATTLE AVG. WEIGHT

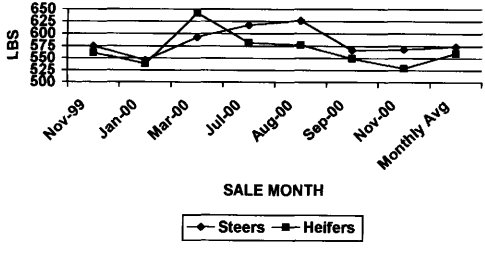
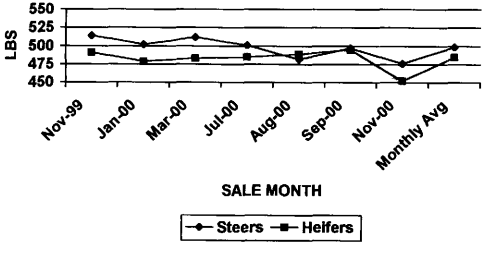


Table 4. NON-PREMIUM CATTLE AVG. WEIGHT

Month	Steers	Heifers
Nov-99	514	491
Jan-00	502	479
Mar-00	512	483
Jul-00	501	485
Aug-00	482	489
Sep-00	497	495
Nov-00	476	452
Avg.	499	485

Figure 4. NON-PREMIUM CATTLE AVG. WEIGHT



GROSS PREMIUMS

It is a common practice in the beef industry to pay less per hundredweight for heavier cattle than their lighter counterparts. In order to compensate for this reduction in price and compare cattle of different weights on an equal basis, an industry standard $.04 slide is applied. The difference in average weight of the two groups of cattle is multiplied by $.04 to derive a dollar value that is added to the heavier groups price per hundredweight. The total dollars are then calculated on the two groups and this difference is the gross, slide-adjusted premium (Example 1). Slide adjustments are a theoretical method of determining the value of heavier cattle if they weighed the same as lighter cattle and therefore calculated on backgrounded versus non-backgrounded cattle.

The calculated gross slide adjusted steer premiums for all backgrounded versus all non-backgrounded cattle ranged from a high of $162.58 per head in August to a low of $77.93 per head in January with a monthly average of $97.37 per head (Table 5). The gross slide adjusted heifer premiums for all backgrounded versus all non-backgrounded cattle ranged from a high of $161.34 per head in March to a low of $68.87 per head in September with a monthly average of $100.51 per head (Table 5). Figure 5 illustrates the slide adjusted gross premiums paid for steers and heifers on a monthly basis. For the majority of the year, the slide adjusted premiums for steers and heifers are about equal except for March and August. The March backgrounded heifers realized a slide-adjusted premium of $161.34 per head while the March backgrounded steers only realized a slide-adjusted premium of $86.25 per head (Figure 5). This larger slide adjusted premium is most likely the result of the March backgrounded heifers weighing an

average of 159 lbs more than the March non-backgrounded heifers while the March backgrounded steers weighed only an average of 81 lbs more than the March non-backgrounded steers (Figures 3 & 4). Additionally, the August backgrounded steers received a slide-adjusted premium of $162.58 per head while the August heifers only received a slide-adjusted premium of $106.46 per head (Figure 5). Again, this larger slide-adjusted premium is probably the result of the August backgrounded steers weighing an average of 145 lbs more than the August non-backgrounded steers and the August backgrounded heifers only weighing an average of 88 lbs more than the August non-backgrounded heifers (Figures 3 & 4).

Table 5. GROSS SLIDE ADJUSTED PREMIUM

Month	Steers	Heifers
Nov-99	$124.00	$133.68
Jan-00	$77.93	$70.58
Mar-00	$86.25	$161.34
Jul-00	$123.76	$122.79
Aug-00	$162.58	$106.46
Sep-00	$79.10	$68.87
Nov-00	$119.49	$108.77
Avg.	$97.37	$100.51

Figure 5. GROSS SLIDE ADJUSTED PREMIUM

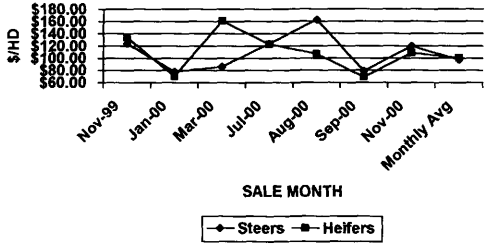


Table 6. ACTUAL GROSS PREMIUM

Month	Steers	Heifers
Nov-99	$110.28	$117.91
Jan-00	$69.18	$57.92
Mar-00	$67.35	$120.56
Jul-00	$95.38	$100.66
Aug-00	$126.56	$86.75
Sep-00	$63.66	$56.71
Nov-00	$98.35	$93.02
Avg.	$80.01	$83.73

Figure 6. ACTUAL GROSS PREMIUM

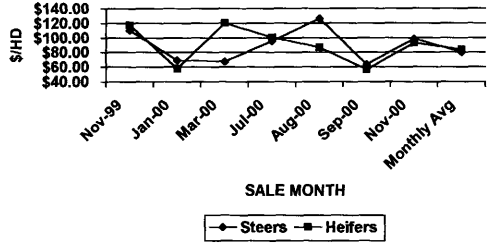


Table 6 displays the average actual gross premiums paid for all backgrounded cattle versus all non-backgrounded cattle. The actual gross premium paid for backgrounded steers ranged from a high of $126.56 per head in August to a low of $63.66 per head in September with a monthly average of $80.01 per head. Additionally, the actual gross premium paid for backgrounded heifers ranged from a high of $120.56 per head in March to a low of $56.71 per head in September with a monthly average of $83.73 per head. Excluding the March and August sales, the trend shown in Figure 6 reveals that actual premiums paid for backgrounded steers and heifers are about equal

with steers being slightly higher. The March heifers and August steers realized higher premiums because of the large differences in average weight previously discussed.

Table 7 illustrates the head distribution of 4-weight backgrounded cattle. The term 4-weight implies all cattle in this group weighed between 400 and 499 lbs at the time of sale. Approximately 3,332 head of backgrounded cattle were sold in the 4-weight classification. The distribution of steers varied from a low of 40 in August to a high of 375 in November 99 with a monthly average of 216 head. Additionally, the distribution of heifers varied from a low of 62 in March to a high of 509 in November 2000 with a monthly average of 260 head. The trend shown in Figure 7 demonstrates the supply of lightweight cattle throughout the year and is in agreement with the beef industry. The majority of cattle are born in the spring to early summer months and therefore there is a lower supply of all weight groups of cattle at this time.

Table 7. 400-499 LB PREMIUM CATTLE DISTRIBUTION

Month	Steers	Heifers
Total	1512	1820
Nov-99	375	263
Jan-00	340	459
Mar-00	62	62
Jul-00	99	158
Aug-00	40	72
Sep-00	258	297
Nov-00	338	509
Avg.	216	260

Figure 7. 400-499 LB PREMIUM CATTLE DISTRIBUTION

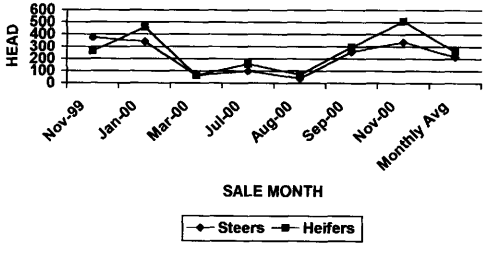
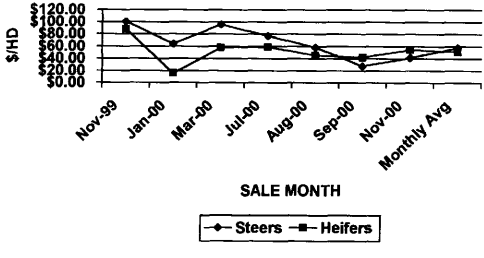


Table 8. 400-499 LB CATTLE GROSS PREMIUM

Month	Steers	Heifers
Nov-99	$100.35	$87.98
Jan-00	$63.73	$15.98
Mar-00	$95.96	$57.77
Jul-00	$76.77	$58.64
Aug-00	$57.91	$44.82
Sep-00	$27.96	$42.17
Nov-00	$41.53	$54.29
Avg.	$57.72	$50.83

Figure 8. 400-499 LB CATTLE GROSS PREMIUM



Premiums paid for 4-weight, backgrounded cattle versus non-backgrounded cattle are displayed in Table 8. The steer premiums ranged from an average high of $100.35 per head in November 1999 to an average low of $27.96 per head in September with a monthly average of $57.72 per head. Heifer premiums ranged from an average high of $87.98 per head in November 1999 to an average low of $15.98 per head in January with a monthly average of $50.83 per head. Excluding the November 1999 sale, the trend shown in Figure 8 reveals higher premiums were paid for 4-weight backgrounded cattle during late spring and summer when the supply of these cattle is lower.

Approximately 5,158 head of 5-weight backgrounded cattle were sold through the JCA sales. The head distribution of 5-weight backgrounded steers varied from a high of 592 head in November 1999 to a low of 73 head in August with a monthly average of 347 head. Additionally, the distribution of 5 weight backgrounded heifers ranged from a high of 601 head in November 1999 to a low of 131 head in March and August with a monthly average of 390 head (Table 9). The trend displayed in Figure 9 shows the supply of 5 weight cattle throughout the year with fewer cattle being available for sale during late spring and summer.

The average gross premiums paid for 5-weight backgrounded steers ranged from a high of $65.30 per head in August to a low of $29.44 per head in September with a monthly average of $39.59 per head. Additionally, the average gross premiums paid for 5-weight backgrounded heifers varied from a high of $82.39 per head in November 1999 to a low of $18.62 per head in January with a monthly average of $55.46 per head (Table

10). Not including the November 1999 sale, Figure 10 demonstrates the tendency of higher premiums paid for 5-weight backgrounded steers and heifers during late spring and summer when the supply is lower.

Table 9. 500-599 LB PREMIUM CATTLE DISTRIBUTION

Month	**Steers**	**Heifers**
Total	2431	2727
Nov-99	592	601
Jan-00	454	528
Mar-00	94	131
Jul-00	202	356
Aug-00	73	131
Sep-00	581	412
Nov-00	435	568
Avg.	347	390

Figure 9. 500-599 LB PREMIUM CATTLE DISTRIBUTION

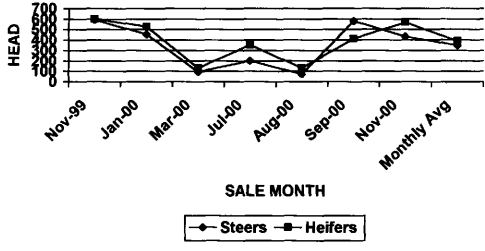
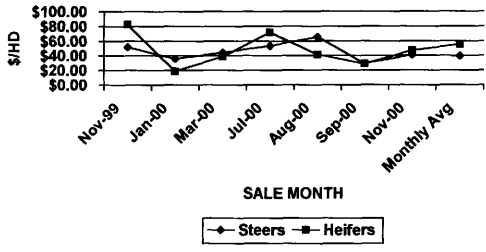


Table 10. 500-599 LB CATTLE GROSS PREMIUM

Month	Steers	Heifers
Nov-99	$51.79	$82.39
Jan-00	$35.78	$18.62
Mar-00	$44.75	$38.80
Jul-00	$53.25	$71.40
Aug-00	$65.30	$41.31
Sep-00	$29.44	$28.63
Nov-00	$41.02	$47.04
Avg.	$39.59	$55.46

Figure 10. 500-599 LB CATTLE GROSS PREMIUM



According to Table 11, approximately one third (6,685) of all backgrounded cattle that were sold were in the 6-weight classification. The distribution of the steers ranged from a high of 797 head in November 1999 to a low of 125 head in March with a monthly average of 497 head. Heifer distribution varied from a high of 585 head in November 1999 to a low of 176 head in August with a monthly average of 458 head. As mentioned previously, the trend displayed in Figure 11 corresponds with the rest of the beef industry in terms of the supply of cattle throughout the year. However the increase seen in backgrounded 6-weight heifers in March is not necessarily representative of the actual supply of 6-weight cattle at this time. The majority of these cattle were most

likely of replacement quality and sold as replacement females to go back into production.

The gross premiums paid for 6-weight steers and heifers are displayed in Table 12. The steer premiums ranged from a high of $80.41 per head in November 1999 to a low of $30.20 per head in January with a monthly average of $55.95 per head. Heifer premiums varied from a high of $83.35 per head in November 1999 to a low of $30.91 per head in September with a monthly average of $49.55 per head. Again excluding the November 1999 sale, the trend shown in Figure 12 indicates higher premiums paid for 6-weight backgrounded cattle during late spring and summer due to less supply.

Table 11. 600-699 LB PREMIUM CATTLE DISTRIBUTION

Month	Steers	Heifers
Total	3478	3207
Nov-99	797	585
Jan-00	615	515
Mar-00	125	563
Jul-00	425	382
Aug-00	264	176
Sep-00	547	445
Nov-00	705	541
Avg.	497	458

Figure 11. 600-699 LB PREMIUM CATTLE DISTRIBUTION

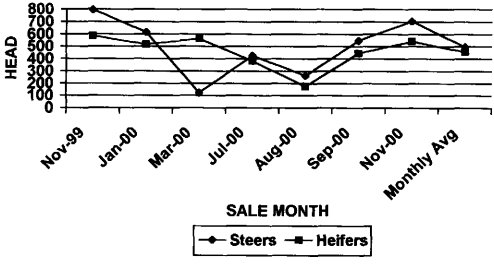


Table 12. 600-699 LB CATTLE GROSS PREMIUM

Month	Steers	Heifers
Nov-99	$80.41	$83.35
Jan-00	$30.20	$35.82
Mar-00	$56.13	$58.58
Jul-00	$53.34	$57.95
Aug-00	$60.75	$39.65
Sep-00	$61.75	$30.91
Nov-00	$38.69	$41.15
Avg.	$55.95	$49.55

Figure 12. 600-699 LB CATTLE GROSS PREMIUM

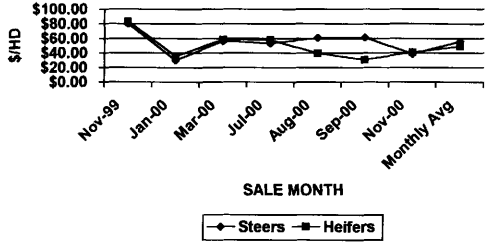


Table 13 exhibits the distribution of 7-weight backgrounded cattle. A total of 1,076 head of 7-weight cattle were sold through the JCA sales with the steers ranging from a high of 153 head in July to a low of 28 head in March with a monthly average of 90 head. The heifers varied from a high of 156 head in March to a low of 20 head in August with a monthly average of 64 head. Excluding the March heifers and July steers, the trend shown in Figure 13 does reflect the supply of 7-weight cattle throughout an average year. The increase in 7-weight heifers in March is most likely the result of those heifers being of replacement quality and therefore intended to return to production as replacement females. The increase in 7 weight steers in July is probably the result of a small group of producers that follow a fall calving program and are selling yearling steers. The large decrease in the supply of 7-weight cattle compared to 4,5 and 6-weight cattle is due to the fact that the majority of feeder cattle have already been placed in feedlots before they reach the 7 or 8-weight classification.

Displayed in Table 14 is the average gross premiums paid for 7-weight backgrounded cattle. The premiums paid for steers varied from a high of $133.43 per head in November 1999 to a low of $45.80 per head in March with a monthly average of $74.62 per head. The heifer premiums ranged from a high of $95.13 per head in November 1999 to a low of $22.05 in September with a monthly average of $57.43 per head. Figure 14 shows that the effect of supply and demand of backgrounded cattle is not as great for 7-weight cattle as for 4, 5, or 6-weight cattle. Although the effects of supply and demand hold true for the August backgrounded cattle, the premiums for the rest of the year do not follow the usual trend of higher prices in late spring and summer

and lower prices during the fall and winter. This is mainly because the majority of cattle are already in a feedlot situation before they reach the 7 or 8-weight classification and therefore the demand and supply of these cattle is naturally lower.

Table 13. 700-799 LB PREMIUM CATTLE DISTRIBUTION

Month	**Steers**	**Heifers**
Total	631	445
Nov-99	110	75
Jan-00	138	75
Mar-00	28	156
Jul-00	153	49
Aug-00	40	20
Sep-00	65	31
Nov-00	97	39
Avg.	90	64

Figure 13. 700-799 LB PREMIUM CATTLE DISTRIBUTION

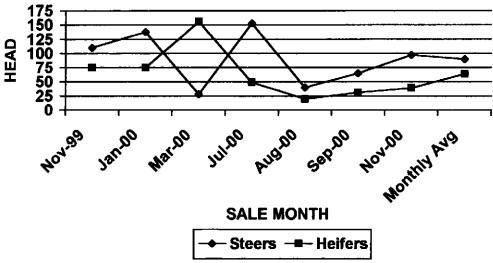
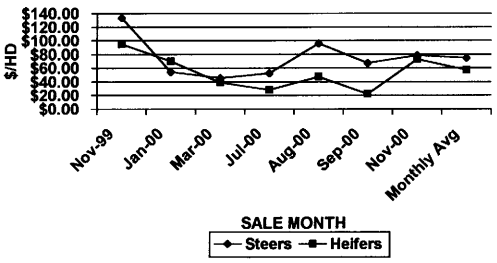


Table 14. 700-799 LB CATTLE GROSS PREMIUM

Month	Steers	Heifers
Nov-99	$133.43	$95.13
Jan-00	$54.52	$70.23
Mar-00	$45.80	$38.85
Jul-00	$52.46	$28.01
Aug-00	$95.80	$47.40
Sep-00	$67.08	$22.05
Nov-00	$78.38	$72.76
Avg.	$74.62	$57.43

Figure 14. 700-799 LB CATTLE GROSS PREMIUM



Only 303 of almost 18,000, backgrounded cattle were classified in the 8-weight category (Table 15). The distribution of 8-weight steers varied from a high of 50 head in July to a low of 12 head in November 2000 with a monthly average of 29 head. The heifers ranged from a high of 31 head in March to low of 2 head in November 2000 with a monthly average of 12 head. Figure 15 illustrates the supply of backgrounded 8-weight cattle is limited and sporadic.

Table 16 displays the premiums paid for 8-weight backgrounded cattle. The steer premiums ranged from a high of $116.28 per head in November 1999 to a low of $26.59 head in September with a monthly average of $58.96 per head. Heifer premiums

varied from a high of $92.18 per head in November 1999 to a low of -$3.82 per head in March with a monthly average of $43.44 per head. Figure 16 reveals that the premiums paid for 8-weight backgrounded cattle are for the most part consistent with the seasonal patterns of the beef industry. However, the March backgrounded heifers actually received less money on average than their non-backgrounded counterparts. Although the backgrounded cattle received a higher price per hundredweight, the average weight of these cattle was significantly lighter than the nonbackgrounded cattle and therefore the overall dollars paid were less.

Table 15. 800-899 LB PREMIUM CATTLE DISTRIBUTION

Month	**Steers**	**Heifers**
Total	202	81
Nov-99	33	4
Jan-00	46	18
Mar-00	17	31
Jul-00	50	15
Aug-00	22	4
Sep-00	22	7
Nov-00	12	2
Avg.	29	12

Figure 15. 800-899 LB PREMIUM CATTLE DISTRIBUTION

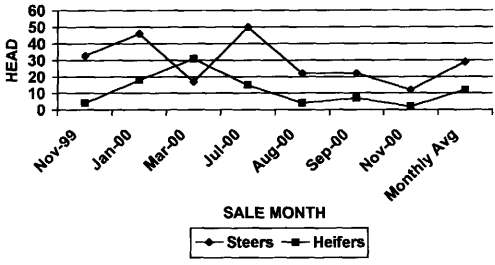
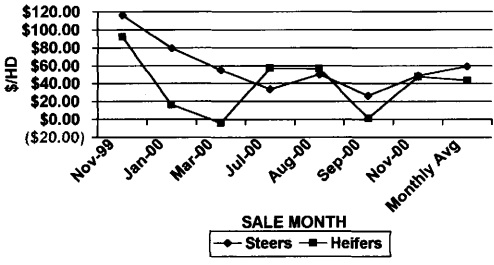


Table 16. 800-899 LB CATTLE GROSS PREMIUM

Month	Steers	Heifers
Nov-99	$116.28	$92.18
Jan-00	$79.66	$16.35
Mar-00	$55.34	-$3.82
Jul-00	$33.87	$57.27
Aug-00	$50.19	$56.52
Sep-00	$26.59	$1.33
Nov-00	$48.90	$47.51
Avg.	$58.96	$43.44

Figure 16. 800-899 LB CATTLE GROSS PREMIUM



SUMMARY AND CONCLUSIONS

Premium backgrounded feeder cattle sales were compared and analyzed to the sale of non-backgrounded feeder cattle. JCA and USDA supplied sale data for the study. The data were collected from 17,958 cattle consigned in the JCA backgrounded feeder cattle sales and from the USDA Market News Desk for 28,786 non-backgrounded cattle from 10 other auction facilities. Variables pertinent to the analyses were sex of the cattle, month of sale, sale weight of cattle, and sale price of the cattle.

The data set was entered into Microsoft Access, sorted, and analyzed on a basic comparison level of backgrounded versus non-backgrounded cattle. Additional analyses involved sorting and analyzing the data according to the sex, and respective weight groups of both backgrounded and non-backgrounded cattle.

Results of this analysis revealed backgrounded steers and heifers weighed an average of 75 lbs per head more than non-backgrounded steers and heifers (Tables 3& 4). Additionally, backgrounded steers received an average slide adjusted gross premium of $97.37 per head more than non-backgrounded steers while backgrounded heifers received an average slide adjusted gross premium of $100.51 per head more than non-backgrounded heifers (Table 5). Furthermore, backgrounded steers received an average actual gross premium of $80.01 per head more than non-backgrounded steers and backgrounded heifers received an average actual gross premium of $83.73 per head more than non-backgrounded heifers (Table 6).

This study covered the first year of premium backgrounded feeder cattle sales at Jordan Cattle Auction. However, this study did not take into account any expenses

incurred by the producer related to the backgrounding of these cattle. All dollar amounts are gross premiums, not net premiums. While these premiums reflect the averages of these first seven sales, they are subject to change with future sales. As more cattle enter backgrounding programs, it is possible for premiums to decrease and producers may eventually receive discounts for non-backgrounded cattle instead of premiums for backgrounded cattle. Although the economic success of backgrounding varies considerably, backgrounding does offer significant economic merit when implemented correctly.

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APPENDIX 1

Description of the Four Value Added Health Programs

Value added health program	Procedures required	Administration time
Vac 24	1. Vaccinate against a) IBR,PI3,BVD, BRSV 7-way Blackleg, *Pasteurella haemolytica*	2 to 4 mo of age
Vac 34		
	1. Vaccinate against a) 7-way Blackleg	at branding
	2. Vaccinage against a) IBR, PI3, BVD,BRSV, *Pasteurella haemolytica*	3 to 4 wks prior to weaning
Vac 45		
Pre-weaning option	1. Vaccinate against a) IBR,PI3,BVD,BRSV 7-way Blackleg, *Pasteurella haemolytica*	at 2 to 4 mo of age or 3 to 4 wk prior to weaning
	2. Revaccinated against a) IBR,PI3,BVD,BRSV, *Pasteurella haemolytica*	at weaning
	3. Weaned at least 45 days prior to shipping	
Vac 45 Weaning Option	1. Vaccinate against a) 7-way Blackleg	at branding
	2. Vaccinate against a) IBR,PI3,BVD,BRSV *Pasteurella haemolytica*	at weaning and 14 to 21 days later
	3. Weaned at least 45 days prior to shipping	
Vac Pre Con	1. Vaccinate against a) 7-way Blackleg	upon arrival
	2. Vaccinate against a) IBR,PI3,BVD,BRSV, *Pasteurella haemolytica*	upon arrival and 14 to 21 days later
	3. Background for at least 45 days	beginning at purchase

APPENDIX 2
Traditional Weaning versus Value Added

	Traditional Normal Weaned	Value Added Preconditioned
Date Weaned	5/19/2000	5/20/2000
Date Sold	5/20/2000	7/12/2000
# Head	19	100
#steers/#heifers	12/7	58/42
Weaning Wt. lbs.	492.2	501
Ranch Shipping Wt., lbs	492.2	571.3
Salebarn Wt., lbs	466.3	562.9
Shrink	5.30%	1.50%
Pencil Shrink		2%
Payweight, lbs	466.3	551.6
Weight Change, lbs	-25.9	50.6
Income	**$/cwt**	**$/cwt**
Price		
Average	$93	$97.44
Range	$81-104	$89-108
Proceeds		
Gross	$8,193.40	$53,745.29
Avg Value $/hd	**$431.23**	**$537.45**
Marketing Expenses		
Commission	$12.33	$11.87
Feed/Yardage	$0.40	$3.00
Beef Checkoff	$1.00	$1.00
Brand Inspection	$0.35	$0.35
Insurance	$1.06	$0.65
Freight	$7.83	$4.76
Sub-total	**$22.97**	**$21.63**
Preconditioning Expenses		
Ear Tag		$0.75
Vaccines		$5.72
Anthelmintic		$1.05
Weaning ration		$0.82
Hay		$1.44
Supplement		$13.80
Pasture		$4.95
Mineral		$0.67
Labor		$3.24
Interest		$2.85
Sub-total		**$35.29**
NET INCOME	**$408.26**	**$480.53**
Difference		**$72.27**

APPENDIX 3

Sale Dates

Premium Sale Dates	Non-Premium Sale Dates
November 18, 1999	11/14/99 - 11/20/99
January 20, 2000	1/16/00 - 1/22/00
March 30, 2000	3/26/00 - 4/1/00
July 20, 2000	7/16/00 - 7/22/00
August 17, 2000	8/13/00 - 8/19/00
September 13, 2000	9/10/00 - 9/16/00
November 9, 2000	11/5/00 - 11/11/00

EXAMPLE 1

Slide Calculation

Nov-99 Premium Steers		**Nov-99 Non Premium Steers**
575 lbs. @ $95.85/cwt		514 lbs. @ $85.83/cwt
	575-514=61 lbs 61*$.04=$2.44	
$95.85+$2.44=$98.29/cwt $98.29*5.75=$565.17/hd		$85.83*5.14=$441.17/hd

$565.17-$441.17= $124/hd Slide Adjusted Premium

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