



DOLLARS & SENSE

The Value of Beef Quality and Consistency

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For More Information



What is the Definition Of Quality?



What Is The Definition Of Quality?

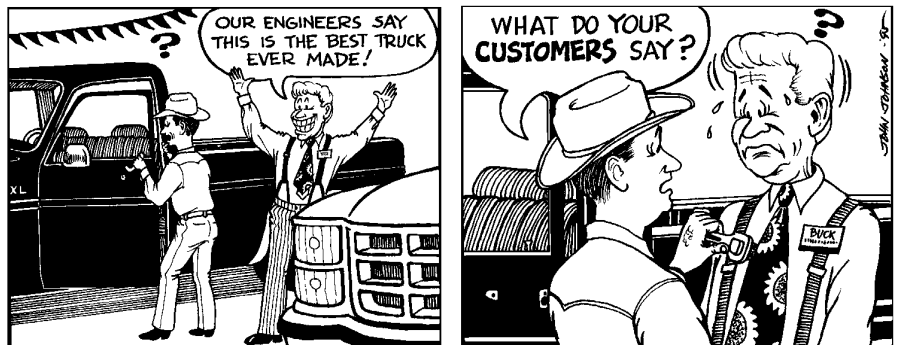
The Definition of Beef Quality

It is a beef product that consistently exceeds customer expectations. Expectations may include taste, price, packaging, color, safety, leanness, ease of preparation, and anything else important to that consumer.

Dr. W. Edward Deming (a quality management expert who is credited for orienting Japanese products toward quality) conceptualized the idea of Total Quality Management. He defined quality in two ways:

- 1) A product that conforms to a set of standards
- 2) A product that meets consumer wants and needs

The Definition of Total Quality Management



It is a system that works to prevent product defects from ever happening, rather than a system that detects product defects in the final consumer-ready product by:

1. Identifying the set of standards required in a product that will meet or exceed customer expectations.
2. Evaluating the entire production scheme of a product from start to finish.
3. Developing a production system that prevents the production of products that do not conform to the prescribed standards.

This publication is dedicated to helping cattle producers identify management practices and cattle genetic selection criteria that will prevent the production of beef products that do not conform to industry targets and, in turn, that will enhance consumer satisfaction, increase profitability, and improve beef's competitiveness.

The Great 8 Beef Quality Challenges

See if you can name the quality challenges to the beef cattle industry shown in the pictures. Write your answer on the line provided and then check them with the key on page 3.



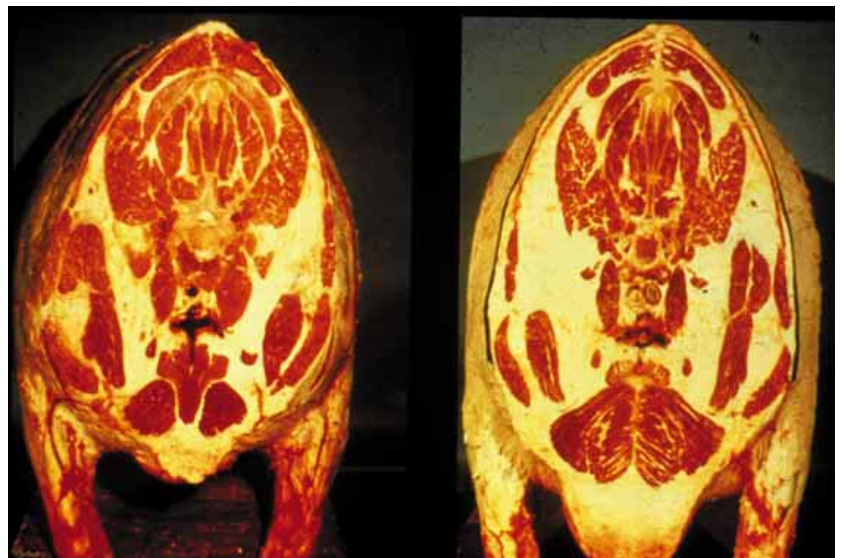
1 _____



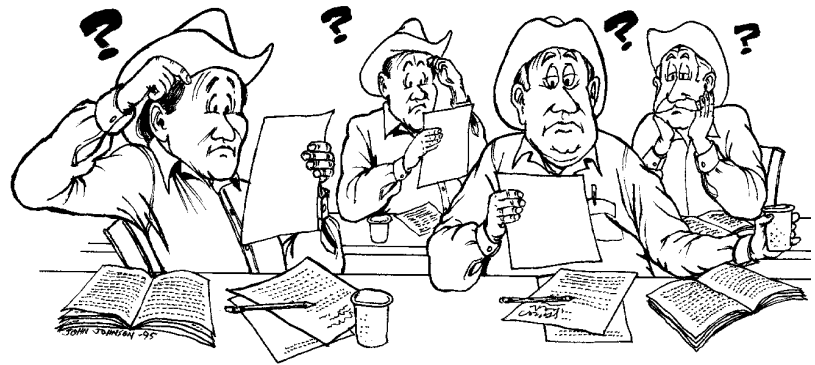
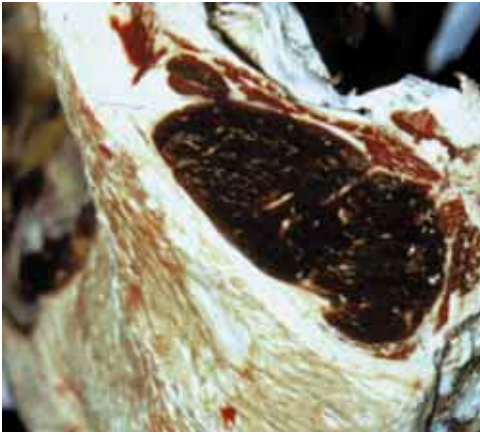
2 _____



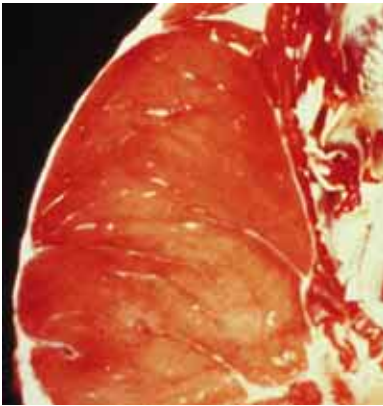
3 _____



4 _____



5 _____



6 _____

7 _____



8 _____

- Big 8 Beef Quality Challenge Key**
1. Injection site blemish - in a top sirloin steak
 2. Side brand on the hide
 3. External fat - shown along the ribeye at the 12th rib
 4. Seam fat - the fat between muscles in a YG2 and YG4 carcass
 5. Dark cutter - caused by stress prior to slaughter
 6. Very big and very small ribeye areas
 7. Inconsistent meat cuts - two 107 wholesale ribs
 8. Non-uniform cattle - all cattle are 7 months old

What They're Saying

"Beef is so variable, it is no longer perceived to be of high value by retailers."

*Nancy Yanish,
Food Marketing Institute
Washington, D.C.*



"Wake up beef cattle industry before it is too late; the time has come to reposition for the future. The industry is not paying enough attention to the eating quality of the beef it produces."

*Marvin J. Walter
Carriage House Meat and Provision Co.
Ames, Iowa*


"I believe beef is in serious trouble. As a retailer, I don't have to sell beef. If I were to sum up in three words what is at the heart of our dilemma with beef, it is the *lack of consistency.*"

*Russ Wolfe,
Topco Associates, Inc.
Skokie, Illinois*





How Much Reward is Possible If I Create Quality?

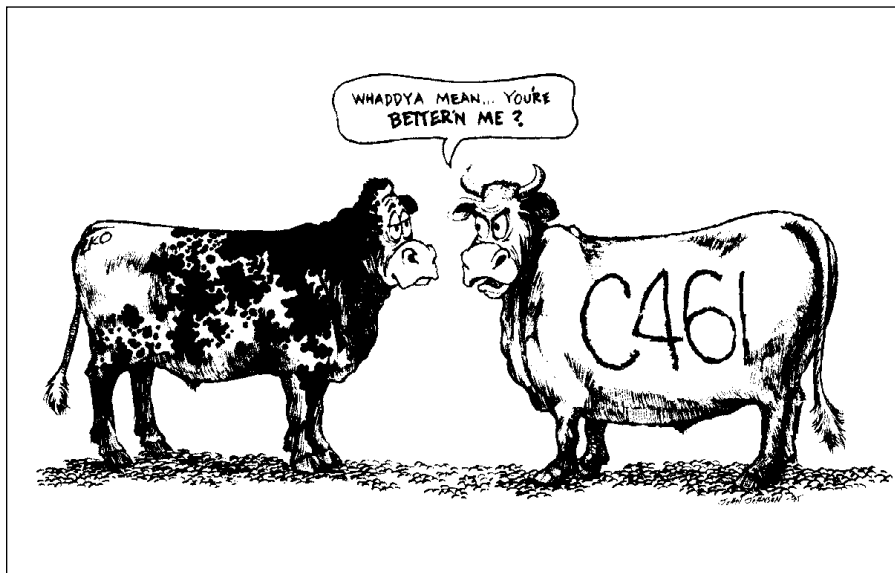


How Much Reward is Possible With a Consistent Quality Product?

LOST \$\$\$\$\$\$\$

\$138.00 Per Head

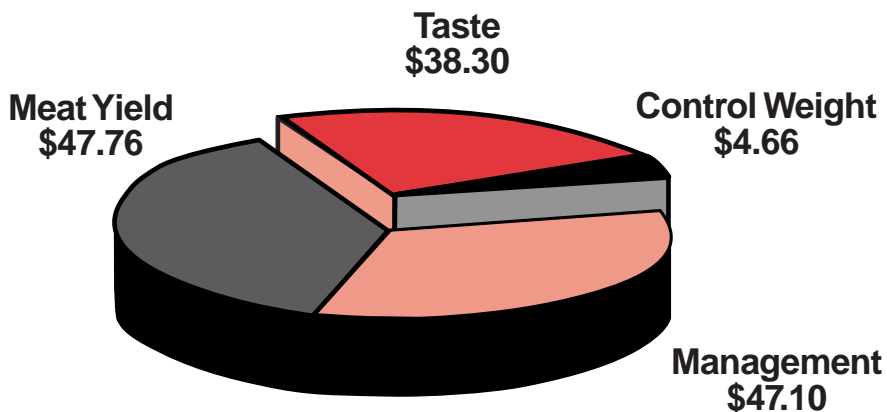
The estimated potential loss in value for every fed beef steer or heifer marketed in the U.S.



**Annual
Total Loss
3.9 Billion Dollars**

The cow/calf producer may not recapture all the loss, but a portion can be realized.

Where is the Money Being Lost?



Source: National Beef Quality Audit (1995)

National Beef Quality Audit

Introduction

The National Beef Quality Audit (NBQA) was a study conducted in 1991 and 1995 for the purpose of examining the incidence and magnitude of quality defects that occur due to selection, management, and production practices. A similar carcass survey was also conducted in 1974 by USDA.

Top 5 Beefs About Quality

According to Packers and End-Users (Retail and Foodservice)

Packers' Top 5 Quality Concerns

1991 NBQA

Hide Damage

Injection Site Blemishes

Excessive Carcass Weights

Bruise Damage

Reduced Quality - Low Marbling Score

1995 NBQA

Lack of Uniformity

Liver Condemnation

Hide Damage

Bruise Damage

Dark Cutters & External Fat

End-Users' Top 5 Quality Concerns

1991 NBQA

Excessive External Fat

Injection Site Blemishes

Too Large/Small Boxed Beef Cuts

Excessive Seam Fat

Lack of Consistency

1995 NBQA

Lack of Uniformity

Inadequate Tenderness

Low Palatability

Excessive External Fat

Price Too High for Value Received

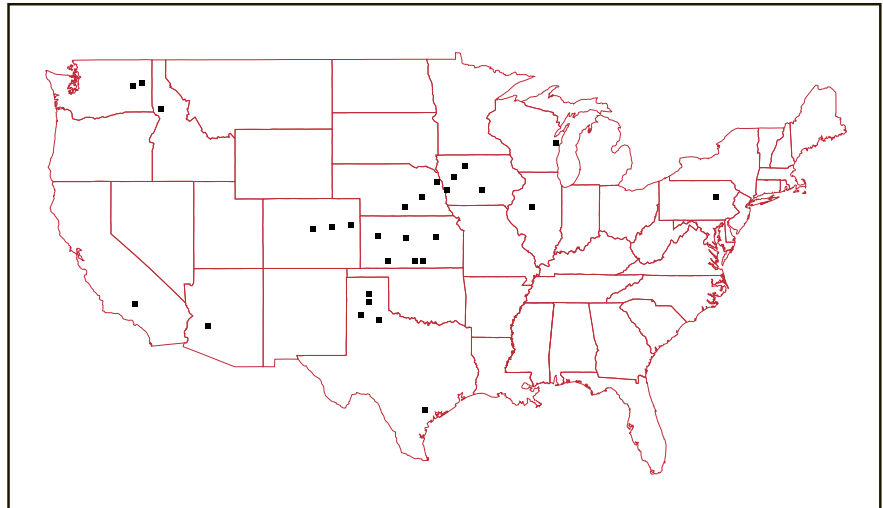
Summary

Of the over 100 people interviewed, in general, they said beef's greatest faults were its inconsistency, fatness, tenderness, and price.

National Beef Quality Audit Executive Summary

In-Plant Quality Audits

Live and carcass data were collected on steers and heifers at 29 major beef packing plants (identified on the map below). These packing companies handle over 80% of the fed beef cattle marketed in the United States.



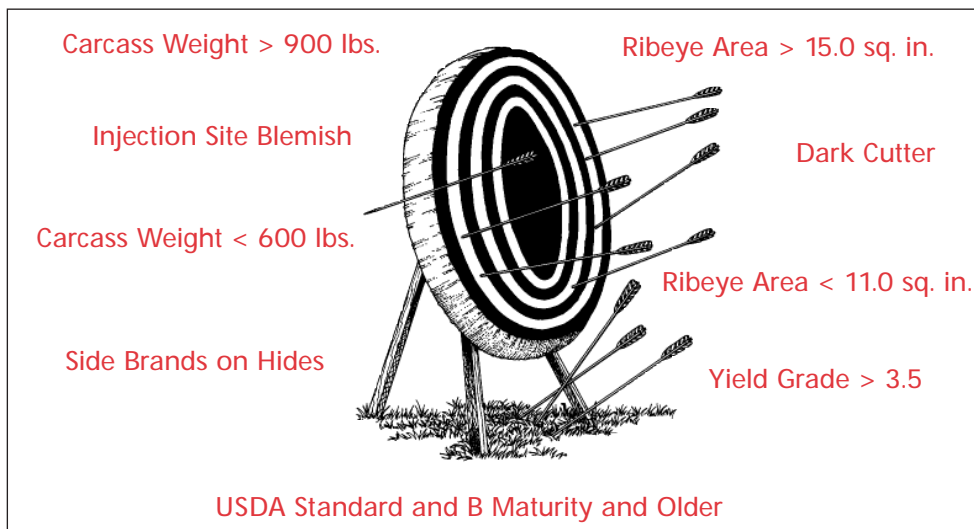
Quality Grade & Yield Grade Information

The first carcass quality audit was conducted in 1974. Below is a comparison of USDA Quality and Yield Grade factors for 1995, 1991 and 1974.

1995 vs 1991
vs 1974

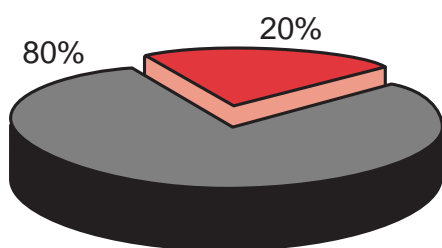
Trait	1995	1991	1974
% Yield Grade 1 and 2	58%	44%	30%
% Choice or Prime	48%	55%	75%
12th Rib Fat	.47"	.59"	.62"
Ribeye Area	12.8 sq. in.	12.9 sq. in.	11.8 sq. in.
Carcass Weight	748 lbs.	760 lbs.	679 lbs.
Ribeye Area/cwt	1.7	1.7	1.7

What Percent of Beef in the NBQA Missed this Target?

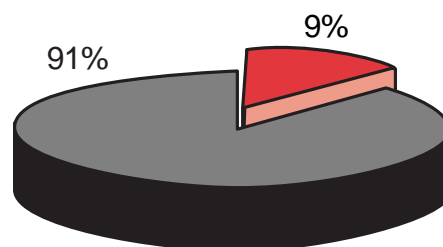


Incidence of Quality Outliers In the 1995 NBQA Audit

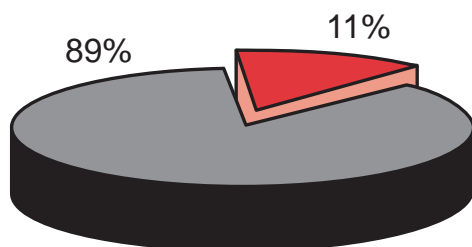
Pieces of the pie chart in red signify the percent outliers for that trait.



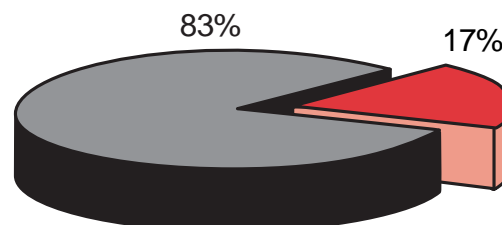
Yield Grade 3.5 or Greater



USDA Standard and \geq B Maturity



Carcass Wt. > 900 and < 600

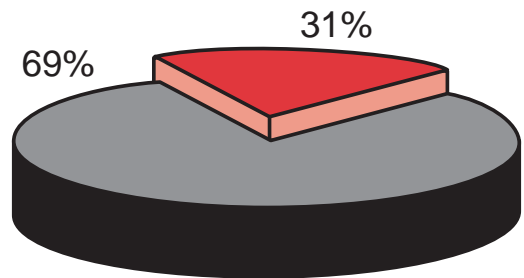


Side Brands on the Hide

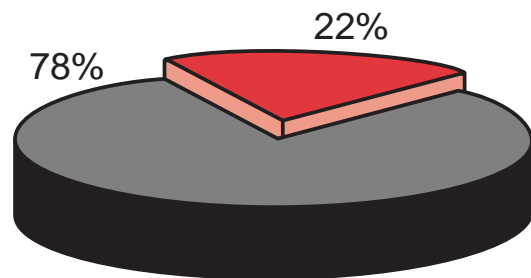
Incidence Of Quality Outliers In the 1995 NBQA

Pieces of the pie chart in red signify the percent outliers for that trait.

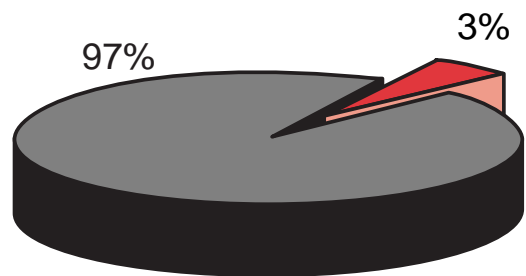
**Ribeye Area
> 15.0 and < 11.0
sq. inches**



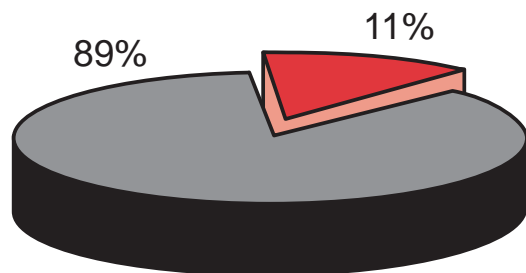
**Liver
Condemnation**



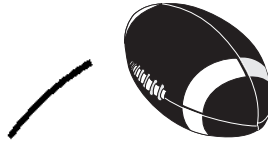
Dark Cutter



**Injection Site
Blemish**



Goals to Improve Quality



**Learn how
your cattle
perform after
they leave
the ranch.**

- ✓ My calves have a good feedlot health record.
- ✓ My calves gain greater than 3 lbs. per day in the feedlot.
- ✓ More than 50% of my calves grade Choice.
- ✓ I have no USDA Standard grade carcasses.
- ✓ A high percent of my carcasses are yield grade 2.
- ✓ I have no yield grade 4 and 5 carcasses.
- ✓ I don't cause injection blemishes.

**Your Attention To
Quality Can:**

- ✓ Maximize the value of your calves.
- ✓ Minimize quality defects.
- ✓ Enhance consumer confidence in beef.

The Tale of Two Steers...

Which is Fattest?



1 Live Weight 1150 lbs.

Which has the
Best Quality
Grade?



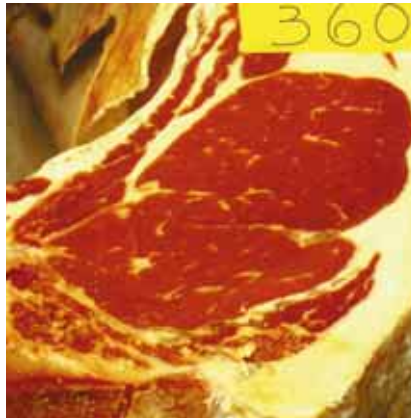
2 Live Weight 1150 lbs.

** For more information about steer 1 and 2, see page 12 and 13.*

Which is
Most
Valuable?

In the Packing Plant

Carcasses in the Packing Plant Cooler



1 Choice, Yield Grade 2
13.8 sq. in. Ribeye

2 Standard, Yield Grade 4
10.8 sq. in. Ribeye

Fat Removed from Wholesale Cuts

Trimmed to 1", .50" and
.25" Fat Trim Specification



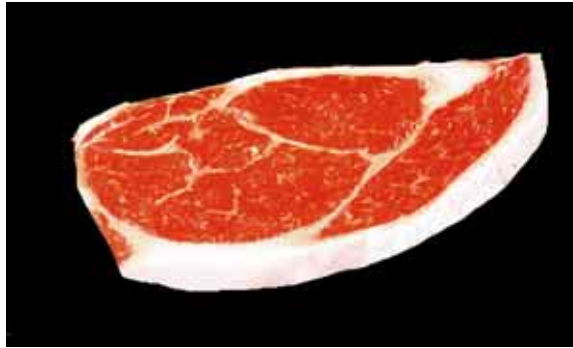
1 Total Fat = 135 lbs.



2 Total Fat = 207 lbs.

In the Retail Meat Counter

Top Sirloin Steaks



Steer 1 vs Steer 2

- **Value Difference \$285.00**

Based on what you see in the pictures and using current market discounts Steer 1 is worth \$285.00 more than Steer 2.

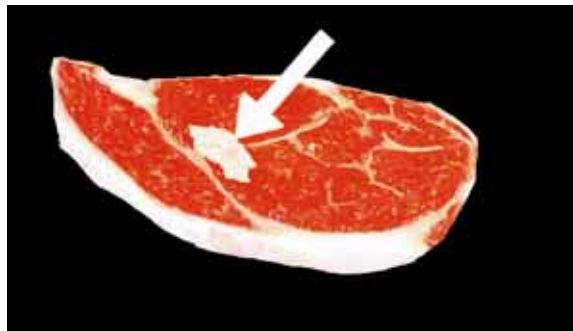
- **Why?**

Based on current market discounts for carcass defects, there is a substantial difference in the value between No. 1 and No. 2.

- **\$285 Plus**

Not calculated in the cost of quality defects are feeding and management costs to get the cattle to the market endpoints shown in the picture, not to mention compromised consumer confidence because of poor management practices that result in fat and tough meat.

- 1 Shear Force 7 lbs.* / No Injection Blemish



- 2 Shear Force 14 lbs.* / Injection Blemish in the Top Sirloin

* A larger number means more force was required to cut through a steak core, and therefore steak No. 2 was tougher. A steak with a shear force below 10 lbs. is usually considered acceptable.

Trait	No. 1	No. 2	Value Difference
Yield Grade	2	4	\$150
Quality Grade	Choice	Standard	\$150
Brand	Side	Butt	-\$25
Injection Blemish	No	Yes	\$10
Tenderness	Tender	Tough	?
Total			\$285 plus

Source: USDA Market Data and 1995 NBOA

Your Attention to Quality ... A Win-Win Proposition



Ranch "A" vs Ranch "B"

Data in the adjacent tables are from the TAMU Ranch to Rail Program. Ranch to Rail is an information feedback program, which provides feedlot performance and carcass information to cattle producers. Ranch "A" consistently produced a high quality product: healthy fast-growing calves that had desirable carcasses.

Ranch "A"					
Tag	Medicine Cost	ADG	Net Return	Yield Grade	Quality Grade
A1	\$0.00	3.8	\$143.25	2	Select
A2	\$0.00	3.5	\$163.06	2	Choice
A3	\$0.00	3.8	\$159.50	2	Select
A4	\$0.00	4.1	\$280.78	2	Choice
Average Net Return Per Calf = \$186.64					

Ranch "B"					
Tag	Medicine Cost	ADG	Net Return	Yield Grade	Quality Grade
B1	\$58.74	2.7	-\$109.70	3	Select
B2	\$80.94	2.6	-\$143.46	2	Select
B3	\$28.45	2.9	-\$100.26	3	Select
B4	\$91.29	3.4	-\$ 6.66	3	Select
Average Net Return Per Calf = -\$90.02					



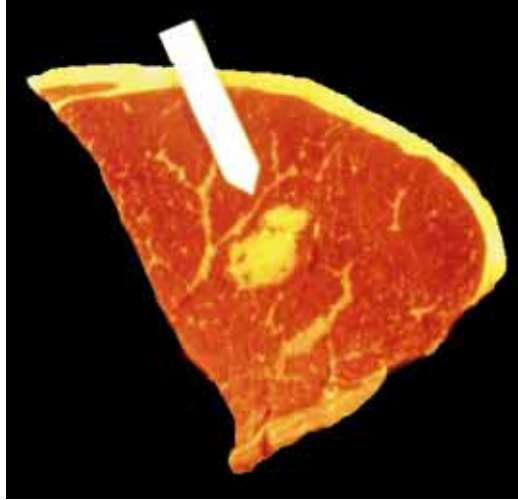
Maintaining Quality Through Management



Maintaining Quality Through Management

Current problems originating from the cow-calf sector which ranchers have at least some control over are:

Injection Site Blemishes



Clostridial Bacterins
In a Colorado State University research study, greater than 90% of intramuscular injections given at branding can be found at slaughter time.

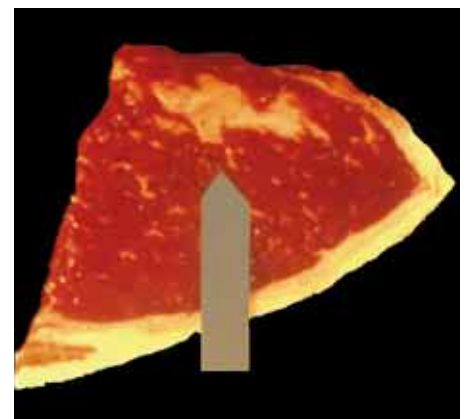


Antibiotics - Many will leave some blemish detectable at slaughter.

LOST \$\$\$\$\$\$\$

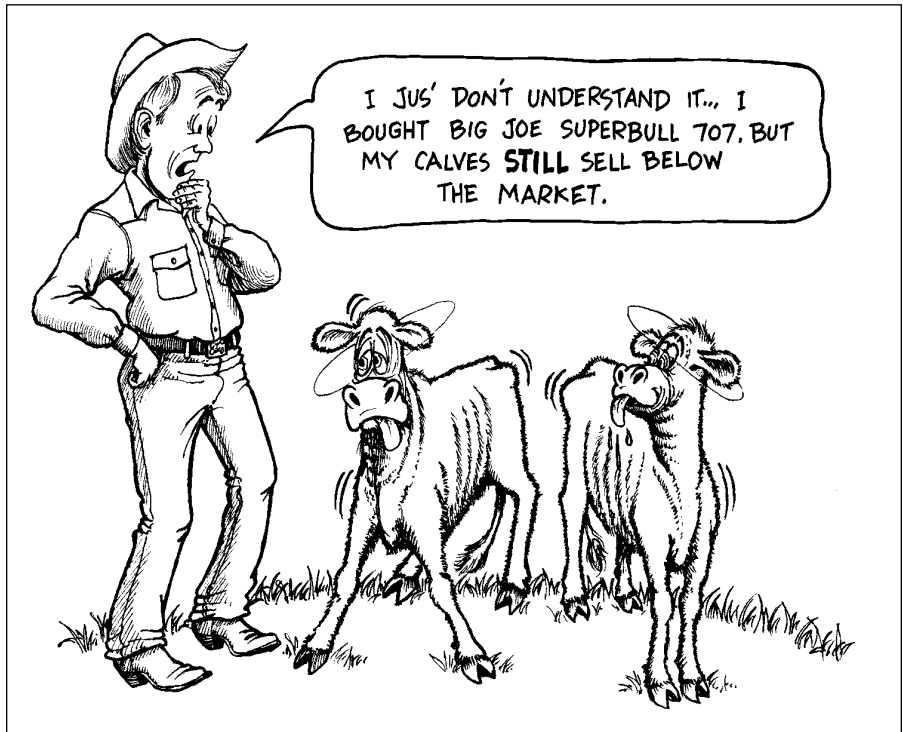
**Industry Loss:
\$188 Million
Annually**

Vitamins - Even fat soluble vitamins can leave small blemishes.



Management

How Do I Manage Quality?



Increase Net Value for Healthy Calves

\$ A direct comparison of those animals that got sick during the feeding period and those that did not in the Texas A&M Ranch to Rail Program shows:

Difference in Feedlot Net Return For Healthy vs Sick Steers

1991-92	+\$62.92
1992-93	+\$91.23
1993-94	+\$88.55
1994-95	+\$49.55
1995-96	+\$59.62

Management Pretest



True or False

- _____ 1. Drug residues can be traced back to producers, leaving them liable.
- _____ 2. Drug labels do not have to be adhered to if you have found a more effective method of use.
- _____ 3. Injection-site problems are not an issue anymore. Producers should inject in the most convenient location.
- _____ 4. Genetic improvements will never be fully realized if your calves are not healthy.
- _____ 5. Management practices at the ranch level have little effect on beef quality or offal value.
- _____ 6. Producers are not being paid for higher quality animals at weaning time.
- _____ 7. Calves that get sick after weaning are less likely to grade Choice than calves that do not.
- _____ 8. Branding will not cause hide damage.

Management Pre-Test (continued)

True or False

9. Parasites do not cause significant hide damage in calves.

10. Lack of a balanced nutrient supply can cause serious immune deficiencies.

11. Preweaning management will have little impact on stress-related diseases.

12. Bovine Respiratory Disease (BRD) can best be controlled by stocker or feedlot operators.

13. Preconditioned calves can be more valuable than freshly weaned calves.

14. Only large producers are able to command higher prices for quality.

15. Quality is only defined as the percent of cattle that have a quality grade of USDA Choice or higher.

16. As the number of calves in the U.S. increases, buyers will be able to pick and choose cattle that meet their quality specifications.

17. There are currently no livestock auction markets or feedlot programs where I can sell my calves identified as vaccinated and preconditioned.

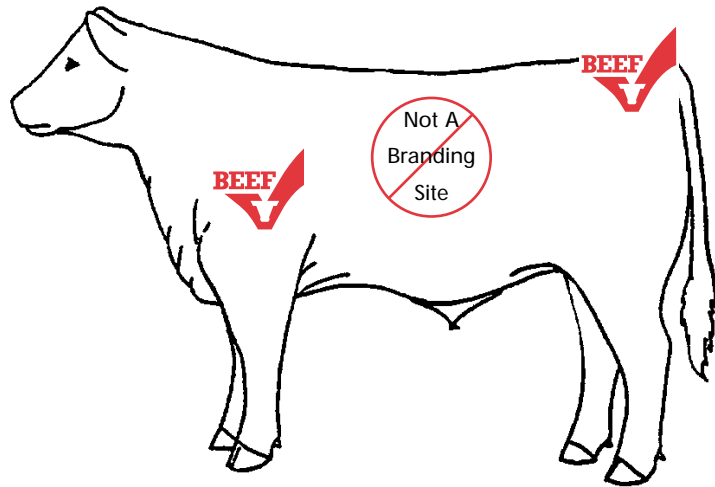
Key to Pre-Test 1. T, 2. F, 3. F, 4. T, 5. F, 6. F, 7. T, 8. F, 9. F, 10. T, 11. F, 12. F, 13. T, 14. F, 15. F, 16. T, 17. F.

Hide Damage

Branding

"A properly applied firebrand in any location serves as positive identification of cattle."

*Steve Munday
Executive Vice President
Texas & Southwestern Cattle Raisers Assoc.*



Hot Iron - Causes hide damage and can cause muscle damage if applied improperly.

Freeze Branding - Causes hide damage only.

Parasites

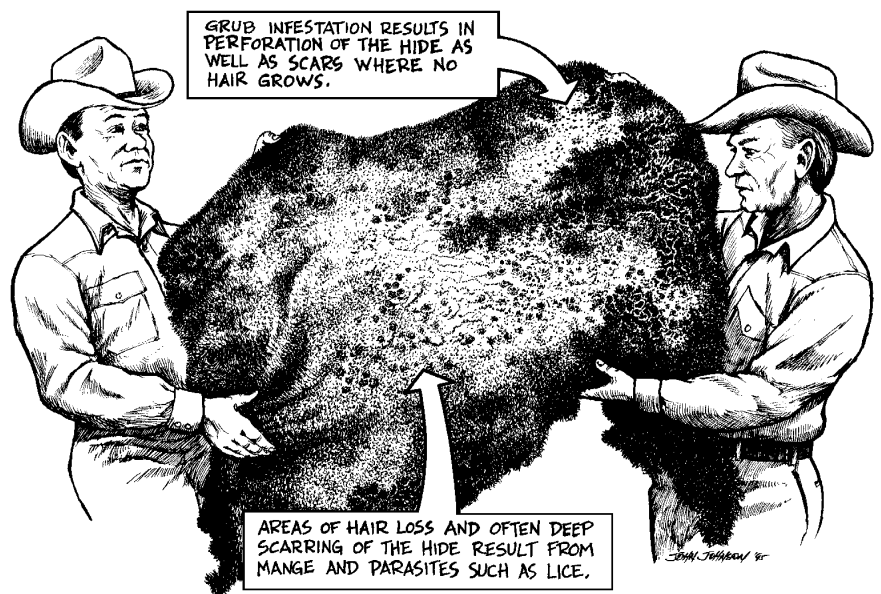
Any parasite damage will lower hide values.

- Grubs
- Lice
- Mange
- Biting Flies

LOST \$\$\$\$\$\$\$

**Industry Loss:
Greater than
\$648 Million
Annually**

This loss is passed along to all cattle sold in the industry by a reduction in the average live cattle price.



Why is a Good Health Program Important?

Healthy cattle perform better later in life, particularly during the stocker/feedlot phases of production.

Producers who get a reputation for having unhealthy cattle will, at some point, be discriminated against. They will also give their area a poor reputation.



Superior genetics are more completely expressed in healthy calves when compared to unhealthy calves.

Backgrounded and/or preconditioned calves can generate moderate price premiums if marketed aggressively in selected markets.

The Value of Sick vs. Healthy Calves

Difference in Value:

In the 1996 Ranch to Rail Program, healthy calves had **\$59.62** more net return than sick calves.

Healthy Calves Net	-\$ 3.40
Sick Calves Net	-\$63.02
Difference	\$59.62

Average Initial Weight of Steer = 577 lbs.

\$49.55/577 lbs. =

\$10.33 / cwt.

	<u>Sick</u>	<u>Healthy</u>
Number of Animals	857	2,017
Death Loss	3.5%	.3%
Daily Gain	2.91	3.01
Total Cost/lb. Gain	72.89¢	65.34¢
Medicine Cost/hd.	\$34.05	\$0
Net Return/hd.	-\$63.02	-\$3.40
Choice	32%	38%
Select	56%	54%
Standard	12%	8%

Source: Ranch to Rail Program, 1996

Calves that did not get sick were potentially worth \$10.33/cwt. more as feeder cattle. Previous Ranch to Rail data has shown that preconditioning greatly reduces the amount of sickness in calves after arrival in the feedyard, leading to substantial value enhancement. This increase in value may accrue to the producer.

Bovine Respiratory Disease (BRD) Complex (Stress Induced)

Respiratory Diseases

The following is a list of respiratory diseases that can impact the health, performance and quality of your calves:

- IBR (Infectious Bovine Rhinotracheitis)
- PI3 (Parainfluenza)
- BVD (Bovine Viral Diarrhea)
- BRSV (Bovine Respiratory Syncytial Virus)
- Pasteurella Haemolytica
- Pasteurella Multocida
- Haemophilus Somnus

Immune System Development and Nutrition

If poor nutrition occurs either with the cow or calf, it could negatively impact the calf's immune system development. The following is a list of nutritional factors that will impact the health and growth of your calves:

- Protein and energy intake balance
- Macro-mineral intake balance
- Trace mineral intake balance
- Vitamin A and E intake

LOST \$\$\$\$\$\$\$

**Industry Loss:
\$115 Million
Annually**

Management Programs

Designed To Minimize Quality Defects In Weaned Calves

Texas-Value Added Calf Management Program (Tex-VAC)

Calf Working (2-4 months of age)

- ✓ **Vaccinating**
 - 7-way clostridial
 - If this is the only time the calves will be vaccinated before they are weaned, and they will not be back-grounded, then follow the VAC-Prewean option (Appendix A).
- ✓ **Castrating** (steers grade higher than bulls)
 - Knife cut all calves not to be kept as sire prospects.
 - Generally steers bring more dollars per pound at weaning.
- ✓ **Dehorning** (dehorning reduces bruises)
 - Polled genetics
 - Chemical paste (at birth)
 - Electric or hot iron bud dehorner (at birth)
 - Spoon or breakover, Barnes type (at working)
- ✓ **Implanting** (Use approved products for each gender and read and follow label directions)
 - Synovex C - steers and heifers
 - Ralgro - steers and heifers
 - Calfoid - steers and non-replacement heifers
 - Compudose - steers only
 - *Note: Never implant uncastrated bull calves!*
- ✓ **Branding**
 - Brand in location registered at County Clerk's Office in the county in which the cattle are physically located.
 - When possible, register and place brands where minimal hide damage will occur.
 - *Note: Keep brand as SIMPLE and SMALL as possible!*
- ✓ **Deworming**
 - Deworm to control internal parasites when needed.
 - Treat to control external parasites as needed.

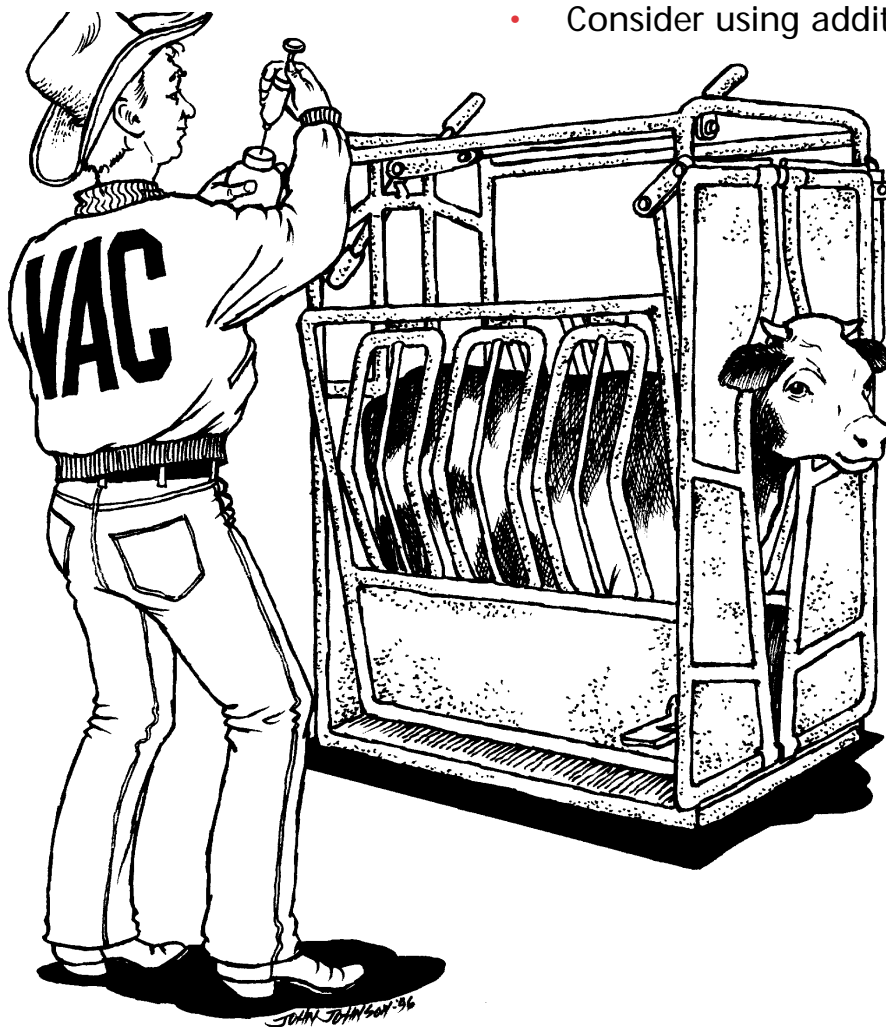
Preweaning Management (4-6 weeks preweaning)

✓ Vaccination Program (VAC-45)

- Follow Value Added Calf-PreWean Plus Program (Appendix A).

✓ Supplementation Program

- Teach calves to eat during the last 30 days before weaning.
- Under poor forage quality, provide creep feed.
- Recommended – High protein (greater than 30% crude protein) limit fed
- Optional – High energy (12-16 % crude protein) free choice
- Consider using additives to increase gain.



Weaning Management

- ✓ **Vaccination Program (VAC-45, Appendix B)**
 - Clostridial 7-way
 - IBR (modified live)
 - PI3 (modified live)
 - BVD (modified live or killed)
 - BRSV (modified live or killed)
 - Pasteurella Haemolytica (toxoid) (if needed)
 - Haemophilus Somnus (if needed)
 - Leptospirosis 5-way (if needed)
- ✓ **Optional Vaccination Program**
 - No preweaning vaccinations
 - First vaccine given at weaning (same as described above)
 - Booster vaccinations given 3-4 weeks after weaning

Supplementation Program

- ✓ 12-14% crude protein complete feed (fed 1 to 7 weeks)
 - Increase over 2-4 days to 1% of body weight
 - Include coccidiostat (Deccox or ionophore)
 - Free choice hay (10% crude protein or higher)

Optional Supplementation Program

- ✓ 12-16% crude protein complete feed (fed 1 week or through bawl)
 - Increase over 2-4 days to 1% of body weight
 - Include coccidiostat (Deccox or ionophore)
- ✓ Free choice hay (10% crude protein or higher)
- ✓ 2 lbs. 40% crude protein daily (fed week 2 through end of program)
or
- ✓ 4 lbs. 20% crude protein daily (fed week 2 through end of program.) Continue to feed ionophore, Deccox, or GainPro
- ✓ Free access to good quality pasture

Value Added Calf Vaccination Management Programs

Value Added Calf-45 (VAC-45)

This program is designed for producers who have the resources to background calves for at least 45 days prior to shipment. This program maximizes the calf's preparedness to enter various production channels.

Value Added Calf-PreWean (VAC-PreWean)

Some producers don't have the resources to background calves. Vac-PreWean is a vaccination program designed to increase the level of resistance prior to weaning so that calves have more immunity as they enter various market channels. This program is based on vaccination at branding with the calves being shipped at weaning.

Value Added Calf-PreWean Plus (VAC-PreWean Plus)

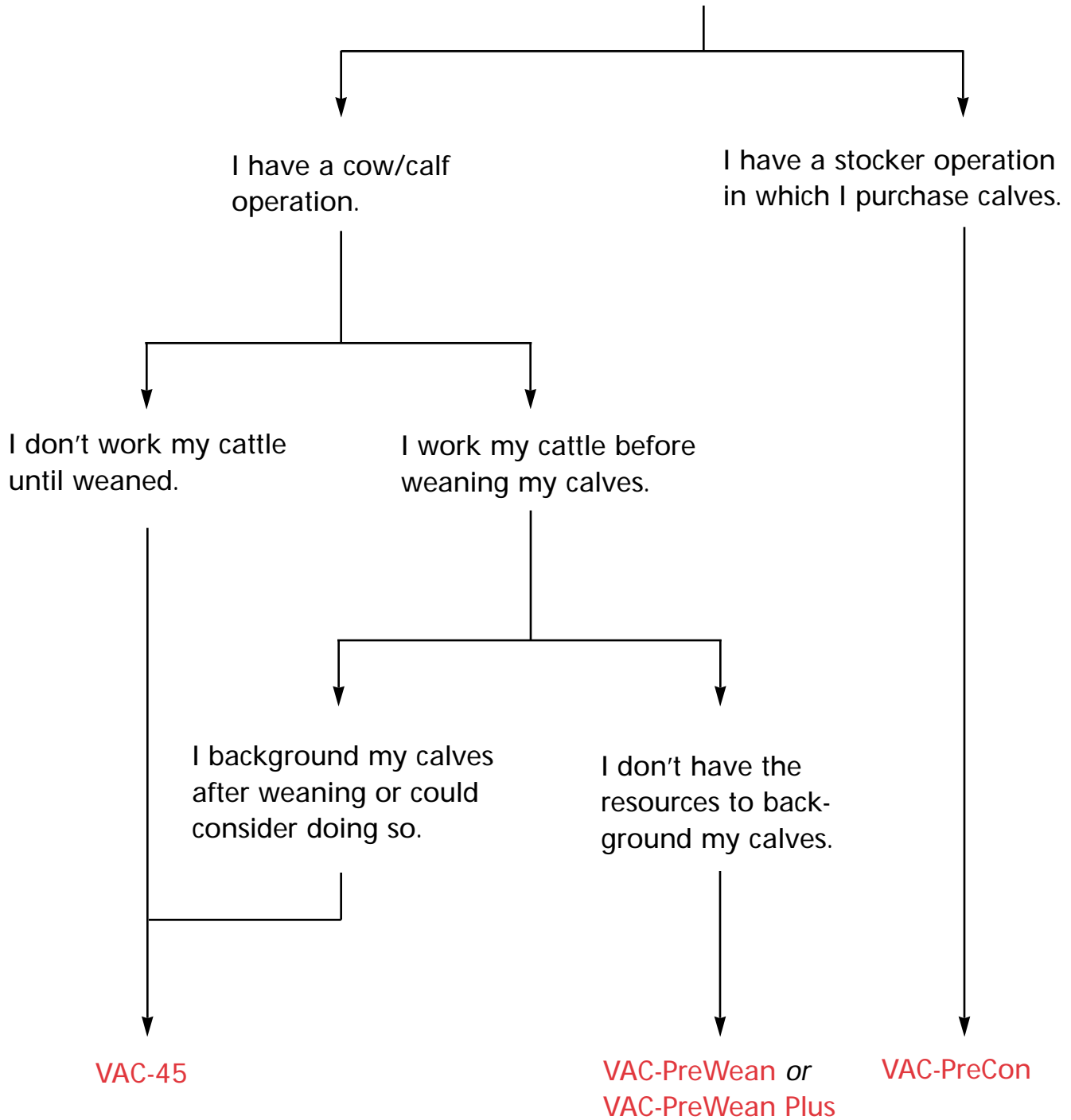
Some producers have the resources to gather their calves prior to weaning, vaccinate them and place them back with the cows for a period of time prior to weaning. This allows time to develop better immunity in an environment that is generally less stressful and where exposure to pathogens is minimal. Better immunity is generally established in older calves due to less maternal antibody interference and a more functional immune system. Vaccinations given less than 3 weeks prior to weaning don't generally provide adequate levels of immunity to assure the protection needed post-weaning.

Value Added Calf-PreCon (VAC-PreCon)

Producers who purchase weaned calves and background them on pasture or in a drylot situation are a major source of stocker/feeder cattle. VAC-PreCon is a vaccination management program designed to help ensure healthy stocker/feeders. This program is based upon cattle put together from various sources that are preconditioned or backgrounded for at least 45 days.

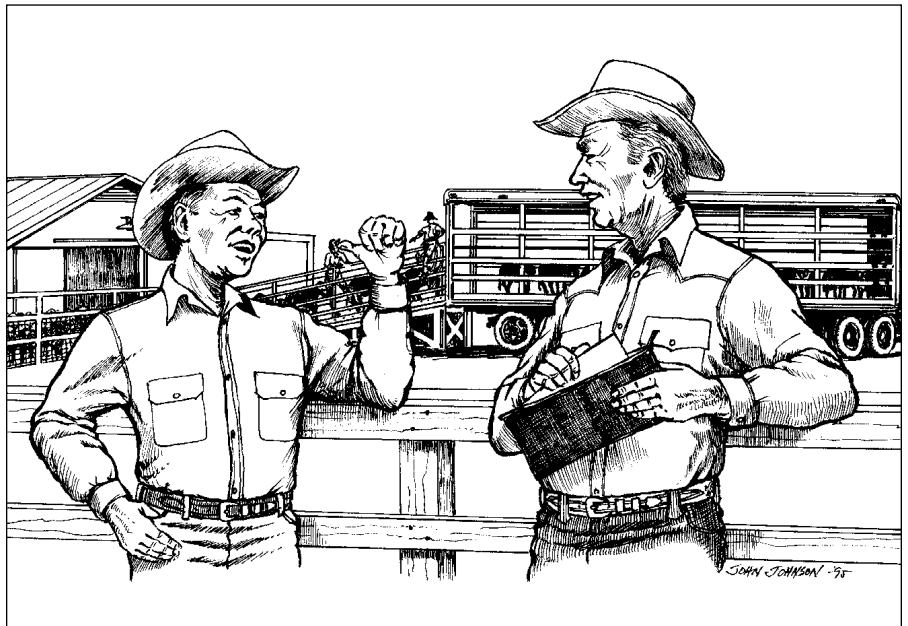
Worksheet

Select one of the following scenarios which will best fit your operation:



The Value of Preconditioning Calves

LOST \$\$\$\$\$\$



Real world benefits of pre-conditioned calves can be seen in the table below. This information is taken from a feedlot that purchased several thousand value-added calves.

Item	VAC-45 Calves	Unknown Origin
Processing and Medicine \$/hd.	\$11.55	\$40.45
Dry Matter Conversion (lbs.)	6.12	6.95
Average Daily Gain (lbs./day)	2.67	2.35
% Dead	.69%	2.93%
Total Cost of Gain/cwt.	\$51.60	\$62.84
Total Weight Gain (lbs.)	543	525
Total Cost of Production/hd.	\$280.19	\$345.66
Total Advantage/hd.	\$65.47	

**Frona Industries data for May, 1994 closeouts*

VAC-45 Backgrounding Budget

	<u>Example*</u>	<u>Your Cost</u>
Normal Weaning Program		
Weaning Weight (Lbs)	550 lbs	_____
Expected Shrink (% , Lbs)	9% , 50 lbs	_____
Pay Weight (Lbs)	500 lbs	_____
Expected Sale Price (\$/CWT)	\$65.00	_____
1. Marketing Costs (\$/Head)	\$12.50	_____
Net Income at Weaning	\$312.50	_____
VAC-PreWean & PreWean Plus VAC-45		
Initial Vaccination: (Per/Head)		
2. Clostridial	\$0.60	_____
3. BRD	\$1.60	_____
4. Intranasal	\$0.40	_____
Additional Vaccine:		
5. H. Somnus	\$0.08	_____
6. Etc. - Once PMH	\$2.00	_____
Labor Costs (processing)	\$5.00	_____
7. Expected Increase in Value/Lb	-0-	_____
Selling Price/CWT	\$65.00	_____
Added Cost of VAC	\$9.68	_____
Net Income at Weaning	\$302.82	_____
VAC-45:		
Booster Vaccination: (Per/Head)		
8. Clostridial	\$0.60	_____
9. BRD	\$0.80	_____
10. Intranasal	\$0.40	_____
Additional Vaccine:		
11. H. Somnus	\$0.08	_____
12. Etc.	\$2.00	_____
13. Antibiotic	\$0.60	_____
14. Weaning Ration	\$11.00	_____
15. Forage/Pasture Cost	\$15.00	_____
16. Supplement Cost	\$10.00	_____
17. Interest Cost	\$5.37	_____
Opportunity Cost	-0-	_____
Labor Cost (processing)	\$5.00	_____
Backgrounding Costs	\$50.85	_____
Expected Increase in Value:		
18. Selling Price/CWT	\$68.35	_____
19. Weight Gain	68 lbs	_____
20. Ending Weight	618 lbs	_____
Expected Shrink	3% , 18 lbs	_____
Projected Pay Weight	600 lbs	_____
21. Net Income at Marketing	\$337.07	_____
22. Advantage to Backgrounding	\$24.57	_____

*The numbers used are for example only.

VAC - 45 Backgrounding Budget

*Example and Cost Explanation Sheet

1. \$2.50/CWT (\$12.50 on a 500# steer calf) to cover freight and all commission fees.
2. Vision 7 Somnus
3. CattleMaster 4
4. TSV-2
5. Somnus included in clostridial vaccine.
6. Pasteurella - Once PMH
7. Data does not support an increase in price without utilization of a proper preconditioning program.
8. Vision 7 Somnus
9. BoviShield 4
10. TSV-2
11. Somnus included in clostridial.
12. Pasteurella vaccine - Once PMH.
13. Pen BP-48
14. Weaning Ration (14 Days)
Five lbs/hd/day of a prepared ration costing \$180/ton.
Ten lbs/hd/day of high quality grass hay at a cost of \$25/1200 lb. round bale.
One lb/hd/day of 47.5% soybean-meal costing \$250/ton.
15. \$10.00/month
16. Three lbs/hd/day of a 25% cube for 31 days at a cost of \$215/ton.
17. 12% APR. for 45 days on Net Income at Weaning and Cost of VAC-PreWean and Vac-45
 $(\$302.82 + 9.68 + 45.48) \times (0.12/360 \times 45) = \5.37
18. "Feedlot Survey" conducted by Mark A. Skiles indicates preconditioning program increases per pound value of a 550# steer calf by an average of \$3.35/CWT.
19. 1.5 lbs/hd/day for 45 days.
20. Weaning weight plus weight gained during 45 days of backgrounding program.
 $550 + 68 = 618.$
21. (Pay Weight x Selling Price) - (Marketing costs + Vac Prewean costs + Backgrounding costs)
 $(600 \times .6835) - (\$12.50 + \$9.68 + \$50.85) = \337.07
22. Answer to formula in #21 minus Net Income at Weaning with Normal Weaning Program.
 $\$337.07 - \$315.50 = \$24.57$

Who's Responsible for Residue Problems?

You Are !!!!

- ➡ So be aware of withdrawal times!!!!
- ➡ Use only medications approved for cattle.
- ➡ For questions consult your veterinarian.



Potential Residue Risk

Unacceptable levels of drug residues detected in edible tissues collected at slaughter may result in traceback, quarantine and potential fines or jail time.

Substantial economic losses may result for the individual producer, as well as negative publicity resulting for the entire industry.

Withdrawal Times

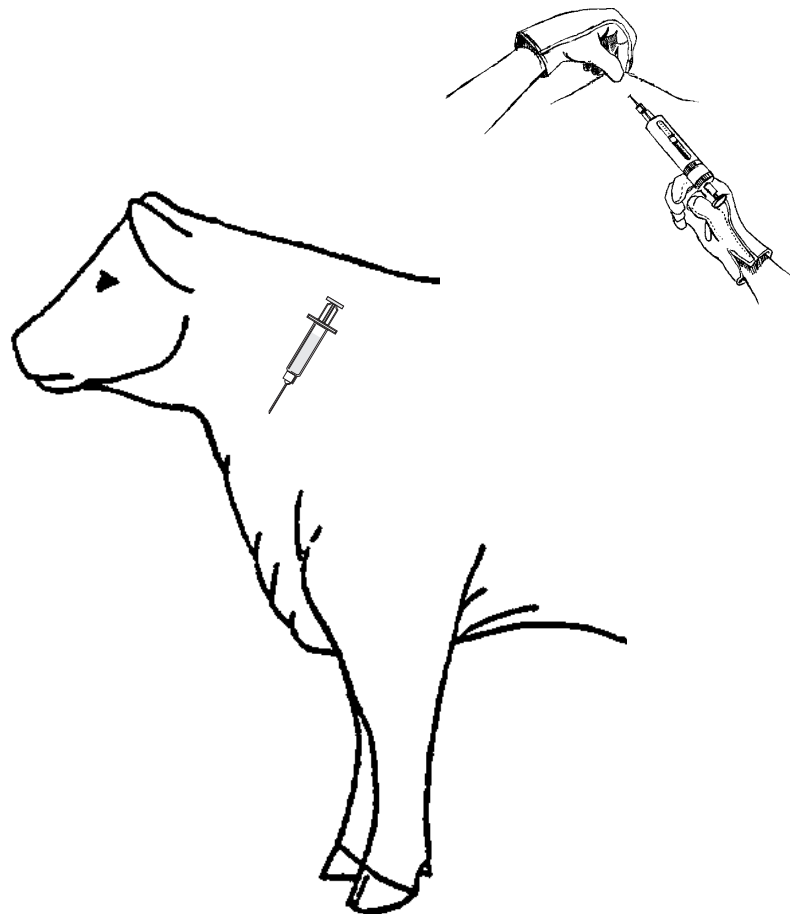
All federally approved drugs will include on their label or package insert required withdrawal time for that drug. These withdrawal times can range from 0 to as many as 60 days or more. The Compendium of Beef Products published by the North American Compendiums, Inc. gives a comprehensive list of drugs approved for use in beef animals, as well as a description of each drug.

In addition, the Compendium includes a chart of the withdrawal times. It is your responsibility to be aware of the withdrawal times on any drugs that you use on your cattle.

A portion of the Compendium is located in Appendix B.

Injection Application Guidelines

- Follow the label!
- When possible, stay away from the muscle and give under the skin (use tenting method.)
- Never mix products in one injection.
- Use multiple sites. Never inject more than 10cc of product in any one site.
- Know the products you are using.
- Use proper sanitation and hygiene.

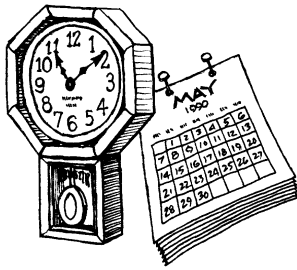


Guidelines for Using Animal Health Products

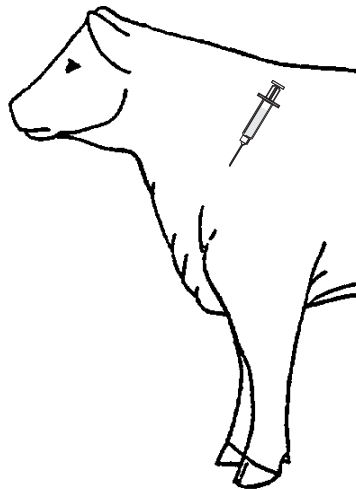
1 Consult your veterinarian to choose a vaccination program that will work for you.



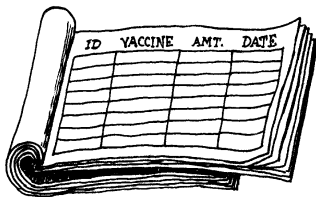
2 Read and follow the label including proper storage!!



3 Be aware of and observe withdrawal times.



4 Follow proper guidelines for all injections (See Injection Application Guidelines on page 31.)

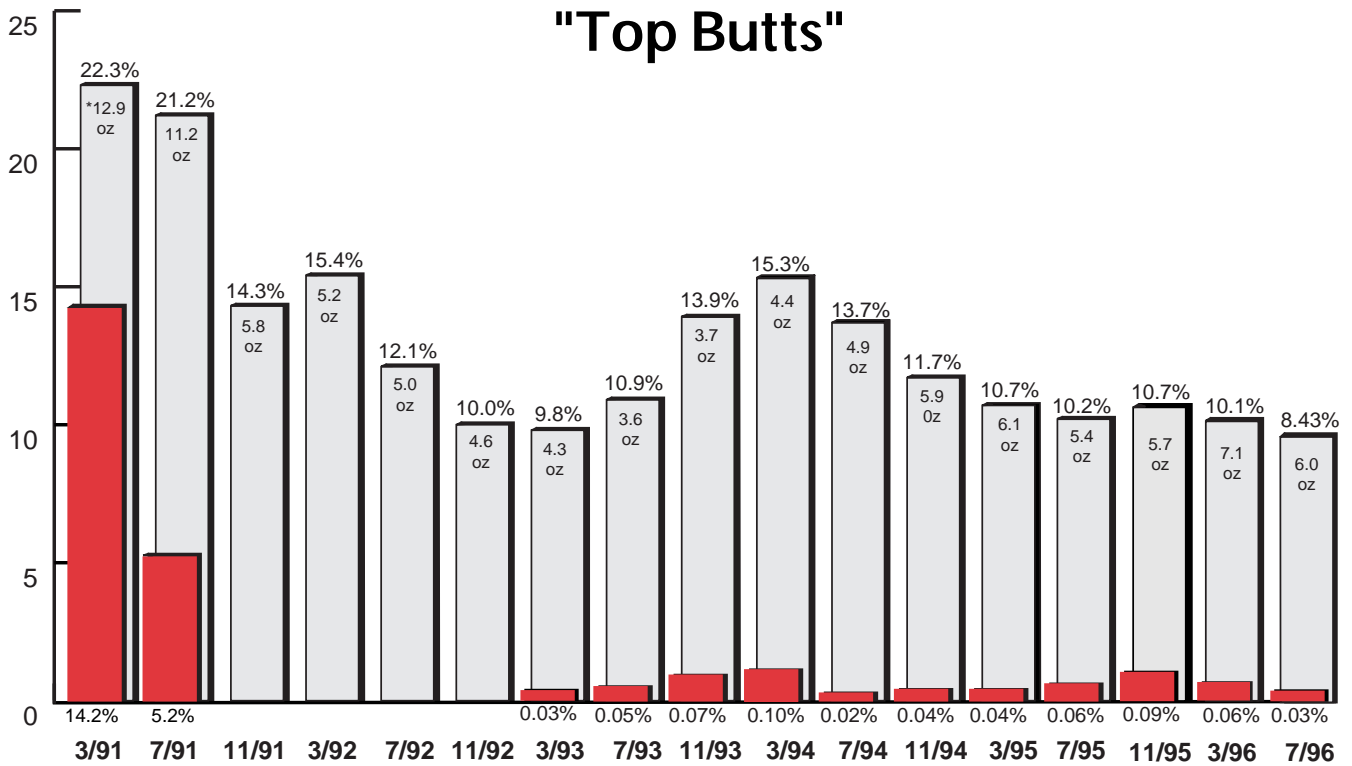


5 Keep records of when, where, and what medications were given.



6 Check with your Veterinarian or Extension Specialist to keep current with new research and technologies.

Injection-Site Audit "Top Butts"



% Non-active scars
 % Active, fluid filled lesions
 * Average trim/lesion

NCA/BQA (7/96)

Report Card
on Injection Sites
"Improving"

Name: U.S. Cattle Industry
Course: Injection Site

Report Card

1991

1996

F

C+

Learning More About My Operation

Problem

I do not know if my calves are meeting consumer targets or how they perform in other industry segments.

Solutions

Texas A&M Ranch to Rail, OK Feedout, and other similar university and breed association programs are information feedback systems designed to provide producers with health, feedlot performance, and carcass merit data on their calves. These programs allow you to send as few as 5 calves from your herd for feedlot performance and carcass value testing.

I do not know my production cost.

Use of the Integrated Resource Management-Standard Performance Analysis (IRM-SPA) program will give you the financial data necessary to make good decisions. Contact your local County Extension Agent, Livestock Specialist or Extension Economist for detailed information as to how to get involved in IRM-SPA (Appendix C).

I don't know when to sell my calves.

The Extension Livestock Marketing Economist, Livestock Marketing Information Center, Cattle-Fax, Market Operators, magazines, newsletters, and video information systems will all provide you with up-to-date market analysis information.



Selection and Culling

How Do I Select and Cull to Improve Quality?

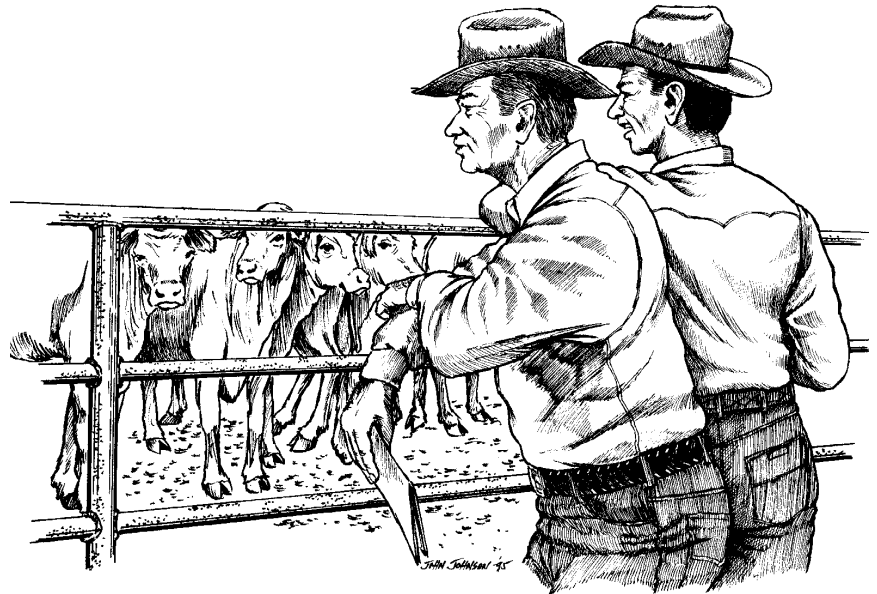


Selection And Culling

How Do You Select and Cull To Improve Quality?

NCBA says:

"\$138/head is lost annually due to non-conforming cattle and poor management practices; a significant portion of that loss is due to genetics."



LOST \$\$\$\$\$\$\$

Genetic improvement could make you money, while improving the performance and quality and consistency of the product for the customer.

The *difference* in per head net return between the top 10% and bottom 10% of steers consigned to the 1995 Ranch to Rail Program was \$375.55, because of management and selection.

Hereford x Brahman Steer Case Study

The two Hereford x Brahman cross steers shown on page 11 demonstrate that genetic improvement can enhance profitability and improve quality.

Selection And Culling Pretest

True Or False



1. As long as my cow has a calf, I should be satisfied because the feedlots will feed them to their maximum potential anyway.
2. Improved selection and management will not put any more money in my pocket. It only benefits the feeder and packer.
3. After consideration of my environmental and managerial constraints, I can formulate a selection and breeding program to help maximize profits.
4. Uniformity in my calves increases a feedlot operator's ability to properly manage them.
5. The TAMU Ranch to Rail Program can be used to evaluate my management and selection criteria.
6. A bull fertility test would be a good idea if I want to maximize calving percentage.
7. If my bull is fertile, pregnancy testing my cows is unnecessary.

Key 1. F, 2. F, 3. T, 4. T, 5. T, 6. T, 7. F

Select Performance Tested Sires

Case Study

The Mayfair Ranch Performance Bull Demonstration with TAMU Extension showed an annual \$50 per calf return to producers for extra weaning weight, yearling weight, and heifer value.



Select Sires for Optimum Performance

The combination of the constraints of cow size, pasture and environmental conditions, and level of management will determine actual data selection criteria. However, producers should create a genetic package which could produce the following slaughter animal:

Individual Carcass Trait Targets			
Fat	Fat Thickness, in.	...	0.35
Muscle	Ribeye Area, sq. in.	...	13.2
Weight	Carcass Weight, lbs.	...	750
Cutability	USDA Yield Grade	...	2.5
Quality Grade	USDA Quality Grade	...	Choice
Tenderness	Shear Force Test, lbs. on middle meats	...	less than 8

Cull Cows Based On Reproductive Performance

Maintain the Herd



I use the following guidelines for maintaining my herd:

- _____ Use controlled breeding and calving season.
- _____ Pregnancy test and remove nonbred cows and late calvers.
- _____ Select for an average 12-month calving interval.
- _____ Use proper vaccination control of economically important diseases.
- _____ Use calving pastures and observation, especially for heifers.
- _____ Select for calving ease (no assistance), along with carcass and performance traits.
- _____ Manage for optimum Body Condition Score (BCS.)
- _____ Maintain cow herd records, and use them to cull low producing cows.

Cull the Herd

- _____ Bad udder
- _____ Extremely worn teeth
- _____ Poor eye sight & other eye problems
- _____ Bad behavior
- _____ Bad feet and legs
- _____ Age & poor keeping condition

LOST \$\$\$\$\$\$\$

15% of the nation's cow herd will not calve this year, costing you an average of \$60 per head in lost maintenance expense (NCA, NAHMS, and Texas Beef Cattle Survey.)

Select & Develop Replacement Heifers For Quality Beef Production

Heifer Selection

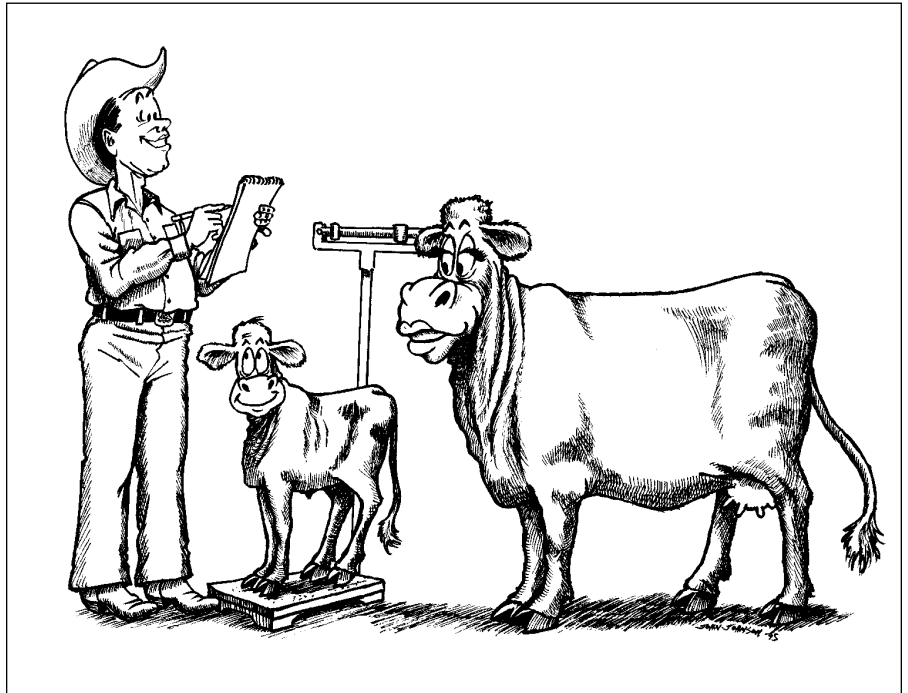
- Breed type and frame size adapted to your ranching operation
- Optimum weaning weights
- Born in the first 45 days of the calving season
- Structural correctness
- Good disposition

Management

- Develop heifers to weigh at least 65% of mature weight at 14 months of age.
- Develop bred heifers to weigh 90% of mature weight at calving.
- Breed 30-45 days before mature cow herd.
- Breed to calve at 22 to 23 months of age.
- Brucellosis vaccination must occur before 10 months of age.
- Breed heifers to calving ease bulls (low actual birth weight and low birth weight EPD's).
- Separate heifers from cows and observe calving.
- Offer assistance in calving if necessary.



Check Performance of Cows



Keep Financial & Performance Records

Standard Performance Analysis (SPA)

SPA is a standardized cow-calf enterprise production and financial performance analysis system. SPA facilitates comparisons of an operation's performance and financial data between years, producers and production regions (Appendix C).

Cull Cows

Cull cows that consistently wean less than 40% of their own body weight or continue to wean light market weight calves.

LOST \$\$\$\$\$\$

Low-end performing cows can cost producers well over \$20 per head per year if not removed from the herd.

Advanced Information

The "Final Exam" For Cow Herd (Sire and Dam)



Minimal Standards

Cull cow herd on the basis of environmental considerations and management constraints. Also consider, progeny feed-lot profitability and expected consumer product satisfaction.

Carcass Value

Select Quality Grade
Yield Grade 2
No Dark Cutters

Growth

ADG 3.0 +
Feed to Gain 7:1
Low Cost of Gain

Taste

Flavorful
Tender
Juicy

Hereford x Brahman Steer Example

(See page 11-13)

At a constant slaughter weight of 1150 lbs., Steer 1 had the genetic ability to produce a USDA Choice, Yield Grade 2 carcass that had tender meat, while Steer 2 had the genetic ability to produce a USDA Standard Yield Grade 4 that was tough. The value difference between these two calves is substantial.

Bull Fertility Test for High Calving Rate

**Breeding
Soundness
Evaluation by
your Veterinarian**



LOST \$\$\$\$\$\$

20% of breeding bulls fail fertility exams, lowering percent calf crop each year (TAMU Research). This could cost the industry up to \$25 loss per calf crop each year.

Physical and Visual Exam of:

- Semen characteristics (motility and morphology)
- Internal sex organs
- External sex organs
- Appropriate sheath score
- Testicle shape and circumference
- Scrotal circumference appropriate for age and breed
- Check for clear eyes
- Sound feet and legs
- Observe bull's mating ability



What About the Future?



Beef Quality: Understanding Your Consumer Now and Into the 21st Century

Jeff W. Savell, Texas A&M University

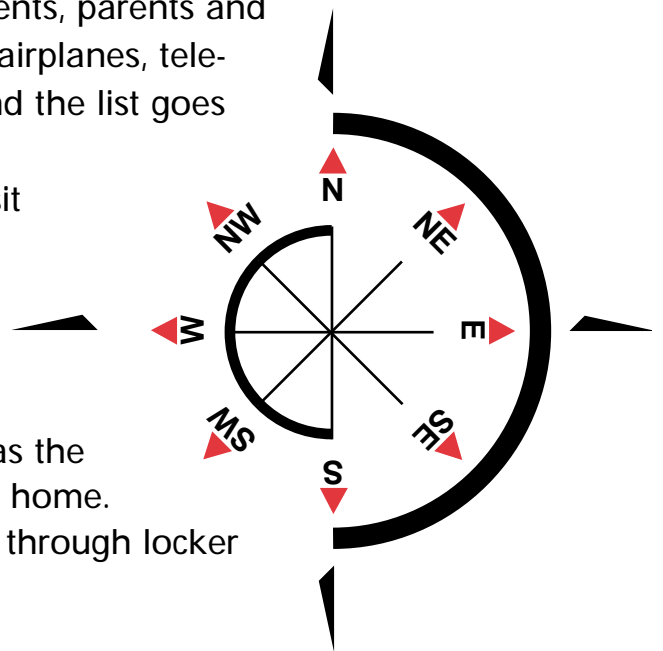
Cattle producers are beginning to understand they are not only in the business of producing cattle, but more importantly, in the business of producing food. To achieve success in providing consumers a high quality, highly valued beef product, it's important to understand the consumer of today and tomorrow.

This section serves as the focal point for what is coming in the 21st century for the beef industry. Actions taken today in improving breeding programs will take effect about the time we begin to learn to write "2000" on our checks and correspondence. Just think of the changes our great-grandparents, grandparents, parents and we have seen in the 20th century: automobiles, airplanes, telephones (even those without wires), televisions, and the list goes on. What will the future hold?

To begin to plan for the 21st century, let's revisit some items of importance in the 20th century that impacted beef:

20th Century

- ✓ Supermarkets replaced the local meat market as the place where consumers purchased beef for the home. People simply don't purchase sides or quarters through locker plants as they did over the first five decades.
- ✓ The varieties of all products – including beef – that consumers can purchase from supermarkets are in the 25,000 to 35,000 item range. Hundreds of different beef products can be found in supermarkets. Consumers have more choices of all products than ever before.
- ✓ Wholesale clubs have made inroads into consumer purchasing patterns. These clubs sell fewer assortments of products but feature larger quantities of those that they sell. Food products, including beef, are now mainstays of these clubs.
- ✓ Microwave ovens became a fixture in American homes with some residences having at least two of these convenience items. Beef never has found a home in the microwave.



- ✓ The inflationary pressures of the 1970s began to influence the work force. More women work today than at any point in the history of the U.S. Availability of convenience products has paralleled the number of women who work outside the home. Ground beef has flourished as a convenience item while roasts have not.
- ✓ What we referred to as traditional families in the past – working husband, stay-at-home wife and mother, and two to three children with a station wagon – are mainly memories longed for by most and captured on film and shown on “Nickelodeon” and other nostalgic cable channels. Today’s “families” rarely eat together anymore. Preparing dinners involving large beef roasts is a thing of the past for most.
- ✓ Development of feedlots in the U.S. after World War II led to the creation of the largest source of high quality, grain-fed beef in the world.
- ✓ Vacuum packaging technology, removing the air from a plastic bag before sealing, allowed the creation and growth of boxed beef. Boxed beef changed where beef is slaughtered from urban areas in the first half of the century to rural areas in the second half.
- ✓ Growth in fast food franchising has created a great outlet for beef. McDonald’s alone has sold some 40 billion hamburgers – equivalent to over 25 million cows! The growth in this market continues at a rapid pace.
- ✓ Pizza is a product in which significant amounts of beef are used. The fact that consumers can order a pizza and have it at their door in about 30 minutes has led to the development of an industry where more pizza may be consumed at home than in a restaurant.
- ✓ In the 1950s, a good beef steak was a thick Porterhouse obtained from your butcher. It is the same today. In the 1950s, a good piece of chicken was one that was from a chicken raised in your back yard and slaughtered on-demand by the head of the household. Today, it is one that is from a 43-day old broiler from controlled genetics and feeding and which is cut, fabricated and packaged centrally.

21st Century

Well enough revisiting. You can see that events of the past have been both positive and negative for the beef industry. Now, what will the future hold?

- ✓ Baby Boomers will retire, creating a great demand for the very leanest and most tender beef that has ever been produced. Will you be ready?
- ✓ Beef’s competitor will be more consistent and uniform than ever. Poultry and pork will

continue to be low-cost, consistent quality products. All of it will be prepacked, mostly cooked, and sold on a per unit basis, not by the pound. How will beef compare?

- ✓ The trend for prepared products will grow. Safety concerns and convenience will drive the need for precooked packaged products. How will beef taste?
- ✓ Packing plants will be fully automated with extensive use of robotics. Packers will request cattle that range only 10 pounds in live weight from their standard, and vary no more than two inches in length and height and width. Will your beef fit these specifications?

How the beef industry, in general, and individual producers, in particular, respond to the next five to ten years may influence to a high degree the success or failure in how these questions are answered.

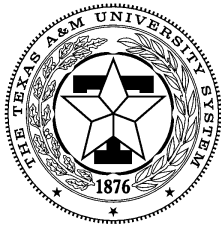
What do producers need to do to be ready for the 21st century? Each must have full knowledge of what they produce today. Think of the compass. It directs you to change your path to get where you should be going. A map, although more detailed, only helps you get where you need to go if you know where you are now. Both instruments are helpful to producers. We must understand the overall direction (the compass) of where beef needs to go, but we must have a map showing where we are and where we need to go to make individual progress. Breed improvement plans, Ranch to Rail programs, progeny testing, and other such tools will continue to help producers make informed decisions.

Learn from this handbook. It is put together by people who care deeply about the beef industry. It is full of practical ideas and recommendations that could and should help everyone improve their products.

As with all industries facing the turn of the century, the competition will be even stiffer, and the demands by the consuming public will be even greater. Every action taken by you to prepare for this task must be informed, well thought out, and with a clear vision of what must be done to plan and prepare. Good luck on your mission to produce the finest, highest quality beef in the world!

Dr. Savell, Professor and E.M. Rosenthal Chairholder in the Department of Animal Science at Texas A&M University, prepared this section as a way to see where beef has succeeded and where beef has not in the past and where the possible challenges are to the industry. All comments and thoughts are his.

Appendix A



Texas Agricultural Extension Service

The Texas A&M University System

Value Added Calf (VAC) Vaccination Management Programs

Feedback of adequate information to most commercial cow-calf producers on how their calves fit the needs of the beef industry has been difficult due to the loss of identity of the ranch of origin as calves move through various marketing channels. Most calves are healthy when they leave the ranch, but stress caused by weaning, transportation, changes in environment, etc. lowers the level of resistance at the same time exposure to disease challenge is increased. The purpose of a vaccination program is to raise the level of resistance to viruses and other pathogens before a disease challenge occurs. A properly designed vaccination program helps reduce medicine costs, lower death losses and enhance production efficiency. Stocker/feeder producers are recognizing this value.

It is critical that the proper vaccines be administered and that adequate time be allowed to develop immunity in an environment where stress is reduced for optimal response. The following vaccination regimes to produce protection against the major viral pathogens are based upon results observed in the Texas A&M Ranch to Rail Program. These regimes resulted in calves with more consistent, predictable, favorable health results.

These programs are designed to get the calves ready to enter the various marketing and production channels after they leave the ranch. Other problems that exist at the ranch level are unique to each operation. Consult with your local veterinarian to access what other health assurance measures are indicated.

The four programs are:

1. Value Added Calf-45 (VAC-45)
2. Value Added Calf-PreWean (VAC-PreWean)
3. Value Added Calf-PreWean Plus (VAC-PreWean Plus)
4. Value Added Calf-PreCon (VAC-PreCon)

1 Value Added Calf-45 (VAC-45)

This program is designed for producers who have the resources to be able to background calves for at least 45 days prior to shipment. This program has been shown to maximize the calf's preparedness to enter various production channels.

There are two vaccination options in this program. One is based upon a pre-weaning vaccination followed by re-vaccination at weaning. The other is based upon vaccination at weaning followed by re-vaccination 14-21 days later. The type of vaccines used depends upon whether or not the calves are nursing or weaned at vaccination. In both options, the cattle are backgrounded at least 45 days after weaning.

Pre-Weaning Option:

Administer an injectable IBR-PI3-BVD-BRSV vaccine 4-6 weeks prior to weaning. If not possible to vaccinate 4-6 weeks prior to weaning, the alternative is to vaccinate at 2-4 months of age when the calves are worked at branding. If this alternative is followed, administer an intranasal modified live IBR-PI3 vaccine at the same time the injectable IBR-PI3-BVD-BRSV vaccine is given. Better immunity is generally established when the calves are older at vaccination due to less maternal antibody interference and the presence of a more functional immune system in the calf. That is why vaccination 4-6 weeks prior to weaning is preferred. The IBR and PI3 components of the injectable vaccine must be chemically altered modified live, the BVD killed and the BRSV modified live. The vaccines must have label clearance for use in calves nursing pregnant cows.

When the calves are weaned, re-vaccinate with an injectable IBR-PI3-BVD-BRSV vaccine. The IBR and PI3 components must be modified live while the BVD and BRSV can be either modified live or killed.

Weaning Option:

If the calves did not receive a pre-weaning vaccination, administer an intranasal modified live IBR-PI3 vaccine and an injectable IBR-PI3-BVD-BRSV vaccine at weaning. Re-vaccinate with an injectable IBR-PI3-BVD-BRSV vaccine 14-21 days later. The IBR and PI3 components of the injectable vaccine must be modified live. The BVD and BRSV can be either modified live or killed.

2 Value Added Calf-PreWean (VAC-PreWean)

Some producers don't have the resources to be able to background calves. VAC-PreWean is a management program designed to increase the level of resistance prior to weaning so that calves have more immunity as they enter various market channels. This program is based upon a pre-weaning vaccination at branding with the calves being shipped at weaning.

Vaccinate against IBR-PI3-BVD-BRSV with an injectable vaccine and an intranasal modified live IBR-PI3 vaccine when the calves are worked at 2-4 months of age. The IBR and PI3 components of the injectable vaccine must be chemically altered modified live, the BVD killed and the BRSV modified live. The vaccines must have label clearance for use in calves nursing pregnant cows.

3 Value Added Calf-PreWean Plus (VAC-PreWean Plus)

Some producers have the resources to be able to gather their calves prior to weaning, vaccinate them and place them back with the cows for a period of time prior to weaning. This allows time to develop immunity in an environment that is generally less stressful and where exposure to pathogens is minimal. Better immunity is generally established in older calves due to less maternal antibody interference and a more functional immune system. However, vaccinations given less than 3 weeks prior to weaning don't generally provide adequate levels of immunity to assure the protection needed post-weaning.

VAC-PreWean Plus is based upon administration of an injectable IBR-PI3-BVD-BRSV vaccine and an intranasal modified live IBR-PI3 vaccine 4-6 weeks prior to weaning with the calves being shipped at weaning. The IBR and PI3 components of the injectable vaccine must be chemically altered modified live, the BVD killed and the BRSV modified live. The vaccines must have label clearance for use in calves nursing pregnant cows.

4 Value Added Calf-PreCon (VAC-PreCon)

Producers that purchase weaned calves and background them on pasture or in a drylot situation are a major source of stocker/feeder cattle. VAC-PreCon is a vaccination management program designed to help ensure healthy stocker/feeders. This program is based upon cattle put together from various sources that are preconditioned or backgrounded for at least 45 days.

Administer an intranasal modified live IBR-PI3 vaccine and an injectable IBR-PI3-BVD-BRSV vaccine upon arrival. Re-vaccinate with the injectable vaccine 14-21 days later. The IBR and PI3 components of the injectable vaccine must be modified live and the BVD and BRSV can be either modified live or killed. (Note: If no known history of vaccination against clostridial organisms, vaccinate and booster at the same time virus vaccines are administered.

Injectable IBR-P13-BVD-BRSV Vaccines

That Meet the Criteria for *Post-Weaning* Vaccinations
in the Value Added Calf (VAC) Program

- All have the full complement of IBR-P13-Bvd-BRSV Vaccines that meet the Criteria for Post-Weaning Vaccinations in the Value Added Calf (VAC) Program
- All contain IBR and P13 that are modified live.
- None are cleared for use in calves nursing pregnant cows.

M = Modified Live

K = Killed

Trade Name	Manufacturer	IBR	P13	BVD	BRSV	Cleared In Calves Nursing Pregnant Cows
BoviShield 4®	Pfizer	M	M	M	M	NO
BoviShield 4+L5®	Pfizer	M	M	M	M	NO
BRSV Vac® 4	Bayer	M	M	M	M	NO
BRSV Vac® 9	Bayer	M	M	M	M	NO
Preg-Guard 9+BRSV®	Pfizer	M	M	M	M	NO
Pyramid MLV4	Fort Dodge	M	M	M	M	NO
Resvac®4/Somubac	Pfizer	M	M	M	M	NO
BoviShield 4® (BVD-K)	Pfizer	M	M	K	M	NO
Horizon I+Vac3	Bayer	M	M	K	M	NO
HerdVac® 4	BioCor	M	M	M	K	NO
Tandem SV+3	Rhone Merieux	M	M	M	K	NO
Odyssey 3 LV+K BRSV	AgriLabs	M	M	M	K	NO
Tandem SV+3 IBR Plus	Rhone Merieux	M+K	M	M	K	NO
Tandem 4KL	Rhone Merieux	M	M	K	K	NO
HerdVac® 4KL	BioCor	M	M	K	K	NO
Odyssey 4 LVK	AgriLabs	M	M	K	K	NO
Tandem 4KL IBR Plus	Rhone Merieux	M+K	M	K	K	NO

Injectable IBR-PI3-BVD-BRSV Vaccines

That Meet the Criteria for *Pre-Weaning* Vaccinations in the Value Added Calf (VAC) Programs

- All have the full complement of IBR-PI3-BVD-BRSV.
- All contain IBR an PI3 that are chemically altered modified live, killed BVD and modified live BRSV.
- All are cleared for use in calves nursing pregnant cows.

CA = Chemically Altered Modified Live
M = Modified Live
K = Killed

Trade Name	Mfr.	IBR	P13	BVD	BRSV	Cleared for Use in Calves Nursing Pregnant Cows
CattleMaster 4 [®]	Pfizer	CA	CA	K	M	Yes
CattleMaster 4+15 [®]	Pfizer	CA	CA	K	M	Yes
CattleMaster 4+ VL5 [®]	Pfizer	CA	CA	K	M	Yes

Intranasal IBR-PI3 Vaccines

That Meet the Criteria for Use in The Value Added Calf (VAC) Programs

- All contain modified live IBR and PI3.
- All have label clearance for use in calves nursing pregnant cows.

Trade Name	Manufacturer	Cleared for Use in Calves Nursing Pregnant Cows
Nasalgen IP	Mallinckrodt	Yes
Nasal-Ject IP	AgriLabs	Yes
TSV-2	Pfizer	Yes

In addition to the specific recommendations for each program, producers need to implement the following:

- Provide adequate nutrition (including minerals and trace minerals) to facilitate adequate growth and to enhance the immune process.
- Vaccinate against the Clostridial organisms (Blackleg, etc.) when the calves are worked at 2-4 months of age and booster at weaning or when calves are 4-6 months old. Vaccinate calves in the VAC-PreCon option upon arrival if no known history of recent Clostridial vaccination.
- When possible use vaccines and antibiotics with label clearance for subcutaneous injection to reduce muscle tissue injection site blemishes. Use the "tenting" tissue injection site blemishes. Use the "tenting" tissue injection site blemishes. Use the "tenting" technique and proper needle size and length.
- Include other vaccines and management practices that are unique to your operation or are of value to the purchaser of your cattle.
- If products must be given intramuscularly, use low dose products with evidence of minimal tissue irritation.
- Don't administer over 10 cc. of product in a single site.
- Administer all shots in front of the shoulder.
- Only clean needles should enter the vaccine/medicine bottle.
- Change needles frequently (after 10-20 uses).
- Use a disinfectant to clean needles between injections EXCEPT when administering modified live or chemically altered modified live vaccines. Inject only into clean areas and change needles more often when using modified live virus vaccines.
- Always read and follow the label directions.

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Appendix B



Withdrawal Time Charts

The following pages contain a reference table listing products alphabetically by trade name, the appropriate species, the route of administration and the corresponding withdrawal times in meat. The withdrawal times listed correspond to label dosages only.

Every effort has been made to ensure the accuracy of the information published. However, it remains the responsibility of the readers to familiarize themselves with the product information contained on the product label or package insert.

The data contained in this document was supplied to the publisher of the Compendium of Veterinary Products. Copies of the publication, which contains over 4600 product monographs, are available from -
North American Compendiums, Inc., 942 Military Street, Port Huron MI 48060
Tel. 800-350-0627

Withdrawal Time Chart Abbreviations

I.A.	Intra-articular	I.R.	Intraruminal
I.M.	Intramuscular	I.U.	Intra-uterine
I.M.M.	Intramammary	I.V.	Intravenous
I.N.	Intranasal	S.C.	Subcutaneous
I.O.	Intraocular	d	Days
I.P.	Intraperitoneal	h	Hours

Product Name	Company Name	Species	Route of Administration	Meat
1% Vapona Insecticide	Durvet	Cattle	Topical	-
Note: Do not apply to calves under 6 months of age.				
3% Rabon® Livestock Dust	Durvet	Cattle	Topical	-
5% Dextrose Injection, USP	Rhone Merieux	Beef cattle	I.V., S.C.	-
5-Way Calf Scour Bolus™	AgriLabs	Calves	Oral	14d
7-Way/Somnus	Aspen	Cattle	I.M., S.C.	21d
20% Sulfaquinoxaline Sodium Solution	Loveland	Cattle	Oral	10d
20/20™	Bayer Corporation	Cattle	S.C.	21d
50% Dextrose Injection, USP	A.H.A.	Beef cattle	I.V.	-
31.92% Sul-Q-Nox	Russell	Cattle	Oral	10d
Absolute™	AgriLabs	Cattle	I.M.	60d
Absolute™ M	AgriLabs	Cattle	I.M., S.C.	60d
Absorbine® Flys-X® Insecticide	W.F. Young	Cattle	Topical	-
Action™ 200	Mallinckrodt	Cattle	I.M., I.V.	28d
AD-5	Premier Farmtech	Beef cattle	I.M., I.R., S.C.	-
ADE-Sol	Vet-A-Mix	Beef cattle	Oral	-
A-D Injection	Durvet	Cattle	I.M.	60d
Advance™ A.S.A.P.™	Milk Specialties	Calves	Oral	
Note: Do not use in calves to be processed for veal.				
Advance™ Calf Medic®	Milk Specialties	Cattle	Oral	30d
Advance™ Calf Medic® Concentrate	Milk Specialties	Cattle	Oral	30d
After-Birth Bolus	AgriPharm	Beef cattle	I.U., Topical	-
After-Birth Bolus	RXV	Beef cattle	I.U., Topical	-
Agri-Cillin™	AgriLabs	Cattle	I.M.	10d
AgriCyl	Anthony	Cattle	I.V.	19d
Note: Do not use in calves to be processed for veal.				
Agrimycin™-100	AgriLabs	Cattle	I.V.	22d
Note: Use beyond four (4) days may result in tissue residues beyond the withdrawal time.				
Agrimycin® 200	AgriLabs	Cattle	I.M.	28d
Albon® Boluses	Pfizer Animal Health	Cattle	Oral	7d
Note: Do not use in calves to be processed for veal.				
Albon® Concentrated Solution 12.5%	Pfizer Animal Health	Cattle	Oral	7d
Note: Do not use in calves to be processed for veal.				
Albon® Injection 40%	Pfizer Animal Health	Cattle	I.V.	5d
Note: Do not use in calves to be processed for veal.				

Withdrawal Time Charts

Withdrawal times listed correspond to label dosages only.

Product Name	Company Name	Species	Route of Administration	Meat
Albon® Soluble Powder	Pfizer Animal Health	Cattle	Oral	7d
Note: Do not use in calves to be processed for veal.				
Albon® SR Bolus	Pfizer Animal Health	Cattle	Oral	21d
Note: Do not use in calves to be processed for veal.				
All-In-One Calf Bolus	RXV	Beef cattle Calves	Oral Oral	- -
Note: No withdrawal time is necessary.				
All-In-One Cattle Bolus	RXV	Beef cattle	Oral	-
Note: No withdrawal time is necessary.				
Alpha-7™	Anchor	Cattle	S.C.	60d
Alpha-7™	Bio-Ceutic	Cattle	S.C.	60d
Alpha-CD™	Anchor	Cattle	S.C.	60d
Alpha-CD™	Bio-Ceutic	Cattle	S.C.	60d
AluSpray®	Vétoquinol	Beef cattle	Topical	-
A-Lyte Concentrate	Durvet	Beef cattle	Oral	-
A-Lyte Solution	Durvet	Beef cattle	Oral	-
Ambi-Pen™	Butler	Beef cattle	S.C.	30d
Amcalcilyte Forte	Phoenix	Beef cattle	Oral	-
Amcalcilyte Forte	Vedco	Beef cattle	Oral	-
Amino Acid Bolus	AgriLabs	Beef cattle	Oral	-
Amino Acid Boluses	AgriPharm	Beef cattle	Oral	-
Amino Acid Boluses	RXV	Beef cattle	Oral	-
Amino Acid Concentrate	AgriLabs	Beef cattle	Oral	-
Amino Acid Concentrate Oral Solution	Aspen	Beef cattle	Oral	-
Amino Acid Concentrate Oral Solution	A.H.A.	Beef cattle	Oral	-
Amino Acid Oral Concentrate	Phoenix	Beef cattle	Oral	-
Amino Acid Oral Solution	A.H.A.	Beef cattle	Oral	-
Amino Acid Oral Solution	Aspen	Beef cattle	Oral	-
Amino Acid Oral Solution	Phoenix	Beef cattle	Oral	-
Amino Acid Solution	AgriLabs	Beef cattle	Oral	-
Aminocal Plus™	Butler	Beef cattle	Oral	-
Amino Concentrate 34X	Wendt	Beef cattle	Oral	-
Aminoplex	Butler	Beef cattle	Oral	-
Aminoplex Concentrate	Butler	Beef cattle	Oral	-
Amino Plus Bolus	A.H.A.	Cattle	Oral	-
Amino Plus Concentrate	AgriPharm	Beef cattle	Oral	-
Amino Plus Concentrate	RXV	Beef cattle	Oral	-
Amino Plus Solution	AgriPharm	Beef cattle	Oral	-
Amino Plus Solution	RXV	Beef cattle	Oral	-
Amoxi-Bol®	Pfizer Animal Health	Calves	Oral	20d
Amoxi-Inject® (Cattle)	Pfizer Animal Health	Cattle	I.M., S.C.	25d
Amoxi-Mast®	Pfizer Animal Health	Cattle	I.M.M.	12d
Anaject™ 100	Premier Farmtech	Cattle	I.V.	22d
Anaplaz®	Fort Dodge	Cattle	S.C.	60d
Ana-Sorb™	Wendt	Beef cattle	Oral	-
Anthrax Spore Vaccine	Colorado Serum	Cattle	S.C.	60d
Note: If emergency conditions require vaccination of animals reaching market age and condition, these should not be offered for slaughter in less than 60 days after administration of the vaccine.				
Aquacillin™	Vedco	Cattle	I.M.	10d
Aquaject	Vetus	Beef cattle	I.M., I.V., S.C.	-
Aqueous Fly Spray	Loveland	Beef cattle	Topical	-
Aspirin 60 Grain	Butler	Cattle	Oral	-
Aspirin 240 Grain Boluses	Vedco	Cattle	Oral	-
Aspirin 480 Grain Boluses	Vedco	Cattle	Oral	-
Aspirin Bolus	Durvet	Beef cattle	Oral	-
Aspirin Bolus	Phoenix	Cattle	Oral	-
Aspirin Boluses	A.H.A.	Cattle	Oral	-
Aspirin Boluses	AgriLabs	Cattle	Oral	-
Aspirin Boluses	AgriPharm	Beef cattle	Oral	-
Aspirin Boluses	Butler	Cattle	Oral	-
Aspirin Boluses	Premier Farmtech	Cattle	Oral	-
Aspirin Boluses 240 grains	RXV	Cattle	Oral	-
Aspirin Boluses 480 grains	RXV	Beef cattle	Oral	-
Aspirin Powder	Butler	Beef cattle	Oral	-
Aspirin Powder	First Priority	Cattle	Oral	-
Aspirin Powder	RXV	Beef cattle	Oral	-
Aspirin Powder	Vedco	Beef cattle	Oral	-

Product Name	Company Name	Species	Route of Administration	Meat
Aspirin Tablets	Vedco	Cattle	Oral	-
Atroban® Delice® Pour-On Insecticide	Mallinckrodt	Beef cattle	Topical	-
Atroban® Extra Insecticide Ear Tags	Mallinckrodt	Cattle	Ear tags	-
Note: Remove tags before slaughter.				
Atropine L.A.	Butler	Beef cattle	I.M., I.V., S.C.	-
Atropine Sulfate Injection 15 mg/mL L.A.	RXV	Beef cattle	I.M., I.V., S.C.	-
Atropine Sulfate Injection 15 mg/mL L.A.	W.V.S.	Beef cattle	I.M., I.V., S.C.	-
Atropine Sulfate Injection L.A.	Vedco	Beef cattle	I.M., I.V., S.C.	-
Aureomycin® 50 Granular Type A Medicated Article	Roche Vitamins	Beef cattle Cattle	Oral Oral	10d 48h
Note: Not to be administered to beef cattle and non-lactating dairy cattle within 48 hours of slaughter at levels of 350 mg or more per head per day. Not to be fed to beef cattle at 5.0 mg/lb. body weight per day within 10 days of slaughter.				
Aureomycin® 90 Granular Type A Medicated Article	Roche Vitamins	Beef cattle Cattle	Oral Oral	10d 48h
Note: Not to be administered to beef cattle and non-lactating dairy cattle within 48 hours of slaughter at levels of 350 mg or more per head per day. Not to be fed to beef cattle at 5.0 mg/lb. body weight per day within 10 days of slaughter.				
Aureomycin® 100 Granular Type A Medicated Article	Roche Vitamins	Beef cattle Cattle	Oral Oral	10d 48h
Note: Not to be administered to beef cattle and non-lactating dairy cattle within 48 hours of slaughter at levels of 350 mg or more per head per day. Not to be fed to beef cattle at 5.0 mg/lb. body weight per day within 10 days of slaughter.				
Aureomycin® Soluble Calf Oblets®	Fort Dodge	Calves	Oral	24h
Aureomycin® Soluble Powder	Fort Dodge	Calves	Oral	24h
Aureomycin® Soluble Powder Concentrate	Fort Dodge	Calves	Oral	24h
Aureomycin® Tablets	Fort Dodge	Calves	Oral	24h
Aureo S 700® Type A Medicated Article	Roche Vitamins	Beef cattle	Oral	7d
Azium® Solution	Schering-Plough	Beef cattle	I.M., I.V.	-
Bacifer® 50 Type A Medicated Article	Roche Vitamins	Beef cattle	Feed	-
Balance™ Oral Mineral Supplement	Bayer Corporation	Beef cattle	Oral	-
Bar-4®	Anchor	Cattle	I.M.	21d
Bar-4™/Somnus	Anchor	Cattle	I.M.	21d
Bar-Guard-99™	Anchor	Cattle	Oral	21d
Bar Somnus™	Anchor	Cattle	I.M.	21d
Bar Somnus™-2P	Anchor	Cattle	I.M.	21d
Bar-Vac® 7/Somnus	Anchor	Cattle	I.M.	21d
Bar-Vac®.CD/T	Anchor	Cattle	I.M., S.C.	21d
B-Comject 150	Vetus	Beef cattle	I.M., I.V.	-
B-Comject Forte	Vetus	Cattle	I.M., S.C.	-
B Complex One-Fifty	Phoenix	Beef cattle	I.M., I.V.	-
B Complex One-Fifty Injection	Vedco	Beef cattle	I.M., I.V.	-
B Complex with C and B-12 Injection	Butler	Beef cattle	I.M., I.V.	-
B Complex with C and B-12 Injection	Steris	Beef cattle	I.M., I.V.	-
Benza-Pen®	W.V.S.	Beef cattle	S.C.	30d
Note: Do not use in calves to be processed for veal. Treatment in beef cattle must be limited to two (2) doses.				
Bicarboject	Vetus	Beef cattle	I.V.	-
BioDres® Wound Dressing	DVM	Beef cattle	Topical	-
Biolyte®	Pharmacia & Upjohn	Beef cattle	Oral	-
Bio-Mycin® 200	Bio-Ceutic	Cattle Cattle	I.M., I.V. S.C.	28d 36d
Bio-Mycin® C	Bio-Ceutic	Cattle	I.M.	18d
Note: Do not use in calves to be processed for veal. Use beyond four (4) days may result in tissue residues beyond the withdrawal time.				
Biopect™	Durvet	Beef cattle	Oral	-
Biosol® Liquid	Pharmacia & Upjohn	Cattle	Oral	30d
Note: Not to be used in veal calves.				
Bismu-Kote Suspension	Vedco	Beef cattle	Oral	-
Bismusal	A.H.A.	Beef cattle	Oral	-
Bismusal	Chem-Tronics	Beef cattle	Oral	-
Bismusal Suspension	RXV	Beef cattle	Oral	-
Bismusol	First Priority	Cattle	Oral	-
Bloat Guard® Liquid Type A Medicated Article	Pfizer Animal Health	Beef cattle	Oral	-
Bloat Guard® Top Dressing Medicated	Pfizer Animal Health	Beef cattle	Oral	-
Bloat Guard® Type A Medicated Article	Pfizer Animal Health	Beef cattle	Feed	-
Bloat-Pac®	Vet-A-Mix	Cattle	I.R., Oral	-
Bloat Treatment	AgriPharm	Cattle	Oral	3d
Bloat Treatment	Butler	Beef cattle	Oral	-

Withdrawal Time Charts
Withdrawal times listed correspond to label dosages only.

Product Name	Company Name	Species	Route of Administration	Meat
Bloat Treatment	RXV	Cattle	Oral	3d
Blood Stop Powder	AgriLabs	Cattle	Topical	-
Note: Not for use on animals intended for food purposes.				
Blood Stop Powder	AgriPharm	Beef cattle	Topical	-
Blood Stop Powder	Aspen	Beef cattle	Topical	-
Blood Stop Powder	Durvet	Beef cattle	Topical	-
Blood Stop Powder	RXV	Beef cattle	Topical	-
Bluelite™ C	TechMix	Beef cattle	Oral	-
Blue Lotion Spray	Anchor	Beef cattle	Topical	-
Blue Lotion Topical Antiseptic	First Priority	Cattle	Topical	-
BMD® 30	Alpharma	Beef cattle	Feed	-
BMD® 50	Alpharma	Beef cattle	Feed	-
BMD® 60	Alpharma	Beef cattle	Feed	-
Bo-Bac-2X™	Anchor	Cattle	S.C.	21d
Boltan III™	Butler	Cattle	Oral	-
BO-SE®	Schering-Plough	Calves	I.M., S.C.	30d
Boss™ Pour-On Insecticide	Mallinckrodt	Cattle	Topical	-
BovaMune™	AgriLabs	Cattle	I.M., S.C.	21d
Bova-Pro® Gel	RXV	Beef cattle	Oral	-
Note: No withdrawal time is necessary.				
Bovatec®	Roche Vitamins	Cattle	Oral	-
Note: Do not use in calves to be processed for veal.				
BovaZine SR	Vedco	Cattle	Oral	8d
Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.				
BovaZine SR Calf Bolus	Vedco	Cattle	Oral	8d
Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.				
BovEye®	Pfizer Animal Health	Cattle	S.C.	21d
Bovi-K 4™	Pfizer Animal Health	Cattle	I.M.	21d
Bovine 3	Durvet	Cattle	I.M., S.C.	21d
Bovine 4	Durvet	Cattle	I.M., S.C.	21d
Bovine 4 KL	Durvet	Cattle	I.M., S.C.	21d
Bovine 8	Durvet	Cattle	I.M., S.C.	21d
Bovine 9	Durvet	Cattle	I.M., S.C.	21d
Bovine Bluelite™	TechMix	Beef cattle	Oral	-
Bovine Ecolizer®	Grand	Cattle	Oral	21d
Bovine Ecolizer®+C	Grand	Cattle	Oral	21d
Bovine Maximizer™	Grand	Beef cattle	Oral	-
Bovine Past-OneVac	Durvet	Cattle	I.M.	21d
Bovine Pili Shield™	Grand	Cattle	I.M.	60d
Bovine Rhinotracheitis-Parainfluenza ₃ Vaccine	Colorado Serum	Cattle	I.M.	21d
Bovine Rhinotracheitis-Virus Diarrhea-Parainfluenza-3 Vaccine	Colorado Serum	Cattle	I.M.	21d
Bovi-Sera™ Antiserum	Colorado Serum	Cattle	I.M., S.C.	21d
BoviShield® 3	Pfizer Animal Health	Cattle	I.M.	21d
BoviShield® 4	Pfizer Animal Health	Cattle	I.M.	21d
BoviShield® 4+L5	Pfizer Animal Health	Cattle	I.M.	21d
BoviShield® BRSV	Pfizer Animal Health	Cattle	I.M.	21d
BoviShield® IBR	Pfizer Animal Health	Cattle	I.M.	21d
BoviShield® IBR-BRSV-LP	Pfizer Animal Health	Cattle	I.M.	21d
BoviShield® IBR-BVD	Pfizer Animal Health	Cattle	I.M.	21d
BoviShield® IBR-BVD-BRSV-LP	Pfizer Animal Health	Cattle	I.M.	21d
BoviShield® IBR-PI ₃ -BRSV	Pfizer Animal Health	Cattle	I.M.	21d
BP-1	AgriPharm	Beef cattle	Oral	-
BRD-1®	Franklin	Cattle	I.M., S.C.	21d
Breed-Back-10	Anchor	Cattle	I.M.	21d
Breed-Back-10	Bio-Ceutic	Cattle	I.M.	21d
BRSV Vac®	Bayer Corporation	Cattle	I.M., S.C.	21d
BRSV Vac® 3	Bayer Corporation	Cattle	I.M.	21d
BRSV Vac® 4	Bayer Corporation	Cattle	I.M.	21d
BRSV Vac® 9	Bayer Corporation	Cattle	I.M.	21d
BRSV Vac® F3Lp	Bayer Corporation	Cattle	I.M.	21d
Note: Not for use in pregnant animals.				
Brucella Abortus Vaccine	Colorado Serum	Cattle	S.C.	21d
Brucella Abortus Vaccine	Coopers	Cattle	S.C.	21d
Brucella Abortus Vaccine (Strain 19)	Professional Biological	Cattle	S.C.	21d
Brucella Abortus Vaccine (Strain RB-51)	Professional Biological	Cattle	S.C.	21d
Cal-Dex CMPK	A.H.A.	Beef cattle	I.V.	-

Product Name	Company Name	Species	Route of Administration	Meat
Cal-Dex C-M-P-K	ProLabs	Beef cattle	I.V.	-
Cal-Dex CMPK	Wendt	Cattle	I.V.	-
Cal Dex CMPK Injection	Aspen	Beef cattle	I.V.	-
Cal-Dextro® No. 2	Fort Dodge	Beef cattle	I.M., I.P., I.V., S.C.	-
Cal-Dextro® Special	Fort Dodge	Beef cattle	I.M., I.P., I.V., S.C.	-
Calf Electrolytes	Solvay	Beef cattle	Oral	-
Calf Formula SF	RXV	Beef cattle	Oral	-
Calf-Guard®	Pfizer Animal Health	Cattle	I.M., Oral	21d
Calf Quencher	Vedco	Beef cattle	Oral	-
Calf Rehydrate	Durvet	Beef cattle	Oral	-
Calf Restart One-4®	TechMix	Calves	Oral	-
Calf Scour Bolus Antibiotic	Durvet	Calves	Oral	24h
Note: Do not use in calves to be processed for veal.				
Cal MP-1000	Butler	Beef cattle	I.V.	-
Cal-MP 1700™	Butler	Beef cattle	I.V.	-
Cal-MPK 1069	Butler	Beef cattle	I.V.	-
Cal-MPK 1234™	Butler	Beef cattle	I.V.	-
Cal-Phos #2	Vedco	Beef cattle	I.V.	-
Cal-Phos #2 Injection	Phoenix	Beef cattle	I.V.	-
Cal-Phos #2 with Potassium Injection	Phoenix	Beef cattle	I.V.	-
Carmilax® Bolets® and Carmilax® Powder	Pfizer Animal Health	Cattle	Oral	-
Catron III™	Bio-Ceutic	Beef cattle	Topical	-
CattleMaster® 4	Pfizer Animal Health	Cattle	I.M.	21d
CattleMaster® 4+L5	Pfizer Animal Health	Cattle	I.M.	21d
CattleMaster® 4+VL5	Pfizer Animal Health	Cattle	I.M.	21d
CattleMaster® BVD-K	Pfizer Animal Health	Cattle	I.M.	21d
Cattle-Vac™ 4	Durvet	Cattle	I.M., S.C.	21d
Cattle-Vac™ 4-Somnus	Durvet	Cattle	I.M., S.C.	21d
Cattle-Vac™ 8	Durvet	Cattle	I.M., S.C.	21d
Cattle-Vac™ 9	Durvet	Cattle	I.M., S.C.	21d
Cattle-Vac™ 9-Somnus	Durvet	Cattle	I.M., S.C.	21d
Cattlyst® 50	Roche Vitamins	Beef cattle	Feed	-
C & D Antitoxin	Anchor	Cattle	S.C.	21d
C-D Antitoxin	Bio-Ceutic	Cattle	S.C.	21d
C & D Toxoid	Anchor	Cattle Sheep	S.C. S.C.	21d 21d
C & D Toxoid	Aspen	Cattle	I.M., S.C.	21d
Cefa-Dri®	Fort Dodge	Dairy cattle	I.M.M.	42d
Note: Not to be used within 30 days of calving.				
Chlora-Cycline	RXV	Cattle	Oral	24h
Note: Do not use in calves to be processed for veal.				
Chlora-Lube	AgriLabs	Beef cattle	I.U., Topical	-
ChlorhexiDerm™ Disinfectant	DVM	Cattle	Topical	-
ChlorhexiDerm™ Scrub	DVM	Beef cattle	Topical	-
Chlorhexidine Disinfectant Solution	AgriLabs	Beef cattle	Topical	-
Chlorhexidine Scrub	First Priority	Beef cattle	Topical	-
Chlorhexi-Lube	First Priority	Cattle	Topical	-
ChlorHex Surgical Scrub	Vedco	Beef cattle	I.U., Topical	-
Chlor-Scrub 40™	Butler	Beef cattle	Topical	-
Chorionic Gonadotropin	Butler	Beef cattle	Intrafollicular, I.M., I.V.	-
Chorionic Gonadotropin for Injection, USP	Steris	Beef cattle	Intrafollicular, I.M., I.V.	-
Chorulon®	Intervet	Beef cattle	I.M.	-
C-Ject 250	Vetus	Beef cattle	I.M., I.V.	-
Clostratox® BCD	Grand	Cattle	S.C.	21d
Clostratox® C	Grand	Cattle	S.C.	21d
Clostratox® Ultra C 1300	Grand	Cattle	S.C.	21d
Clostridial 7-Way	AgriLabs	Cattle	I.M., S.C.	21d
Clostridial 7-Way plus Somnumune™	AgriLabs	Cattle	I.M., S.C.	21d
Clostridial 8-Way	AgriLabs	Cattle	I.M., S.C.	21d
Clostridium Chauvoei-Septicum Bacterin	Colorado Serum	Cattle	S.C.	21d
Clostridium Chauvoei-Septicum-Novyi-Sordellii Bacterin-Toxoid	Colorado Serum	Cattle	I.M., S.C.	21d
Clostridium Chauvoei-Septicum-Pasteurella Haemolytica-Multocida Bacterin	Colorado Serum	Cattle	S.C.	21d
Clostridium Perfringens Type C Antitoxin	Colorado Serum	Cattle	I.V., S.C.	21d

Withdrawal Time Charts

Withdrawal times listed correspond to label dosages only.

Product Name	Company Name	Species	Route of Administration	Meat
Clostridium Perfringens Types C & D Antitoxin	Colorado Serum	Cattle	S.C.	21d
Note: If emergency conditions require vaccination of animals reaching market age and condition, these should not be offered for slaughter in less than 21 days after administration of the vaccine.				
Clostridium Perfringens Types C & D-Tetanus Toxoid	Colorado Serum	Cattle	I.M., S.C.	21d
Clostridium Perfringens Types C & D Toxoid	Colorado Serum	Cattle	I.M., S.C.	21d
Clostri Shield® 7 Way	Grand	Cattle	I.M., S.C.	21d
Clostri Shield® 8 Way	Grand	Cattle	I.M., S.C.	21d
Clostri Shield® BCD	Grand	Cattle	I.M.	21d
Clostri Shield® C	Grand	Cattle	I.M.	21d
Clostri Shield® D	Grand	Cattle	I.M.	21d
Clovite®	Franklin	Beef cattle	Oral	-
Clovite® Conditioner	Fort Dodge	Beef cattle	Oral	-
CLTC® 100 MR	Pfizer Animal Health	Beef cattle	Oral	-
CMPK	RXV	Beef cattle	I.V.	-
C M P K	W.V.S.	Beef cattle	I.V.	-
CMPK-Dex	Vetus	Cattle	I.V.	-
C-M-P-K Injection	Vet Tek	Beef cattle	I.V.	-
CMPK Oral	AgriPharm	Beef cattle	Oral	-
CMPK-Oral Solution 33%	Vedco	Beef cattle	Oral	-
CMPK Reinforced	Vedco	Beef cattle	I.V.	-
CMPK Solution	Aspen	Cattle	Oral	-
CMPK Solution	Vedco	Beef cattle	I.V.	-
Colostrum-Guard	Jorgensen	Beef cattle	Oral	-
Colostrum-Plus	Jorgensen	Beef cattle	Oral	-
Colostrum Powder	Vedco	Beef cattle	Oral	-
Colostrx®	Schering-Plough	Calves	Oral	-
Combicillin	Anthony	Beef cattle	S.C.	30d
Comeback™	AgriPharm	Calves	Oral	-
Comeback™	RXV	Calves	Oral	-
Commando™ Insecticide Cattle Ear Tag	Fermenta	Cattle	Ear tags	-
Note: Remove tags before slaughter.				
Compudose® 200	VetLife	Beef cattle	Implant	-
Conquest™-1+3	Aspen	Cattle	I.M., S.C.	21d
Conquest™-4K	Aspen	Cattle	I.M., S.C.	21d
Conquest™-4K+H.S.	Aspen	Cattle	I.M., S.C.	21d
Conquest™-4KW	Aspen	Cattle	I.M.	21d
Conquest™-4KW+H.S.	Aspen	Cattle	I.M.	21d
Conquest™ 5K+VL5 (oil base)	Aspen	Cattle	I.M.	60d
Conquest™ 5K (oil base)	Aspen	Cattle	I.M.	60d
Conquest™-8K	Aspen	Cattle	I.M., S.C.	21d
Conquest™-9K	Aspen	Cattle	I.M., S.C.	21d
Conquest™-9K+H.S.	Aspen	Cattle	I.M., S.C.	21d
Controlled Iodine Spray	Durvet	Beef cattle	Topical	-
Controlled Iodine Spray	Vet Tek	Beef cattle	Topical	-
Copasure®-12.5	Schering-Plough	Calves	Oral	-
Copasure®-25	Schering-Plough	Cattle	Oral	-
Co-Ral® 1%	Durvet	Cattle	Topical	-
Co-Ral® 1% Dust	AgriLabs	Beef cattle	Topical	-
Co-Ral® 25% Wettable Powder	Bayer Corporation	Cattle	Topical	-
Co-Ral® Animal Insecticide 1% Dust	A.H.A.	Beef cattle	Topical	-
Co-Ral® Emulsifiable Livestock Insecticide	Bayer Corporation	Cattle	Topical	-
Co-Ral® Livestock Insecticide Spray	Bayer Corporation	Cattle	Topical	-
Corid® 1.25% Crumbles	Merck AgVet	Calves	Oral	24h
Corid® 9.6% Oral Solution	Merck AgVet	Calves	Oral	24h
Corid® 20% Soluble Powder	Merck AgVet	Calves	Oral	24h
Corrective Suspension	Phoenix	Beef cattle	Oral	-
Cow-Vac® 9	Aspen	Cattle	I.M., S.C.	21d
Crystiben®	Solvay	Beef cattle	S.C.	30d
Crysticillin® 300 A.S.	Solvay	Calves Cattle	I.M. I.M.	7d 4d
CTC 50	Alpha	Cattle	Oral	48h
CTC 50	Durvet	Cattle	Oral	48h
CTC Soluble Powder Concentrate	Durvet	Calves	Oral	24h
Curatrem®	Merck AgVet	Cattle	Oral	8d
Cutter Blue® Ear Tags	Bayer Corporation	Cattle	Ear tags	-
Note: Remove tags before slaughter.				

Product Name	Company Name	Species	Route of Administration	Meat
Cutter Gold® Ear Tags	Bayer Corporation	Cattle	Ear tags	-
Note: Remove tags before slaughter.				
Cyanocobalamin Injectable 1000 mcg/mL	Wendt	Beef cattle	I.M., S.C.	-
Cyanocobalamin Injectable 3000 mcg/mL	Wendt	Beef cattle	I.M., S.C.	-
Cyanocobalamin Injectable 5000 mcg/mL	Wendt	Beef cattle	I.M., S.C.	-
CyLence™ Pour-On Insecticide	Bayer Corporation	Beef cattle	Topical	-
Dairy Bomb	AgriLabs	Beef cattle	Topical	-
Dairy Bomb-30	Durvet	Cattle	Topical	-
Dairy Bomb-55	Durvet	Cattle	Topical	-
Dariclox®	Pfizer Animal Health	Cattle	I.M.M.	10d
D-Ca-Fos®	Fort Dodge	Beef cattle	Oral	-
Deccox®	Rhone-Poulenc	Cattle	Oral	-
Dectomax®	Pfizer Animal Health	Cattle	I.M., S.C.	35d
Note: Do not use in calves to be processed for veal.				
Defender®-4-HS	Premier Farmtech	Cattle	I.M., S.C.	21d
Defender® 9	Premier Farmtech	Cattle	I.M., S.C.	21d
Defender® 9 HS	Premier Farmtech	Cattle	I.M., S.C.	21d
Defender® IBR-BVD-PI3	Premier Farmtech	Cattle	I.M., S.C.	21d
Defender® IBR-BVD-PI3-BRSV	Premier Farmtech	Cattle	I.M., S.C.	21d
Defender® IBR-BVD-PI3-L5	Premier Farmtech	Cattle	I.M., S.C.	21d
Defensor®	Pfizer Animal Health	Cattle	I.M.	21d
Dehoming Paste	RXV	Beef cattle	Topical	-
Dehoming Paste	Wendt	Beef cattle	Topical	-
Deliver® Nutritional Supplement	Bayer Corporation	Beef cattle	Oral	-
Del-Phos® Emulsifiable Liquid	Mallinckrodt	Cattle	Topical	3d
Dexaject	Vetus	Cattle	I.M., I.V.	-
Note: Do not use in calves to be processed for veal.				
Dexalyte	Butler	Beef cattle	I.P., I.V., S.C.	-
Dexalyte 8X Powder	Butler	Beef cattle	Oral	-
Dexamethasone Solution	Aspen	Cattle	I.M., I.V.	-
Note: Do not use in calves to be processed for veal.				
Dexamethasone Solution	Butler	Cattle	I.M., I.V.	-
Note: Do not use in calves to be processed for veal.				
Dexamethasone Solution	Phoenix	Cattle	I.M., I.V.	-
Note: Do not use in calves to be processed for veal.				
Dexolyte Solution	Phoenix	Beef cattle	I.P., I.V.	-
Dextro-Cal #2	Phoenix	Beef cattle	I.M., I.P., I.V., S.C.	-
Dextro-Cal Special	Phoenix	Beef cattle	I.M., I.P., I.V., S.C.	-
Di-Methox™ 12.5% Oral Solution	AgriLabs	Calves Cattle	Oral Oral	7d 7d
Di-Methox™ Injection-40%	AgriLabs	Cattle	I.V.	5d
Di-Methox™ Soluble Powder	AgriLabs	Calves Cattle	Oral Oral	7d 7d
Discovery®-3	Franklin	Cattle	I.M., S.C.	21d
Discovery®-3L5	Franklin	Cattle	I.M., S.C.	21d
Discovery®-3 VL5	Franklin	Cattle	S.C.	60d
Discovery®-4	Franklin	Cattle	I.M., S.C.	21d
Discovery®-4+PH	Franklin	Cattle	I.M.	21d
Discovery®-4+PH/somnus	Franklin	Cattle	I.M., S.C.	21d
Discovery®-4+somnus	Franklin	Cattle	I.M.	21d
Discovery®-4L5	Franklin	Cattle	I.M., S.C.	21d
Discovery®-4L5+PH	Franklin	Cattle	I.M.	21d
Discovery®-4L5+somnus	Franklin	Cattle	I.M.	21d
DI-Alpha Tocopherol Acetate Injection	Vedco	Beef cattle	I.M., S.C.	-
D-Lyte H ₂ O-K™	Fort Dodge	Beef cattle	Oral	-
Dominator® Ear Tags	Coopers	Beef cattle	Ear tags	-
Double "A" Concentrate	Vedco	Beef cattle	Oral	-
Double "A" Solution	Vedco	Beef cattle	Oral	-
Double Barrel™ Insecticide Ear Tags	Mallinckrodt	Cattle	Ear tags	-
Note: Remove tags before slaughter.				
Dr. Naylor® Dehoming Paste	H.W. Naylor	Beef cattle	Topical	-
Dr. Naylor® Hoof 'n Heel®	H.W. Naylor	Beef cattle	Topical	-
Drycide	Loveland	Cattle	Topical	5d
Dry-Clox®	Fort Dodge	Cattle	I.M.M.	30d
Note: For use in dry cows only. Not to be used within 30 days of calving.				
Duomag 96 Oral Gel	Vedco	Cattle	Oral	-
Duo-Pen®	AgriPharm	Beef cattle	S.C.	30d

Withdrawal Time Charts

Withdrawal times listed correspond to label dosages only.

Product Name	Company Name	Species	Route of Administration	Meat
Duo-Pen®	RXV	Beef cattle	S.C.	30d
Duramycin 10	Durvet	Calves	Oral	5d
Note: Do not use in calves to be processed for veal.				
Duramycin-50	Durvet	Cattle	I.V.	19d
Duramycin 72-200	Durvet	Cattle	I.M.	28d
Duramycin-100	Durvet	Cattle	I.V.	19d
Duramycin-324	Durvet	Calves	Oral	5d
Dura-Pen	Durvet	Beef cattle	S.C.	30d
Durapen™	Vedco	Beef cattle	S.C.	30d
Durasect™ Long-Acting Livestock Pour-On	Pfizer Animal Health	Cattle	Topical	-
Dybelon™	Bio-Ceutic	Cattle	S.C.	21d
E. coli Bac	AgriLabs	Cattle	I.M., S.C.	21d
E. Colicin-B™	AgriLabs	Calves	I.N., Oral	21d
ECP® Sterile Solution	Pharmacia & Upjohn	Beef cattle	I.M.	-
Ectiban® D	Durvet	Swine	Topical	5d
Ectiban® DeLice®	AgriPharm	Beef cattle	Topical	-
Ectiban® DeLice®	Durvet	Beef cattle	Topical	-
Ectrin® Insecticide Cattle Ear Tag	Fermenta	Cattle	Ear tags	-
Note: Remove tags before slaughter.				
E.D.D.I. 20 Gr.	Vedco	Cattle	Oral	-
E.D.D.I. 40 Gr.	Vedco	Cattle	Oral	-
Electroid® 7 Plus H.S. Vaccine	Coopers	Cattle	I.M., S.C.	21d
Electroid® 7 Vaccine	Coopers	Cattle	I.M., S.C.	21d
Electrolyte Powder 8X	Phoenix	Beef cattle	Oral	-
Electrolyte Solution	ProLabs	Beef cattle	I.P., I.V.	-
Electrolyte Solution	Vet Tek	Beef cattle	I.P., I.V.	-
Electrolyte Solution with Dextrose	Vedco	Beef cattle	I.P., I.V.	-
Electrolytes-Plus	Russell	Beef cattle	Oral	-
Electrolyte w/Dextrose Injection	Aspen	Beef cattle	I.P., I.V.	-
Electro R	Russell	Beef cattle	Oral	-
Elite 4™	Anchor	Cattle	I.M.	21d
Elite 4™	Bio-Ceutic	Cattle	I.M.	21d
Elite 4-HS™	Anchor	Cattle	I.M.	21d
Elite 4-HS™	Bio-Ceutic	Cattle	I.M.	21d
Elite 9™	Anchor	Cattle	I.M.	21d
Elite 9™	Bio-Ceutic	Cattle	I.M.	21d
Elite 9-HS™	Anchor	Cattle	I.M.	21d
Elite 9-HS™	Bio-Ceutic	Cattle	I.M.	21d
Elpak™-360	Vedco	Beef cattle	Oral	-
Elpak™-G	Vedco	Beef cattle	Oral	-
EmulsiVit AE	Vedco	Beef cattle	I.M., S.C.	-
EmulsiVit E-300	Vedco	Beef cattle	I.M., S.C.	-
EmulsiVit E-500	Vedco	Beef cattle	I.M., S.C.	-
EmulsiVit E/A&D	Vedco	Beef cattle	I.M., S.C.	-
EmulsiVit E/A&D w B ₁₂	Vedco	Beef cattle	I.M., S.C.	-
ENDOVAC-Bovi®	Immvac	Cattle	I.M.	60d
Endura-Lyte®	Life Science	Beef cattle	Oral	-
Entrolyte®	Pfizer Animal Health	Beef cattle	Oral	-
Entrolyte® H.E.	Pfizer Animal Health	Beef cattle	Oral	-
Epidural Injection	Vedco	Beef cattle	Epidural	-
Epinephrine	Vedco	Beef cattle	I.M., S.C.	-
Epinephrine	Vet Tek	Beef cattle	I.M., S.C.	-
Epinephrine Injection	AgriLabs	Beef cattle	I.M., S.C.	-
Epinephrine Injection 1:1000	A.H.A.	Beef cattle	S.C.	-
Epinephrine Injection 1:1,000	Butler	Beef cattle	I.M., S.C.	-
Epinephrine Injection 1:1,000	Phoenix	Beef cattle	I.M., S.C.	-
Epinephrine Injection 1:1000	RXV	Beef cattle	I.M., S.C.	-
Epinephrine Injection 1:1000	W.V.S.	Beef cattle	I.M., S.C.	-
Epinephrine Injection U.S.P.	Anchor	Beef cattle	S.C.	-
Epinject	Vetus	Cattle	I.M., S.C.	-
Equi-Phar™ Electrolyte with Dextrose	Vedco	Beef cattle	I.P., I.V.	-
Erythro®-36	Rhone Merieux	Cattle	I.M.M.	14d
Erythro®-100	Rhone Merieux	Cattle	I.M.	14d
Erythro®-200	Rhone Merieux	Cattle	I.M.	21d

Withdrawal times listed correspond to label dosages only.

Withdrawal Time Charts

Product Name	Company Name	Species	Route of Administration	Meat
Erythro [®] -Dry	Rhone Merieux	Cattle	I.M.M.	14d
Note: Animals infused with this product must not be slaughtered for use in food within 96 hours after calving. Calves born to treated cows must not be slaughtered for food at less than 10 days of age.				
Estrumate [®]	Bayer Corporation	Beef cattle	I.M.	-
Ethyodide	Vet-A-Mix	Beef cattle	Oral	-
Excalibur [®] Ear Tags	Mallinckrodt	Cattle	Ear tags	-
Note: Remove tags before slaughter.				
Expar [®] Extra Insecticide Ear Tags	Mallinckrodt	Cattle	Ear tags	-
Note: Remove tags before slaughter.				
Expar [®] Pour-On Insecticide	Coopers	Beef cattle	Topical	-
Express 4 TM	Anchor	Cattle	I.M.	21d
Express 4 TM	Bio-Ceutic	Cattle	I.M.	21d
Express 4-HS TM	Anchor	Cattle	I.M.	21d
Express 4-HS TM	Bio-Ceutic	Cattle	I.M.	21d
Factrel [®]	Fort Dodge	Cattle	I.M.	--
Feed Mate TM 68	Anchor	Beef cattle	Oral	-
Feed Mate TM Calf/Veal	Anchor	Beef cattle	Oral	-
Feed-Mate TM Reload TM Eubiotic TM Gel	Anchor	Beef cattle	Oral	-
Fermicon-7/Somnugen	Bio-Ceutic	Cattle	I.M.	21d
Fermicon C-D TM	Bio-Ceutic	Cattle	I.M., S.C.	21d
Fermicon CD/T	Bio-Ceutic	Cattle	I.M., S.C.	21d
Fermycin TM Soluble	Fermenta	Cattle	Oral	24h
Finaplix [®] -H	Hoechst Roussel Vet	Cattle	S.C.	-
Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.				
Finaplix [®] -S	Hoechst Roussel Vet	Cattle	S.C.	-
Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.				
First Defense TM	ImmuCell	Beef cattle	Oral	-
Flo-Cillin [®]	Fort Dodge	Beef cattle	S.C.	30d
Note: Do not use in calves to be processed for veal. Treatment in beef cattle must be limited to two (2) doses.				
Fluid Formula 360	Bio-Ceutic	Beef cattle	Oral	-
Follutein	Solvay	Beef cattle	Intrafollicular, I.M., I.V.	-
Foot Rot & Ringworm Spray	AgriLabs	Beef cattle	Topical	-
Formula 66	Loveland	Beef cattle	Topical	-
Formula 911 [®]	AgriPharm	Beef calves Calves	Oral Oral	- -
Formula 911 [®]	RXV	Beef cattle	Oral	-
Fortified Vitamin B Complex	AgriLabs	Beef cattle	I.M., S.C.	-
Fortified Vitamin B-Complex	AgriPharm	Beef cattle	I.M.	-
Fortress [®] 7	Pfizer Animal Health	Cattle	S.C.	21d
Fortress [®] 8	Pfizer Animal Health	Cattle	S.C.	21d
Fortress [®] CD	Pfizer Animal Health	Cattle	S.C.	21d
Gainpro TM -10	Hoechst Roussel Vet	Beef cattle	Oral	-
Note: Not for use in animals intended for breeding.				
Gallimycin [®] -36	AgriLabs	Cattle	I.M.M.	14d
Gallimycin [®] -36	Rhone Merieux	Cattle	I.M.M.	14d
Gallimycin [®] -100	Rhone Merieux	Cattle	I.M.	14d
Gallimycin [®] -Dry	Rhone Merieux	Cattle	I.M.M.	14d
Note: Animals infused with this product must not be slaughtered for use in food within 96 hours after calving. Calves born to treated cows must not be slaughtered for food at less than 10 days of age.				
Gallimycin [®] -Dry Cow	AgriLabs	Cattle	I.M.M.	14d
Note: Calves born to treated cows must not be slaughtered for food at less than 10 days of age.				
Gastro-Cote	Butler	Beef cattle	Oral	-
Gastro-Sorb TM Bolus	Butler	Beef cattle	Oral	-
Gastro-Sorb TM Calf Bolus	Butler	Calves	Oral	-
Genecol [®] 99	Schering-Plough	Beef cattle	Oral	-
Gentle Iodine	Butler	Beef cattle	Topical	-
Gentle Iodine 1%	Aspen	Beef cattle	Topical	-
Gentle Iodine 1%	Chem-Tronics	Beef cattle	Topical	-
Gentle Iodine 1%	Wendt	Beef cattle	Topical	-
Gentle Iodine Wound Spray	First Priority	Cattle	Topical	-
Gentle Iodine Wound Spray	Vedco	Beef cattle	Topical	-
Glucaminolyte Forte	Vedco	Beef cattle	Oral	-
Gluco-Amino-Forte Oral Solution	Phoenix	Beef cattle	Oral	-
Go-Dry	G.C. Hanford	Cattle	I.M.M.	14d
Note: For use in dry cows only.				
Good Start Calf Bolus	RXV	Beef cattle	Oral	-

Withdrawal Time Charts

Withdrawal times listed correspond to label dosages only.

Product Name	Company Name	Species	Route of Administration	Meat
Good Start Calf Paste	RXV	Beef cattle	Oral	-
Granulex®.V Aerosol Spray	Pfizer Animal Health	Beef cattle	Topical	-
Granulex®.V Liquid	Pfizer Animal Health	Beef cattle	Topical	-
GX-118®	Starbar	Beef cattle	Topical	21d
Hemostatic Powder	Butler	Beef cattle	Topical	-
Hemostat Powder	Phoenix	Beef cattle	Topical	-
Herdguard™-4	Schering-Plough	Cattle	I.M., S.C.	21d
Herdguard-4™+L5	Schering-Plough	Cattle	I.M., S.C.	21d
Heritage™ 1	Bayer Corporation	Cattle	I.M.	21d
Heritage™ 1+LP	Bayer Corporation	Cattle	I.M.	21d
Heritage™ 2	Bayer Corporation	Cattle	I.M.	21d
Heritage™ 2+LP	Bayer Corporation	Cattle	I.M.	21d
Heritage™ 3	Bayer Corporation	Cattle	I.M.	21d
Heritage™ 7	Bayer Corporation	Cattle	I.M.	21d
Heritage™ 8	Bayer Corporation	Cattle	I.M.	21d
Hetacin®-K Intramammary Infusion	Fort Dodge	Dairy cattle	I.M.M.	10d
Hexascrub Medical Scrub	Vetus	Beef cattle	Topical	-
Hexasol Solution	Vetus	Beef cattle	Topical	-
Hi-Cal Suspension	Vedco	Calves	Oral	-
High-D Dispersible	Russell	Beef cattle	Oral	-
High Level Vitamin-B Complex	Durvet	Beef cattle	I.M., S.C.	-
Hi-Mag 60 Oral Gel	Vedco	Beef cattle	Oral, Rectal	-
Hi-Mag "96" Gel	RXV	Cattle	Oral	-
Hi-Po B Complex™	Butler	Beef cattle	I.M.	-
Hog and Cattle Vitamins and Electrolytes	Solvay	Beef cattle	Oral	-
Hopkins® Dust'R	Loveland	Cattle	Topical	
Note: There is no withholding period from last application to slaughter.				
Hopkins® Malathion	Loveland	Cattle	Topical	
Note: For use on beef and non-milking cattle only.				
Horizon® 1+Vac 3	Bayer Corporation	Cattle	I.M., S.C.	21d
Horizon® 4	Bayer Corporation	Cattle	I.M., S.C.	21d
Horizon® 9	Bayer Corporation	Cattle	I.M., S.C.	21d
Horizon® 10	Bayer Corporation	Cattle	I.M., S.C.	21d
Hydra-Lyte	Vet-A-Mix	Beef cattle	Oral	-
Hydrogen Peroxide 3%	AgriPharm	Beef cattle	Topical	-
Hydrogen Peroxide 3%	RXV	Beef cattle	Topical	-
Hydrogen Peroxide 3% Solution	First Priority	Cattle	Topical	-
Hydrogen Peroxide U.S.P.	Vedco	Beef cattle	Topical	-
Hypersaline E	Vetus	Cattle	I.V., S.C.	-
Hyper Saline Solution 8X	Butler	Beef cattle	I.V., S.C.	-
Hypertonic Saline Solution 7.2%	Phoenix	Beef cattle	I.V., S.C.	-
Hypertonic Saline Solution 7.2%	RXV	Beef cattle	I.V., S.C.	-
Hy-Sorb™	Rhone Merieux	Beef cattle	Oral	-
IBL Vaccine	Aspen	Cattle	I.M.	21d
IBP-L5 Vaccine	Aspen	Cattle	I.M., S.C.	21d
IBP-RS-L5 Vaccine	Aspen	Cattle	I.M.	21d
IBP-RS Vaccine	Aspen	Cattle	I.M.	21d
IBP-SomnuMune® Vaccine	Aspen	Cattle	I.M., S.C.	21d
IBP Vaccine	Aspen	Cattle	I.M., S.C.	21d
IBR	Rhone Merieux	Cattle	I.M.	21d
IBR-BVD	Rhone Merieux	Cattle	I.M.	21d
IBR-BVD-Lepto	Rhone Merieux	Cattle	I.M.	21d
IBR-BVD-PI ₃	Rhone Merieux	Cattle	I.M.	21d
IBR-BVD-PI ₃ /Bar Somnus-2P™	Anchor	Cattle	I.M.	21d
IBR-BVD-PI ₃ with Lepto 5-Way	Rhone Merieux	Cattle	I.M.	21d
IBR-BVD-PI ₃ /Somnugen-2P	Bio-Ceutic	Cattle	I.M.	21d
IBR-Lepto	Rhone Merieux	Cattle	I.M.	21d
IBR-PI ₃	Rhone Merieux	Cattle	I.M.	21d
IBR-PI ₃ /Bar Somnus-2P™	Anchor	Cattle	I.M.	21d
IBR Vaccine	Aspen	Cattle	I.M.	21d
Ichthammol Ointment	First Priority	Cattle	Topical	-
Identi-Mark™ Blue Tablets	Bayer Corporation	Cattle	Topical	-
Identi-Mark™ Green Tablets	Bayer Corporation	Cattle	Topical	-
Identi-Mark™ Orange Tablets	Bayer Corporation	Cattle	Topical	-
Identi-Mark™ Red Tablets	Bayer Corporation	Cattle	Topical	-

Product Name	Company Name	Species	Route of Administration	Meat
IL Vaccine	Aspen	Cattle	I.M.	21d
Implus-C™	Pharmacia & Upjohn	Beef cattle	S.C.	-
	Note: Do not use in calves less than 45 days of age. Do not use in calves weighing more than 185 kg (400 lbs) of body weight. Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food. Not for use in veal calves intended for slaughter or in calves intended for reproduction.			
Implus-H®	Pharmacia & Upjohn	Beef cattle	S.C.	-
	Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.			
Implus-S®	Pharmacia & Upjohn	Beef cattle	S.C.	-
	Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.			
Intesti-Sorb Bolus	AgriPharm	Beef cattle	Oral	-
Intesti-Sorb Bolus	RXV	Beef cattle	Oral	-
Intesti-Sorb Calf Bolus	AgriPharm	Beef cattle	Oral	-
Intesti-Sorb Calf Bolus	RXV	Beef cattle	Oral	-
Intrauterine Bolus	AgriLabs	Beef cattle	I.U., Topical	-
Iodine 7% Tincture	AgriLabs	Beef cattle	Topical	-
Iodine Tincture	Vedco	Beef cattle	Topical	-
Iodine Tincture 7%	AgriPharm	Beef cattle	Topical	-
Iodine Tincture 7%	First Priority	Cattle	Topical	-
Iodine Wound Spray	AgriLabs	Beef cattle	Topical	-
Iodine Wound Spray 1.0%	AgriPharm	Beef cattle	Topical	-
Iodine Wound Spray 1.0%	RXV	Beef cattle	Topical	-
Iodine Wound Spray 2.44%	AgriPharm	Beef cattle	Topical	-
Iodine Wound Spray 2.44%	RXV	Beef cattle	Topical	-
Iodoject	Vetus	Cattle	I.V.	-
Iofec®-20 Disinfectant	Loveland	Cattle	Topical	-
IP-RS Vaccine	Aspen	Cattle	I.M.	21d
I-Site™	AgriLabs	Cattle	S.C.	21d
Isopropyl Alcohol 70%	Aspen	Cattle	Topical	-
Isopropyl Alcohol 70%	Butler	Cattle	Topical	-
Isopropyl Alcohol 70%	Chem-Tronics	Cattle	Topical	-
Isopropyl Alcohol 70%	First Priority	Cattle	Topical	-
Isopropyl Alcohol 70%	RXV	Cattle	Topical	-
Isopropyl Alcohol 70%	Vedco	Cattle	Topical	-
Isopropyl Alcohol 99%	AgriPharm	Cattle	Topical	-
Isopropyl Alcohol 99%	Aspen	Cattle	Topical	-
Isopropyl Alcohol 99%	Chem-Tronics	Cattle	Topical	-
Isopropyl Alcohol 99%	First Priority	Cattle	Topical	-
Isopropyl Alcohol 99%	RXV	Cattle	Topical	-
Isopropyl Alcohol 99%	Vedco	Beef cattle	Topical	-
Ivomec® 1% Injection for Cattle	Merck AgVet	Cattle	S.C.	35d
Ivomec® Plus Injection for Cattle	Merck AgVet	Cattle	S.C.	49d
Ivomec® Pour-On for Cattle	Merck AgVet	Cattle	Topical	48d
Jencine® K99 Vaccine	Coopers	Cattle	I.M., S.C.	60d
J • Vac™ 9K	Rhone Merieux	Cattle	I.M., S.C.	21d
J • Vac™ J5	Rhone Merieux	Cattle	I.M., S.C.	21d
J • Vac™ L5	Rhone Merieux	Cattle	I.M.	21d
K ₁ Veterinary™	Wendt	Beef cattle	I.V.	-
K99 Shield™	Grand	Cattle	I.M., S.C.	60d
Kaolin Pectin	A.H.A.	Beef cattle	Oral	-
Kaolin-Pectin	Durvet	Beef cattle	Oral	-
Kaolin-Pectin Plus	AgriPharm	Beef cattle	Oral	-
Kaolin-Pectin Plus	RXV	Beef cattle	Oral	-
Kaolin-Pectin Plus Powder	RXV	Beef cattle	Oral	-
Kaolin Pectin Suspension	First Priority	Cattle	Oral	-
Kao-Pec	AgriLabs	Beef cattle	Oral	-
Kaopectol	Chem-Tronics	Beef cattle	Oral	-
Kaopectolin	Aspen	Beef cattle	Oral	-
Kaopectolin™	Butler	Beef cattle	Oral	-
Keto Amino Forte™	Butler	Beef cattle	Oral	-
K-Ject	Vetus	Calves Cattle	I.M., I.V., S.C. I.M., I.V., S.C.	- -
K-Sol	Vet-A-Mix	Beef cattle	Oral	-
LA Aspirin Boluses	Wendt	Beef cattle	Oral	-
Lactated Ringers	Vet Tek	Beef cattle	I.P., I.V.	-
Lactated Ringer's Injection	Vedco	Beef cattle	I.V., S.C.	-
Lactated Ringer's Injection, USP	A.H.A.	Beef cattle	I.V., S.C.	-

Withdrawal Time Charts

Withdrawal times listed correspond to label dosages only.

Product Name	Company Name	Species	Route of Administration	Meat
Lactated Ringer's Solution	RXV	Beef cattle	I.P., I.V.	-
Lactolyte-Gold™	Butler	Beef cattle	Oral	-
Land O Lakes® First Milk® Formula	Land O'Lakes	Beef cattle	Oral	-
Land O Lakes® Instant Amplifier™ Max NT	Land O'Lakes	Calves	Oral	30d
Land O Lakes® Instant Amplifier™ Select NT	Land O'Lakes	Calves	Oral	30d
Land O Lakes® Instant Maxi Care® NT	Land O'Lakes	Calves	Oral	30d
Lanodine™	Butler	Beef cattle	Topical	-
Lasix® Injection 5%	Hoechst Roussel Vet	Cattle	I.M., I.V.	48h
Laxade Bolus	AgriPharm	Cattle	Oral	-
Laxade Bolus	RXV	Cattle	Oral	-
Laxade Powder	AgriPharm	Cattle	Oral	-
Laxade Powder	RXV	Beef cattle	Oral	-
Lepto 5	AgriLabs	Cattle	I.M., S.C.	21d
Lepto 5	Durvet	Cattle	I.M., S.C.	21d
Lepto 5	Premier Farmtech	Cattle	I.M., S.C.	21d
Lepto 5 Vaccine	Aspen	Cattle	I.M., S.C.	21d
Lepto 5-Way	Rhone Merieux	Cattle	I.M.	21d
Leptoform-5®	Pfizer Animal Health	Cattle	I.M.	21d
Lepto Shield™ 5	Grand	Cattle	I.M.	21d
Leukotox®	A.A.H.	Cattle	I.M.	60d
Leukotox® M	A.A.H.	Cattle	I.M., S.C.	60d
Leukotox® MTD	A.A.H.	Cattle	I.M.	60d
Levamisole Phosphate	AgriLabs	Cattle	S.C.	7d
Levamisole Phosphate Injectable Solution, 13.65%	Aspen	Cattle	S.C.	7d
Levasole® Cattle Dewormer Boluses	Mallinckrodt	Cattle	Oral	48h
Levasole® Injectable Dewormer Solution, 13.65%	Mallinckrodt	Cattle	S.C.	7d
Levasole® Soluble Drench Powder	Mallinckrodt	Cattle	Oral	48h
Lib	Squire	Beef cattle	Oral	-
Lidocaine 2% Injectable	A.H.A.	Beef cattle	Epidural, Infiltration, Nerve block	-
Lidocaine 2% Injectable	Butler	Beef cattle	Epidural, Infiltration, Nerve block	-
Lidocaine HCl 2%	W.V.S.	Beef cattle	Epidural, Infiltration, Nerve block	-
Lidocaine HCl Injectable 2%	Aspen	Cattle	Epidural, Infiltration, Nerve block	-
Lidocaine HCl Injection 2%	RXV	Beef cattle	Epidural, Infiltration, Nerve block	-
Lidocaine Hydrochloride 2%	Vet Tek	Beef cattle	Epidural, Infiltration, Nerve block	-
Lidocaine Hydrochloride Injectable-2%	Phoenix	Beef cattle	Epidural, Infiltration, Nerve block	-
Lidocaine Injectable 2%	Vedco	Beef cattle	Epidural, Infiltration, Nerve block	-
Lidoject	Vetus	Beef cattle	Epidural, Infiltration, Nerve block	-
Life Boost Bolus™	AgriLabs	Calves	Oral	-
Life Boost Replacer™	AgriLabs	Calves	Oral	-
Lintox®-HD	Starbar	Cattle	Topical	3d
Liquamycin® LA-200®	Pfizer Animal Health	Cattle	I.M., I.V.	28d
Live Boost™ Plus	AgriLabs	Calves	Oral	-
Lixotinic®	Pfizer Animal Health	Beef cattle	Oral	-
Long Acting Penicillin	Premier Farmtech	Beef cattle	S.C.	30d
Louse Powder with Rabon®	LeGear	Beef cattle	Topical	-
Lugol's Solution	Butler	Beef cattle	I.U., Oral	-
Lutalyse® Sterile Solution	Pharmacia & Upjohn	Horses	I.M.	-
Lysigin®	Bio-Ceutic	Cattle	I.M.	21d
Lysoff™ Pour-On	Bayer Corporation	Cattle	Topical	21d
Note: If a second or third application is made for louse or horn fly control, do not slaughter within 35 days of the last treatment.				
Magnalax Bolus	Phoenix	Cattle	Oral	-
Magnalax Boluses	A.H.A.	Cattle	Oral	-
Magnalax Boluses	Aspen	Beef cattle	Oral	-
Magnalax Boluses	Vedco	Cattle	Oral	-
Magnalax Powder	A.H.A.	Cattle	Oral	-
Magnalax Powder	Phoenix	Cattle	Oral	-
Magnalax Powder	Vedco	Cattle	Oral	-
Magne-Lax™	Wendt	Beef cattle	Oral	-
Manniject	Vetus	Beef cattle	I.V.	-
Maxi/Guard Pinkeye Bacterin	Addison	Cattle	S.C.	21d
Maxim-200	Phoenix	Cattle	I.M.	28d
Maxi-Sorb Bolus	Durvet	Beef cattle	Oral	-
Medamycin®	Fermenta	Cattle	I.M.	22d
Medamycin®-100	Fermenta	Cattle	I.V.	22d
M.F.O. Solution	AgriLabs	Beef cattle	Oral	-
MGA® 200 Premix	Pharmacia & Upjohn	Cattle	Oral	48h

Product Name	Company Name	Species	Route of Administration	Meat
MGA® 500 Liquid Premix	Pharmacia & Upjohn	Cattle	Oral	48h
Micotil® 300 Injection	Elanco	Cattle	S.C.	28d
Note: Do not use in calves to be processed for veal. Do not use in calves under 1 month of age or calves being fed an all milk diet.				
Microcillin	Anthony	Calves Cattle	I.M. I.M.	7d 4d
Micro-Vet™ Eubiotic™ Gel	Bio-Ceutic	Beef cattle	Oral	-
Micro-Vet™ SF	Bio-Ceutic	Beef cattle	Oral	-
Micro-Vet™ VMS	Bio-Ceutic	Beef cattle	Oral	-
MicroZyme 28 Dispersible Powder	Vedco	Cattle	Oral	-
MicroZyme Bolus for Calves	Vedco	Beef cattle	Oral	-
MicroZyme Bolus for Cattle	Vedco	Beef cattle	Oral	-
MicroZyme Paste	Vedco	Beef cattle	Oral	-
Mineral Oil	AgriLabs	Beef cattle	Oral	-
Mineral Oil	AgriPharm	Beef cattle	Oral	-
Mineral Oil	Aspen	Beef cattle	Oral	-
Mineral Oil	Durvet	Beef cattle	Oral	-
Mineral Oil	First Priority	Cattle	Oral	-
Mineral Oil	RXV	Beef cattle	Oral	-
Mineral Oil	Vedco	Beef cattle	Oral	-
Mineral Oil 95 V	Butler	Cattle	Oral	-
Mineral Oil USP	Chem-Tronics	Beef cattle	Oral	-
Mineral Oil USP	Vetus	Beef cattle	Oral	-
MoorMan's® Beef Cattle Boost®	MoorMan's	Beef cattle	Oral	7d
MoorMan's® BMD® 30	MoorMan's	Swine	Oral	-
MoorMan's® Calf Grower BT	MoorMan's	Beef cattle	Feed	-
MoorMan's® Calf Starter DC	MoorMan's	Cattle	Oral	-
MoorMan's® Cattle Minerals BT	MoorMan's	Beef cattle	Feed	-
MoorMan's® Dust with Co-Ral® Insecticide	MoorMan's	Beef cattle	Topical	-
MoorMan's® Fly Spray	MoorMan's	Beef cattle	Topical	-
MoorMan's® IGR Cattle Concentrate	MoorMan's	Beef cattle	Feed	-
MoorMan's® IGR Cattle Mix	MoorMan's	Beef cattle	Feed	-
MoorMan's® IGR Minerals®	MoorMan's	Beef cattle	Oral	-
MoorMan's® Mintrate Blonde Block	MoorMan's	Beef cattle	Oral	-
MoorMan's® Moorguard® Minerals for Beef Cattle	MoorMan's	Cattle	Oral	13d
MoorMan's® Moormafume Dust with Co-Ral® Insecticide	MoorMan's	Cattle	Topical	-
MoorMan's® NT 10/10	MoorMan's	Broilers Calves	Oral Oral	5d 7d
MoorMan's® Rid-Ezy Cattle Dewormer	MoorMan's	Cattle	Oral	14d-
Multisol®-R 3X	Rhone Merieux	Beef cattle	I.V.	-
Multisol®-R and 5% Dextrose Injection, USP	Rhone Merieux	Beef cattle	I.V.	-
Multisol®-R Injection	Rhone Merieux	Beef cattle	I.V., S.C.	-
MU-SE®	Schering-Plough	Cattle	I.M., S.C.	30d
MVT™ Bolus Wet Granulation Formula	Butler	Cattle	Oral	-
MVT™ Improved Bolus	Butler	Beef cattle	Oral	-
MVT Powder™	Butler	Cattle	Oral	-
MycAseptic™ Disinfectant	Vétoquinol	Cattle	Topical	-
Mycopar™	Solvay	Calves	S.C.	-
Note: State Animal Health officials should be consulted for specific recommendations.				
Naquasone® Bolus	Schering-Plough	Dairy cattle	Oral	-
Nasalgen® IP Vaccine	Coopers	Cattle	I.N.	21d
Nasal-Ject I.P.	AgriLabs	Cattle	I.N.	21d
Naxcel®	Pharmacia & Upjohn	Cattle	I.M.	-
Neo-128	Tri Bio	Cattle	Oral	30d
Neomix® 325 Soluble Powder	Pharmacia & Upjohn	Cattle	Oral	1d
Note: Not to be used in veal calves.				
Neomix® Ag 325 Soluble Powder	Pharmacia & Upjohn	Cattle	Oral	30d
Note: Not to be used in veal calves.				
Neomycin 200	Aspen	Cattle	Oral	30d
Note: Do not use in calves to be processed for veal.				
Neomycin 325	AgriLabs	Cattle	Oral	30d
Note: Not to be used in veal calves.				
Neomycin 325	Durvet	Cattle	Oral	30d
Neomycin 325 Soluble Powder	Rhone Merieux	Cattle	Oral	30d
Note: Do not use in calves to be processed for veal.				
Neomycin Oral Solution	Durvet	Cattle	Oral	30d
Note: Not to be used in veal calves.				

Withdrawal Time Charts

Withdrawal times listed correspond to label dosages only.

Product Name	Company Name	Species	Route of Administration	Meat
Neomycin Oral Solution	Phoenix	Cattle	Oral	30d
Note: Not to be used in veal calves.				
Neo-Predef®	Pharmacia & Upjohn	Beef cattle	Ophthalmic, Otic, Topical	-
Neo-Terramycin® 50/50	Pfizer Animal Health	Calves	Oral	7d
Note: When fed at the level of 1.4 g neomycin base plus 2 g oxytetracycline/calf/day requires withdrawal from feed 7 days before slaughter. A withdrawal is not required for calves fed at lower levels.				
Neo-Terramycin® 50/50D	Pfizer Animal Health	Calves	Oral	30d
Neo-Terramycin® 100/50	Pfizer Animal Health	Calves	Oral	7d
Note: When fed at the level of 1.4 g neomycin base plus 2 g oxytetracycline/calf/day requires withdrawal from feed 7 days before slaughter. A withdrawal is not required for calves fed at lower levels.				
Neo-Terramycin® 100/50D	Pfizer Animal Health	Calves	Oral	30d
Neovet® Neomycin Oral Solution	RXV	Cattle	Oral	30d
Note: Not to be used in veal calves.				
Neutralizer	RXV	Beef cattle	Oral	-
NFZ® Puffer	AgriLabs	Cattle	Topical	-
Note: Do not use on calves to be processed for veal.				
nfz® puffer	AgriPharm	Cattle	Topical	-
Note: Do not use on calves to be processed for veal.				
NFZ® Puffer	Aspen	Cattle	Topical	-
Note: Do not use on calves to be processed for veal.				
NFZ® Puffer	Durvet	Cattle	Topical	-
Note: Do not use on calves to be processed for veal.				
NFZ® Puffer	Loveland	Cattle	Topical	-
Note: Do not use on calves to be processed for veal.				
nfz® Puffer	RXV	Cattle	Topical	-
Note: Do not use on calves to be processed for veal.				
Nolvalube®	Fort Dodge	Beef cattle	I.U., Topical	-
Nolvasan® Cap-Tabs®	Fort Dodge	Horses	I.U.	-
Nolvasan® Surgical Scrub	Fort Dodge	Beef cattle	Topical	-
Nomagen®	Fort Dodge	Beef cattle	Intratumoral	-
Norcaliphos	Pfizer Animal Health	Beef cattle	I.V., S.C.	-
Normal Colostral Whey	Cuprem	Beef cattle	Oral	-
NRG-Plus™	Butler	Beef cattle	Oral	-
NRG-Plus™	Rhone Merieux	Beef cattle	Oral	-
NRG-Plus™	Vedco	Beef cattle	Oral	-
Nuflor® Injectable Solution 300 mg/mL	Schering-Plough	Cattle	I.M.	28d
Note: Administer by I.M. injection in the neck only. Do not inject more than 10 mL per site. Do not use in calves to be processed for veal. Do not use in calves under 1 month of age or calves being fed an all milk diet.				
Nutra Drench™	A.H.A.	Beef cattle	Oral	-
NutriVed™ EnerGel Forte	Vedco	Beef cattle	Oral	-
Ocu-guard™ MB	Anchor	Cattle	S.C.	21d
Ocu-guard™ MB	Bio-Ceutic	Cattle	S.C.	21d
Odyssey™-3 L.V.	AgriLabs	Cattle	I.M., S.C.	21d
Odyssey™-3 L.V.+K. BRSV	AgriLabs	Cattle	I.M., S.C.	21d
Odyssey™-3 L.V.+Lepto 5	AgriLabs	Cattle	I.M., S.C.	21d
Odyssey™-3 L.V.+SomnuMune®	AgriLabs	Cattle	I.M., S.C.	21d
Odyssey™-3 L.V.+V.L.5	AgriLabs	Cattle	I.M., S.C.	21d
Odyssey™-4 L.V.K.	AgriLabs	Cattle	I.M., S.C.	21d
One Shot®	Pfizer Animal Health	Cattle	I.M., S.C.	21d
Oral Probiotic Calf Pak	AgriPharm	Beef cattle	Oral	-
Oral Probiotic Calf Pak with Colostrum	RXV	Beef cattle	Oral	-
Oral Rehydration	Anchor	Beef cattle	Oral	-
Orbenin-DC®	Pfizer Animal Health	Cattle	I.M.M.	28d
Note: Not to be used within 28 days of calving.				
Organic Iodide	Butler	Cattle	Oral	-
Organic Iodide 20	Durvet	Beef cattle	Feed	-
Organic Iodide 40	Durvet	Beef cattle	Feed	-
Organic Iodine	AgriLabs	Cattle	Oral	-
Organic Iodine	AgriPharm	Beef cattle	Feed	-
Organic Iodine	RXV	Beef cattle	Feed	-
OT 200	Vetus	Cattle	I.M., I.V.	28d
OTC 50	Durvet	Cattle	Oral	1d
Oxject	Vetus	Beef cattle	I.M., I.V., S.C.	-
OXTC® 50	Pfizer Animal Health	Cattle	Oral	5d
Note: When fed in dry feeds at 2 g/head/day and above, in cattle, withdraw 5 days before slaughter. A withdrawal is not necessary at lower use levels in dry feeds for calves.				

Product Name	Company Name	Species	Route of Administration	Meat
OXTC® 100	Pfizer Animal Health	Cattle	Oral	5d
	Note: When fed in dry feeds at 2 g/head/day and above, in cattle, withdraw 5 days before slaughter. A withdrawal is not necessary at lower use levels in dry feeds for calves.			
Oxybiotic™-100	Butler	Cattle	I.V.	19d
Oxybiotic™-200	Butler	Cattle	I.M., I.V.	28d
OxyBiotic™ 200	Vedco	Cattle	I.M.	28d
Oxyject® 100	Fermenta	Beef cattle	I.M.	20d
Oxy-Mycin® 100	AgriPharm	Cattle	I.V.	19d
	Note: Do not use in calves to be processed for veal.			
Oxy-Mycin® 100	RXV	Cattle	I.V.	19d
	Note: Do not use in calves to be processed for veal.			
Oxy-Mycin® 100P	AgriPharm	Cattle	I.M.	18d
Oxy-Mycin® 100P	RXV	Cattle	I.M.	18d
Oxyshot™ LA	Rhone Merieux	Cattle	I.M., I.V.	28d
Oxytet	Vedco	Cattle	I.V.	19d
Oxy-Tet 100™	Anchor	Cattle	I.M.	18d
Oxy-Tet™ 200	Anchor	Cattle	I.M., I.V. S.C.	28d 36d
Oxytocin Injection	A.H.A.	Beef cattle	I.M., I.V., S.C.	-
Oxytocin Injection	Anthony	Beef cattle	I.M., I.V., S.C.	-
Oxytocin Injection	Aspen	Beef cattle	I.M., I.V., S.C.	-
Oxytocin Injection	Phoenix	Beef cattle	I.M., I.V., S.C.	-
Oxytocin Injection	ProLabs	Beef cattle	I.M., I.V., S.C.	-
Oxytocin Injection	Rhone Merieux	Beef cattle	I.M., I.V., S.C.	-
Oxytocin Injection	RXV	Beef cattle	I.M., I.V., S.C.	-
Oxytocin Injection	Vedco	Beef cattle	I.M., I.V., S.C.	-
Oxytocin Injection	Vet Tek	Beef cattle	I.M., I.V., S.C.	-
Oxytocin Injection	W.V.S.	Beef cattle	I.M., I.V., S.C.	-
Oxytocin Injection (100 mL)	Butler	Beef cattle	I.M., I.V., S.C.	-
Oxy-Vet 100	W.V.S.	Cattle	I.V.	22d
	Note: Do not use in calves to be processed for veal.			
Panacur® Paste 10% 3.2 oz. (92 g) (Horse and Cattle)	Hoechst Roussel Vet	Cattle	Oral	8d
Panacur® Paste 10% 10.2 oz. (290 g) (Beef and Dairy Cattle)	Hoechst Roussel Vet	Cattle	Oral	8d
Panacur® Suspension 10% (Beef and Dairy Cattle)	Hoechst Roussel Vet	Cattle	Oral	8d
Panacur® Suspension 10% (Beef and Dairy Cattle and Horses)	Hoechst Roussel Vet	Cattle	Oral	8d
Panmycin® 500	Pharmacia & Upjohn	Calves	Oral	12d
Pasteurella Haemolytica Multocida Bacterin	Colorado Serum	Cattle	S.C.	21d
Patriot™ Insecticide Cattle Ear Tags	Fermenta	Cattle	Ear tags	-
	Note: Remove tags before slaughter.			
Pen-Aqueous	AgriPharm	Calves	I.M.	7d
		Cattle	I.M.	4d
Pen-Aqueous	Durvet	Cattle	I.M.	10d
Pen-Aqueous	RXV	Cattle	I.M.	10d
Pen-Aqueous	W.V.S.	Cattle	I.M.	10d
Pen BP-48®	Pfizer Animal Health	Beef cattle	S.C.	30d
Pen-G	Phoenix	Cattle	I.M.	10d
Pen-G Procaine	Vet Tek	Cattle	I.M.	10d
	Note: Do not use in calves to be processed for veal.			
Penicillin G Procaine	G.C. Hanford	Cattle	I.M.	10d
Penicillin G Procaine Aqueous Suspension	Butler	Cattle	I.M.	10d
Penicillin Mastitis Treatment	G.C. Hanford	Cattle	I.M.M.	3d
Penject	Vetus	Cattle	I.M.	10d
	Note: Do not use in calves to be processed for veal.			
Penject+B	Vetus	Beef cattle	S.C.	30d
	Note: Treatment in beef cattle must be limited to two (2) doses.			
Permectrin™ II	Anchor	Swine	Topical	5d
Permectrin™ II	Aspen	Cattle	Topical	-
Permectrin™ II	Bio-Ceutic	Swine	Topical	5d
Permectrin™ 25% WP	Anchor	Swine	Topical	5d
Permectrin™ CD Pour-On	Anchor	Cattle	Topical	-
Permectrin™ CD Pour-On	Bio-Ceutic	Cattle	Topical	-
Permectrin™ CDS Pour-On	Anchor	Cattle	Topical	-
Permectrin™ CDS Pour-On	Bio-Ceutic	Cattle	Topical	-
Permectrin™ Dairy Cattle & Swine Dust	Anchor	Swine	Topical	5d
Permectrin™ Livestock & Litter Dust	Anchor	Swine	Topical	5d

Withdrawal Time Charts

Withdrawal times listed correspond to label dosages only.

Product Name	Company Name	Species	Route of Administration	Meat
Permethrin™ Pour-On	Anchor	Cattle	Topical	--
Permethrin™ Pour-On	Bio-Ceutic	Cattle	Topical	--
Permethrin™ S Pour-On	Anchor	Cattle	Topical	-
Permethrin™ S Pour-On	Bio-Ceutic	Cattle	Topical	-
Permethrin 0.25% Dust	AgriLabs	Swine	Topical	5d
Permethrin 10%	Durvet	Beef cattle	Topical	-
PfiChlor®	Pfizer Animal Health	Cattle	Oral	-
Note: Not to be administered to beef cattle and non-lactating dairy cattle within 48 hours of slaughter at levels of 350 mg or more per head per day. Not to be fed to beef cattle at 5.0 mg/lb. body weight per day within 10 days of slaughter.				
Pfi-Pen G®	Pfizer Animal Health	Cattle	I.M.	10d
P.H.M. Bac™ 1	AgriLabs	Cattle	I.M.	21d
Phos-Aid	Butler	Cattle	I.M., I.V.	-
Phosphaid Injection	Vedco	Cattle	I.M., I.V.	-
Physiological Saline Solution	Butler	Beef cattle	I.V., S.C.	-
Piliguard® E. Coli-1	Schering-Plough	Cattle	I.M.	60d
Piliguard® Pinkeye-1	Schering-Plough	Cattle	I.M.	60d
Piliguard® Pinkeye + 7	Schering-Plough	Cattle	I.M., S.C.	21d
Pinkeye-3	Aspen	Cattle	I.M., S.C.	21d
Pinkeye Shield™ XT4	Grand	Cattle	I.M.	60d
Pip-Pop 320	Vet-A-Mix	Beef cattle	Oral	-
Plazvax®	Mallinckrodt	Cattle	S.C.	60d
Plexamino® Bolus	Vedco	Beef cattle	Oral	-
Pneumosyn®-H	Franklin	Cattle	I.M., S.C.	21d
Pneumosyn®-H+somnus	Franklin	Cattle	I.M., S.C.	21d
Polydine™ Spray	First Priority	Cattle	Topical	-
Polyflex®	Fort Dodge	Cattle	I.M.	6d
Polylites II™	Butler	Beef cattle	I.P., I.V.	-
Polylites IV	Butler	Beef cattle	Oral	-
Polyotic® Concentrate Soluble Powder	Fort Dodge	Calves	Oral	4d
Polyotic® Oblets®	Fort Dodge	Calves	Oral	14d
Polyotic® Soluble Powder	Fort Dodge	Calves	Oral	4d
Polyox® Powder	Butler	Beef cattle	Oral	-
Polyox® Powder	Rhone Merieux	Beef cattle	Oral	-
Polyox® Powder	Vedco	Beef cattle	Oral	-
Polyox® II Bolus	Rhone Merieux	Beef cattle	Oral	-
Polyox® II Bolus	Vedco	Beef cattle	Oral	-
Poly Serum®	Grand	Cattle	I.M., S.C.	21d
Potassium Chloride	Butler	Cattle	I.V.	-
Potassium Chloride	Phoenix	Beef cattle	I.V.	-
Povidern Medical Scrub	Vetus	Beef cattle	Topical	-
Povidern Medicated Shampoo	Vetus	Beef cattle	Topical	-
Povidern Solution	Vetus	Beef cattle	Topical	-
Povidine	AgriPharm	Cattle	Topical	-
Povidine	RXV	Beef cattle	Topical	-
Povidine 0.75% Scrub	RXV	Beef cattle	Topical	-
Povidine™ Bolus	Butler	Cattle	Topical	-
Povidone Iodine Ointment	First Priority	Beef cattle	Topical	-
Povidone Iodine Scrub	First Priority	Beef cattle	Topical	-
Povidone Iodine Solution	First Priority	Beef cattle	Topical	-
Povidone Scrub	Butler	Beef cattle	Topical	-
Pre-Conditioning/Receiving Formula Gel	Durvet	Beef cattle	Oral	-
Predef® 2X	Pharmacia & Upjohn	Cattle	I.M.	7d
Note: Do not use in calves to be processed for veal.				
PregGuard 9®	Pfizer Animal Health	Cattle	I.M.	21d
Presponse®	Fort Dodge	Cattle	I.M.	21d
Presponse® HM	Fort Dodge	Cattle	I.M.	21d
Pre-Vent 6™	AgriLabs	Cattle	I.M., S.C.	21d
Pro-Bac® 1	A.V.L.	Cattle	S.C.	60d
Pro-Bac® 3	A.V.L.	Calves	S.C.	60d
Pro-Bac® 3R	A.V.L.	Calves	S.C.	60d
Pro-Bac® 4	A.V.L.	Calves	S.C.	60d
Probios® Bovine One Oral Gel	Microbial Genetics	Beef cattle	Oral	-
Probios® Dispersible Powder	Microbial Genetics	Beef cattle	Oral	-
Probios® Granules	Microbial Genetics	Beef cattle	Oral	-
Probios® Oral Boluses	Microbial Genetics	Beef cattle	Oral	-

Product Name	Company Name	Species	Route of Administration	Meat
Probios® Plus Natural E Bovine One Oral Gel	Microbial Genetics	Beef cattle	Oral	-
Procal™ Powder	Butler	Beef cattle	Oral	-
ProCure™ 200	Bayer Corporation	Cattle	I.M., I.V.	28d
Prodine Ointment	Phoenix	Beef cattle	Topical	-
Prodine Scrub	Phoenix	Beef cattle	Topical	-
Prohibit™ Soluble Drench Powder	AgriLabs	Cattle	Oral	48h
Prolate* (Livestock)	Starbar	Cattle	Topical	1d
Promycin™ 100	Phoenix	Cattle	I.V.	22d
Note: Do not use in calves to be processed for veal. Not for use in lactating dairy cattle.				
Promycin Injection	Phoenix	Cattle	I.V.	19d
Proteoseptic Bolus	Vedco	Beef cattle	I.U., Topical	-
Protobolic™ Bolus Improved	Butler	Beef cattle	Oral	-
Proudsoff™	Creative Science	Cattle	Topical	-
Note: Not for use on animals intended for food purposes.				
Pulmo-guard™ PH	Anchor	Cattle	I.M.	60d
Pulmo-guard™ PH	Bio-Ceutic	Cattle	I.M.	60d
Purina® Anaplasmosis Block	Purina Mills	Cattle	Oral	48h
Purina® Cattle Dust	Purina Mills	Beef cattle	Topical	-
Purina® Chek-R-Mycin® 10x	Purina Mills	Calves	Oral	1d
Purina® Easy Duster™ Insecticide-I	Purina Mills	Beef cattle	Topical	-
Purina® Fly-A-Rest® Dairy Spray	Purina Mills	Beef cattle	Topical	-
Purina® Fly Larvicide Feed Mix	Purina Mills	Cattle	Oral	-
Purina® Grub-Kill	Purina Mills	Cattle	Topical	35d
Purina® Hard Hitter® 5.7%	Purina Mills	Swine	Topical	5d
Purina® Hard Hitter® Aqueous Spray	Purina Mills	Swine	Topical	5d
Purina® Hard Hitter® Cattle Pour-On Insecticide	Purina Mills	Beef cattle	Topical	-
Purina® Hog & Cattle Dusting Powder II	Purina Mills	Beef cattle	Topical	-
Purina® Sulfa-Nox® Liquid	Purina Mills	Cattle	Oral	10d
Purple Lotion Wound Dressing	AgriPharm	Horses	Topical	-
Purple Lotion Wound Dressing	Durvet	Horses	Topical	-
PVP Iodine Ointment	Vedco	Beef cattle	Topical	-
Pyramid™ 4+Presponse® SQ	Fort Dodge	Cattle	I.M., S.C.	21d
Pyramid™ MLV 3	Fort Dodge	Cattle	I.M.	21d
Pyramid™ MLV 4	Fort Dodge	Cattle	I.M.	21d
Pyrenone® Spray	Uncle Sam	Beef cattle	Topical	-
Pyrethrin Plus	Durvet	Beef cattle	Topical	-
Quadrplex/Somnugen	Bio-Ceutic	Cattle	I.M.	21d
Quartermaster®	Pharmacia & Upjohn	Dairy cattle	I.M.M.	60d
Note: Animals infused with this product must not be slaughtered for use in food within 96 hours after calving. This product must not be used within 6 weeks of the expected date of calving.				
Quatracon-2X™	Bio-Ceutic	Cattle	S.C.	21d
Rabdomun® Vaccine	Mallinckrodt	Cattle	I.M.	21d
Rabguard-TC®	Pfizer Animal Health	Cattle	I.M.	21d
Rabon® 3% Dust	AgriLabs	Beef cattle	Topical	-
Rabon® 50 WP	Fermenta	Beef cattle	Topical	-
Rabon® Oral Larvicide	Fermenta	Beef cattle	Feed	-
Ralgro® Implants (Cattle)	Mallinckrodt	Cattle	S.C.	-
Ralgro® Magnum™ Implants	Mallinckrodt	Cattle	Implant	-
Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.				
Rally™-20	Vedco	Cattle	I.M., I.V.	4d
Note: Do not use in calves to be processed for veal.				
Ravap® E.C.	Fermenta	Beef cattle	Topical	-
Recharge	Jorgensen	Beef cattle	Oral	-
Re-Covr® Injection	Solvay	Cattle	I.M., I.V.	4d
Note: Do not use in calves to be processed for veal.				
Renew™	AgriLabs	Beef cattle	Oral	-
Replenish™	Fermenta	Beef cattle	Oral	-
Reprotec®-T	Franklin	Cattle	S.C.	60d
Reprotec®-TVL5	Franklin	Cattle	S.C.	60d
Resist 7	AgriPharm	Cattle	S.C.	21d
Re-Sorb®	Pfizer Animal Health	Beef cattle	Oral	-
Respiragen™ Antiserum	Colorado Serum	Cattle	I.M., S.C.	21d
Respond™	AgriLabs	Beef cattle	Oral	-
Respond	Jorgensen	Beef cattle	Oral	-
ResProMune™ 4 IBP-BRSV	AgriLabs	Cattle	I.M., S.C.	21d

Withdrawal Time Charts
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Product Name	Company Name	Species	Route of Administration	Meat
ResProMune™ 4 + SomnuMune®	AgriLabs	Cattle	I.M.	60d
ResProMune™ 8 IBP-Lepto 5	AgriLabs	Cattle	I.M., S.C.	21d
ResProMune™ 9	AgriLabs	Cattle	I.M., S.C.	21d
ResProMune™ 10	AgriLabs	Cattle	I.M., S.C.	21d
ResProMune® 4+VL5	AgriLabs	Cattle	I.M.	60d
Resvac® 4/Somubac®	Pfizer Animal Health	Cattle	I.M.	21d
Resvac® BRSV/Somubac®	Pfizer Animal Health	Cattle	I.M.	21d
Revalor®-g	Hoechst Roussel Vet	Cattle	Implant	-
Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.				
Revalor®-h	Hoechst Roussel Vet	Beef calves	Implant	-
Not for use in breeding herd replacements.				
Revalor®-s	Hoechst Roussel Vet	Cattle	S.C.	-
Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.				
R.I.D. Russell Iodine Disinfectant	Russell	Poultry	Oral	-
RM Imrab® 3	Rhone Merieux	Cattle	I.M., S.C.	21d
RM Imrab® Bovine Plus	Rhone Merieux	Cattle	I.M., S.C.	21d
Rocadyne	Rochester Midland	Cattle	Oral	-
Rocavit® E-40%	Pfizer Animal Health	Beef cattle	Oral	-
Rol-276	RXV	Beef cattle	Oral	-
Rotator® Ear Tags	Coopers	Cattle	Ear tags	-
Note: Remove tags before slaughter.				
Rot-Not™	Vétoquinol	Cattle	Topical	-
Rumalax™ Bolus	AgriLabs	Beef cattle	Oral	-
Rumatel®	Pfizer Animal Health	Cattle	Oral	14d-
Rumen Boluses	Durvet	Beef cattle	Oral	-
Rumen-Eze	Vet-A-Mix	Beef cattle	Oral	-
Rumensin® 80	Elanco	Beef cattle	Oral	-
Note: Do not feed to lactating cattle or goats.				
Rumen Yeast Caps	TechMix	Beef cattle	Oral	-
Ruminant LactoBac Gel	Vedco	Beef cattle	Oral	-
RXV Alliance™ IBP	RXV	Cattle	I.M., S.C.	21d
RXV Alliance™ IBP + Lepto 5	RXV	Cattle	I.M., S.C.	21d
RXV Alliance™ IBP + Somnus	RXV	Cattle	I.M., S.C.	21d
RXV Antidote™ One PHM	RXV	Cattle	I.M.	21d
RXV-BP-1 (Bovine Probiotic Paste)	RXV	Beef cattle	Oral	-
RXV-CP-1	RXV	Beef cattle	Oral	-
		Calves	Oral	-
RXV-CP1 Concentrate	RXV	Beef cattle	Oral	-
		Calves	Oral	-
RXV HerdVac® 4	RXV	Cattle	I.M., S.C.	21d
RXV HerdVac® 4KL	RXV	Cattle	I.M., S.C.	21d
RXV-Pec	RXV	Calves	Oral	-
RXV Rescue 3K-L 5 Vac™	RXV	Cattle	I.M., S.C.	21d
RXV Rescue™ 4K + L5 Somnus	RXV	Cattle	I.M., S.C.	21d
RXV Rescue 4K-L 5 Vac™	RXV	Cattle	I.M., S.C.	21d
RXV Rescue 4K-Somnus Vac™	RXV	Cattle	I.M., S.C.	21d
RXV Rescue 4K Vac™	RXV	Cattle	I.M., S.C.	21d
RXV Resist 7	RXV	Cattle	S.C.	21d
RXV Vac™ Cow-Vac® 9	RXV	Cattle	I.M., S.C.	21d
RXV Vac™ IBR-BVD-PI3	RXV	Cattle	I.M., S.C.	21d
RXV Vac™ Lepto 5	RXV	Cattle	I.M., S.C.	21d
RXV Vac™ SomnuMune®	RXV	Cattle	I.M., S.C.	21d
RXV Vac™ Vibrio-Lepto 5	RXV	Cattle	I.M., S.C.	21d
Saber™ Extra Ear Tags	Mallinckrodt	Cattle	Ear tags	-
Saber™ Pour-On Insecticide	Mallinckrodt	Cattle	Topical	-
Note: Not recommended for use on veal calves.				
Safe-Guard® 0.5% Cattle Top Dress Pellets	Hoechst Roussel Vet	Cattle	Oral	13d
Safe-Guard® 20% Beef and Dairy Cattle Dewormer	Hoechst Roussel Vet	Cattle	Oral	13d
Safe-Guard® 20% Natural Protein Deworming Block	Hoechst Roussel Vet	Cattle	Oral	16d
Safe-Guard®/En-Pro-Al® Blocks	Hoechst Roussel Vet	Cattle	Oral	11d
Safe-Guard® Paste 10% 3.2 oz. (92 g) (Horse and Cattle)	Hoechst Roussel Vet	Cattle	Oral	8d
Safe-Guard® Paste 10% 10.2 oz. (290 g) (Beef and Dairy Cattle)	Hoechst Roussel Vet	Cattle	Oral	8d
Safe-Guard® Suspension 10% (Beef and Dairy Cattle)	Hoechst Roussel Vet	Cattle	Oral	8d
Saline 0.9% Solution	Vetus	Cattle	I.V., S.C.	-
Saline Solution	Vedco	Beef cattle	I.V., S.C.	-

Product Name	Company Name	Species	Route of Administration	Meat
Saline Solution 0.9%	Phoenix	Beef cattle	I.V., S.C.	-
Salmo Bac TD™	AgriLabs	Cattle	I.M., S.C.	21d
Salmonella Dublin-Typhimurium Bacterin	Colorado Serum	Cattle	S.C.	21d
Salmo Shield® T	Grand	Cattle	I.M., S.C.	21d
Salmo Shield® TD	Grand	Cattle	I.M., S.C.	21d
Scour-Cheque™	A.H.A.	Calves	Oral	21d
ScourGuard 3 (K)®	Pfizer Animal Health	Cattle	I.M.	21d
ScourGuard 3 (K)/C®	Pfizer Animal Health	Cattle	I.M.	21d
Screw Worm Aerosol-L	AgriLabs	Beef cattle	Topical	-
Screw Worm Aerosol-L	Loveland	Beef cattle	Topical	-
Screwworm & Ear Tick Spray	Anchor	Beef cattle	Topical	-
Septimune® PH/HS	Fort Dodge	Cattle	I.M., S.C.	21d
Septimune® PH-K	Fort Dodge	Cattle	I.M., S.C.	21d
Sero-Guard-99™	Bio-Ceutic	Calves	Oral	21d
Show Shampoo™	Butler	Beef cattle	Topical	-
Siteguard® MLG Vaccine	Coopers	Cattle	I.M., S.C.	21d
Sodium Bicarbonate	Butler	Beef cattle	I.V., S.C.	-
Sodium Bicarbonate 8.4%	Vedco	Beef cattle	I.V.	-
Sodium Iodide	ProLabs	Cattle	I.V.	-
Sodium Iodide	Vet Tek	Cattle	I.V.	-
Sodium Iodide 20%	RXV	Cattle	I.V.	-
Sodium Iodide 20%	W.V.S.	Cattle	I.V.	-
Sodium Iodide 20% Injection	Aspen	Cattle	I.V.	-
Sodium Iodide 20% Injection	Phoenix	Cattle	I.V.	-
Sodium Iodide 20% Injection	Vedco	Cattle	I.V.	-
Sodium Iodide Solution 20%	Butler	Cattle	I.V.	-
Sodium Sulfamethazine	Durvet	Cattle	Oral	10d
Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.				
Solu/Tet	Vedco	Calves	Oral	5d
Solvahex® Surgical Scrub/Skin & Wound Cleanser	Solvay	Beef cattle	Topical	-
Somato-Staph®	Anchor	Cattle	I.M.	21d
Somato-Staph®/Lepto-5	Anchor	Cattle	I.M.	21d
SomnuMune®	AgriLabs	Cattle	I.M., S.C.	21d
SomnuMune®	Aspen	Cattle	I.M., S.C.	21d
Somnu Shield™	Grand	Cattle	I.M., S.C.	21d
Somnu Shield™ XT	Grand	Cattle	I.M.	60d
Somubac®	Pfizer Animal Health	Cattle	I.M., S.C.	21d
Spoton® Cattle Insecticide	Bayer Corporation	Cattle	Topical	45d
Stanisol	Q.A. Laboratories	Beef cattle	Topical	-
StayBred VL5™	Pfizer Animal Health	Cattle	I.M.	21d
Sterile Penicillin G Benzathine and Penicillin G Procaine	Aspen	Beef cattle	S.C.	30d
Note: Do not use in calves to be processed for veal.				
Sterile Penicillin G Procaine	Aspen	Calves	I.M.	7d
		Cattle	I.M.	4d
Sterile Procaine Penicillin G	Premier Farmtech	Cattle	I.M.	10d
Sterile Saline	Vet Tek	Beef cattle	I.M., I.P., I.V., S.C.	-
Sterile Saline Solution	AgriPharm	Beef cattle	I.M., I.P., I.V., S.C.	-
Sterile Saline Solution	RXV	Beef cattle	I.M., I.P., I.V., S.C.	-
Stock Power	LeGear	Beef cattle	Oral	-
Strategy™ V4 Vaccine	Mallinckrodt	Cattle	I.M.	21d
Strategy™ V4HS Vaccine	Mallinckrodt	Cattle	I.M.	21d
Strategy™ V4HSL5 Vaccine	Mallinckrodt	Cattle	I.M.	21d
Strategy™ V4L5 Vaccine	Mallinckrodt	Cattle	I.M.	21d
Strong Iodine Tincture	Butler	Beef cattle	Topical	-
Strong Iodine Tincture 7%	Durvet	Beef cattle	Topical	-
Sulfadimethoxine Injection - 40%	Aspen	Cattle	I.V.	5d
Note: Do not use in calves to be processed for veal.				
Sulfadimethoxine Injection-40%	Durvet	Cattle	I.V.	5d
Sulfadimethoxine Injection-40%	Rhone Merieux	Cattle	I.V.	5d
Sulfadimethoxine Injection-40%	Vedco	Cattle	I.V.	5d
Sulfadimethoxine Oral Solution	Aspen	Cattle	Oral	7d
Note: Do not use in calves to be processed for veal.				
Sulfadimethoxine Oral Solution	Butler	Cattle	Oral	7d
Note: Do not use in calves to be processed for veal.				
Sulfadimethoxine Oral Solution	Durvet	Cattle	Oral	7d
Sulfadimethoxine Oral Solution	Rhone Merieux	Cattle	Oral	7d

Withdrawal Time Charts

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Product Name	Company Name	Species	Route of Administration	Meat
Sulfadimethoxine Oral Solution	Vedco	Cattle	Oral	7d
	Note: Do not use in calves to be processed for veal.			
Sulfadimethoxine Soluble Powder	Aspen	Cattle	Oral	7d
	Note: Do not use in calves to be processed for veal.			
Sulfadimethoxine Soluble Powder	Durvet	Cattle	Oral	7d
Sulfadimethoxine Soluble Powder	Rhone Merieux	Cattle	Oral	7d
Sulfadimethoxine Soluble Powder	Vedco	Cattle	Oral	7d
Sulfa-Max® III	AgriLabs	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sulfa-Max™ III Calf Bolus	AgriLabs	Calves	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time. Not for use in female dairy cattle 20 months of age or older.			
Sulfa-Q 20% Concentrate	RXV	Cattle	Oral	10d
SulfaSure™ SR	Butler	Cattle	Oral	8d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
SulfaSure™ SR	Fermenta	Cattle	Oral	8d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
Sulfa Sure™-SR Bolus	Premier Farmtech	Cattle	Oral	8d
SulfaSure™ SR Calf Bolus	Aspen	Cattle	Oral	8d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
SulfaSure™ SR Calf Bolus	Butler	Cattle	Oral	8d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
SulfaSure™ SR Calf Bolus	Fermenta	Calves	Oral	8d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
SulfaSure™ SR Cattle Bolus	Aspen	Cattle	Oral	8d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
SulfaTech® Calf Bolus	A.H.A.	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
SulfaTech® Cattle	A.H.A.	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
Sulmet® Drinking Water Solution 12.5%	Fort Dodge	Cattle	Oral	10d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
Sulmet® Oblets®	Fort Dodge	Cattle	Oral	10d
Sulmet® Soluble Powder	Fort Dodge	Cattle	Oral	10d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
Super II Dairy & Farm Spray	Durvet	Beef cattle	Topical	-
Super B Complex	Vedco	Cattle	I.M., S.C.	-
Super SeE	Vet-A-Mix	Beef cattle	Feed	-
Super-Tet® with Havlogen®	Bayer Corporation	Cattle	I.M.	21d
SupraSulfa III® Calf Bolus	RXV	Calves	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
SupraSulfa III® Calf Bolus	W.V.S.	Calves	Oral	8d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
SupraSulfa III® Cattle Bolus	W.V.S.	Cattle	Oral	8d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
SupraSulfa® SR	RXV	Cattle	Oral	8d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet.			
Sure-Start Plus	RXV	Beef cattle	Oral	-
Sure-Start Plus Drench	RXV	Beef cattle	Oral	-
Sustain III®	AgriLabs	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III®	AgriPharm	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III®	Butler	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III®	Durvet	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III™	Phoenix	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III®	Vedco	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			

Withdrawal times listed correspond to label dosages only.

Withdrawal Time Charts

Product Name	Company Name	Species	Route of Administration	Meat
Sustain III® Calf Bolus	AgriLabs	Calves	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III® Calf Bolus	AgriPharm	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III® Calf Bolus	Aspen	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III® Calf Bolus	Butler	Calves	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III® Calf Bolus	Durvet	Calves	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III™ Calf Bolus	Phoenix	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain® III Calf Bolus	Rhone Merieux	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III® Calf Bolus	Vedco	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain III® Cattle Bolus	Aspen	Cattle	Oral	12d
	Note: Do not use in calves under 1 month of age or calves being fed an all milk diet. Exceeding two (2) consecutive doses may cause violative tissue residues to remain beyond the withdrawal time.			
Sustain® III Cattle Bolus	Rhone Merieux	Cattle	Oral	12d
Synanthic® Bovine Dewormer Paste, 18.5%	Fort Dodge	Cattle	Oral	11d
Synanthic® Bovine Dewormer Suspension, 9.06%	Fort Dodge	Cattle	Oral	7d
Synanthic® Bovine Dewormer Suspension, 22.5%	Fort Dodge	Cattle	I.R., Oral	7d
Synco-Mate-B®	Rhone Merieux	Cattle	I.M., S.C.	-
Synergized DeLice® Pour-On Insecticide	Coopers	Beef cattle	Topical	-
Synergized Expar® Pour-On Insecticide	Coopers	Beef cattle	Topical	-
Synovex® C	Fort Dodge	Beef cattle	S.C.	-
	Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.			
Synovex® H	Aspen	Beef cattle	S.C.	-
	Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.			
Synovex® H	Fort Dodge	Beef cattle	S.C.	-
	Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.			
Synovex® Plus™	Fort Dodge	Beef cattle	S.C.	-
	Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.			
Synovex® S	Aspen	Beef cattle	S.C.	-
	Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.			
Synovex® S	Fort Dodge	Beef cattle	S.C.	-
	Note: Implant in the ear only. Do not attempt to salvage the implanted ear for human or animal food.			
Syn Shield™	Grand	Cattle	I.M.	60d
Syntabac™ "Plus" Gel	Fort Dodge	Cattle	Oral	-
	Note: No withdrawal time is necessary.			
Tactic® E.C.	Hoechst Roussel Vet	Cattle	Topical	--
Tamed Iodine Wound Spray	Chem-Tronics	Beef cattle	Topical	-
Tandem® 3KL	Rhone Merieux	Cattle	I.M.	21d
Tandem® 3KL IBR Plus	Rhone Merieux	Cattle	I.M.	21d
Tandem® 4K	Rhone Merieux	Cattle	I.M., S.C.	21d
Tandem® 4KL	Rhone Merieux	Cattle	I.M., S.C.	21d
Tandem® 4KL IBR Plus	Rhone Merieux	Cattle	I.M.	21d
Tandem® 9K	Rhone Merieux	Cattle	I.M., S.C.	21d
Tandem® SV+3	Rhone Merieux	Cattle	I.M.	21d
Tandem® SV+3 IBR Plus	Rhone Merieux	Cattle	I.M.	21d
Tanni-Gel	Vet-A-Mix	Beef cattle	Topical	-
TBZ® 43% Cattle Wormer Paste	Merck AgVet	Cattle	Oral	3d
Tempered Iodine 2.44	Phoenix	Beef cattle	Topical	-
Terminator™ Tag	Anchor	Cattle	Ear tags	-
	Note: Remove tags before slaughter.			
Terminator™ Tag	Bio-Ceutic	Cattle	Ear tags	-
	Note: Remove tags before slaughter.			
Terramycin-343® Soluble Powder	Pfizer Animal Health	Cattle	Oral	5d
Terramycin® Ophthalmic Ointment	Pfizer Animal Health	Beef cattle	Ophthalmic	-
Terramycin® Scours Tablets	Pfizer Animal Health	Calves	Oral	7d
Terramycin® Soluble Powder	Pfizer Animal Health	Cattle	Oral	5d

Withdrawal Time Charts

Withdrawal times listed correspond to label dosages only.

Product Name	Company Name	Species	Route of Administration	Meat
Terra-Vet 100	Aspen	Cattle	I.V.	22d
Note: Do not use in calves to be processed for veal.				
Tetanus Antitoxin	Colorado Serum	Cattle	I.M., S.C.	21d
Tetanus Antitoxin	Fort Dodge	Cattle	I.P., I.V., S.C.	21d
Tetanus Antitoxin	Professional Biological	Cattle	I.M., S.C.	21d
Tetanus Antitoxin	Rhone Merieux	Cattle	I.M., I.V., S.C.	21d
Tetanus Antitoxin Equine Origin	EquiLabs	Cattle	I.M., S.C.	21d
Tetanus Toxoid	Colorado Serum	Cattle	I.M., S.C.	21d
Tetanus Toxoid-Concentrated	Colorado Serum	Cattle	I.M.	21d
Tetanus Toxoid-Concentrated	Professional Biological	Cattle	I.M., S.C.	21d
Tetguard™	Boehringer Ingelheim	Cattle	I.M., S.C.	21d
Tetnogen®	Solvay	Cattle	I.M., S.C.	21d
Tetnogen®-AT	Solvay	Cattle	I.M., S.C.	21d
Tetra-324	Premier Farmtech	Calves	Oral	5d
Tetra-Biotic-100	A.H.A.	Cattle	I.V.	19d
Tetracycline Hydrochloride Soluble Powder	Butler	Calves	Oral	5d
Tetracycline Hydrochloride Soluble Powder-324	AgriLabs	Calves	Oral	5d
Tetracycline Hydrochloride Soluble Powder-324	Butler	Calves	Oral	5d
Tetracycline Hydrochloride Soluble Powder-324	Vedco	Cattle	Oral	5d
Tetracycline Soluble Powder 324	AgriPharm	Cattle	Oral	5d
Note: Do not use in calves to be processed for veal.				
Tetracycline Soluble Powder 324	RXV	Calves	Oral	5d
Note: Do not use in calves to be processed for veal.				
Tetracycline Soluble Powder 324	W.V.S.	Calves	Oral	5d
Note: Do not use in calves to be processed for veal.				
Tetrasure™ 324	Fermenta	Calves	Oral	5d
Tet-Sol 324™	A.H.A.	Calves	Oral	5d
Therabloat® Drench Concentrate	Pfizer Animal Health	Beef cattle	Oral	-
Thiamine Hydrochloride Injection	Butler	Beef cattle	I.M.	-
Thiamine Hydrochloride Injection	Phoenix	Beef cattle	I.M.	-
Thiamine Hydrochloride Injection	Vedco	Beef cattle	I.M.	-
Thraxol®-2	Bayer Corporation	Cattle	S.C.	42d
Tiguvon® Cattle Insecticide Pour-On	Bayer Corporation	Cattle	Topical	35d
Tincture Iodine 7%	A.H.A.	Beef cattle	Topical	-
Tincture Iodine 7%	Aspen	Beef cattle	Topical	-
Tincture Iodine 7%	Chem-Tronics	Beef cattle	Topical	-
TM®-50	Pfizer Animal Health	Cattle	Oral	-
Note: When fed in dry feeds at 2 g/head/day and above, in cattle, withdraw 5 days before slaughter. A withdrawal is not necessary at lower use levels in dry feeds for calves.				
TM®-50D	Pfizer Animal Health	Cattle	Oral	-
Note: When fed in dry feeds at 2 g/head/day and above, in cattle, withdraw 5 days before slaughter. A withdrawal is not necessary at lower use levels in dry feeds for calves.				
ToDAY®	Franklin	Cattle	I.M.M.	4d
ToMORROW®	Franklin	Cattle	I.M.M.	42d
Topical Fungicide	Durvet	Cattle	Topical	-
Topical Wound Spray	A.H.A.	Horses	Topical	-
Totalon® Pour-On Dewormer	Mallinckrodt	Cattle	Topical	9d
Toxiban™ Granules	Vet-A-Mix	Beef cattle	Oral	-
Toxiban™ Suspension	Vet-A-Mix	Beef cattle	Oral	-
ToxiBar™ Suspension with Sorbitol	Vet-A-Mix	Beef cattle	Oral	-
Tramisol®	RXV	Cattle	S.C.	7d
Tramisol® Cattle Dewormer Oblet®	Mallinckrodt	Cattle	Oral	48h
Tramisol® Injectable Solution, 13.65%	Mallinckrodt	Cattle	S.C.	7d
Tramisol® Soluble Drench Powder	Mallinckrodt	Cattle	Oral	48h
Tramisol® Type A Medicated Article	Mallinckrodt	Cattle	Oral	48h
Triangle® 1	Fort Dodge	Cattle	I.M., S.C.	21d
Triangle® 3	Fort Dodge	Cattle	I.M., S.C.	21d
Triangle® 3 V5L	Fort Dodge	Cattle	S.C.	60d
Triangle® 4 2 mL Dose	Fort Dodge	Cattle	I.M., S.C.	21d
Triangle® 4+HS	Fort Dodge	Cattle	I.M.	21d
Triangle® 4+PH/HS	Fort Dodge	Cattle	I.M., S.C.	21d
Triangle® 4+PH-K	Fort Dodge	Cattle	I.M., S.C.	21d
Triangle® 8	Fort Dodge	Cattle	I.M.	21d
Triangle® 9	Fort Dodge	Cattle	I.M., S.C.	21d
Triangle® 9+HS	Fort Dodge	Cattle	I.M.	21d
Triangle® 9+PH-K	Fort Dodge	Cattle	I.M.	21d
TrichGuard®	Fort Dodge	Cattle	S.C.	60d

Product Name	Company Name	Species	Route of Administration	Meat
TrichGuard® V5L	Fort Dodge	Cattle	S.C.	60d
Trichontrol™	Pfizer Animal Health	Cattle	S.C.	60d
Trichontrol™ VL5	Pfizer Animal Health	Cattle	S.C.	60d
Trienamamine™	Phoenix	Cattle	I.M., I.V.	4d
	Note: Do not use in calves to be processed for veal.			
Tripelennamine Hydrochloride	Aspen	Cattle	I.M., I.V.	4d
	Note: Do not use in calves to be processed for veal.			
Tripelennamine Hydrochloride	Butler	Cattle	I.M., I.V.	4d
	Note: Do not use in calves to be processed for veal.			
Tripelennamine Hydrochloride	Vet Tek	Cattle	I.M., I.V.	4d
Triple Histamine	RXV	Cattle	I.M., I.V.	4d
	Not for use in horses intended for food.			
Triple Histamine	W.V.S.	Cattle	I.M., I.V.	4d
	Note: Do not use in calves to be processed for veal.			
Tri-Tussin™ Powder	Life Science	Cattle	Oral	-
TriVib 5L®	Fort Dodge	Cattle	S.C.	60d
TSV-2®	Pfizer Animal Health	Cattle	I.N.	21d
Twin-Pen™	AgriLabs	Beef cattle	S.C.	30d
	Note: Treatment in beef cattle must be limited to two (2) doses.			
Tylan® 50 Injection	Elanco	Beef cattle	I.M.	21d
Tylan® 200 Injection	Elanco	Beef cattle	I.M.	21d
Tylosin Injection	AgriLabs	Cattle	I.M.	21d
	Note: Do not use in calves to be processed for veal.			
Tylosin Injection	Aspen	Cattle	I.M.	21d
	Note: Do not use in calves to be processed for veal.			
Tylosin Injection	Fermenta	Cattle	I.M.	21d
UAA (Universal Animal Antidote) Gel	Vedco	Cattle	Oral	-
Uddermate™	Anchor	Cattle	I.M.M.	14d
Ultrabac® 7	Pfizer Animal Health	Cattle	I.M., S.C.	21d
Ultrabac® 7/Somubac®	Pfizer Animal Health	Cattle	I.M., S.C.	21d
Ultrabac® 8	Pfizer Animal Health	Cattle	I.M., S.C.	21d
Ultrabac® CD	Pfizer Animal Health	Cattle	I.M., S.C.	21d
Uterine Bolus	Butler	Beef cattle	I.U., Topical	-
Uterine Bolus	Durvet	Beef cattle	I.U., Topical	-
Uterine Bolus	Phoenix	Beef cattle	I.U., Topical	-
Valbazen® Cattle Dewormer Paste	Pfizer Animal Health	Cattle	Oral	27d
Valbazen® Cattle Dewormer Suspension	Pfizer Animal Health	Cattle	Oral	27d
V.A.L.® Syrup	Fort Dodge	Beef cattle	Oral	-
Vapona Feedlot-4 lb. Concentrate	Durvet	Cattle	Topical	1d
Veda-K ₁ Injection	Vedco	Beef cattle	I.M., I.V., S.C.	-
Vedalyte 8X Powder	Vedco	Beef cattle	Oral	-
Veda-Sorb Bolus	Vedco	Beef cattle	Oral	-
Veda-Sorb Jr Bolus	Vedco	Beef cattle	Oral	-
Velenium™	Fort Dodge	Beef cattle	I.M., S.C.	30d
Vetadine Scrub	Vedco	Beef cattle	Topical	-
Vetadine Solution	Vedco	Beef cattle	Topical	-
Veta-K ₁ ® Injection	Rhone Merieux	Beef cattle	I.M., I.V., S.C.	-
Vetalyte Plus I.V. Solution	RXV	Beef cattle	I.V.	-
Veterinary Pentothal® Kit	Rhone Merieux	Beef cattle	I.V.	-
Vetisulid® Boluses	Solvay	Calves	Oral	7d
Vetisulid® Injection	Solvay	Calves	I.V.	5d
Vetisulid® Powder	Solvay	Calves	Oral	7d
Vibo-5	Bio-Ceutic	Cattle	I.M.	21d
Vibo-5/Somnugen	Bio-Ceutic	Cattle	I.M.	21d
Vibralone™-H-L5	Bayer Corporation	Cattle	I.M.	21d
Vibralone™-L5	Bayer Corporation	Cattle	I.M.	21d
Vibri-Lep®-5	Franklin	Cattle	S.C.	60d
Vibrin®	Pfizer Animal Health	Cattle	S.C.	60d
Vibrio-Lepto 5	AgriLabs	Cattle	I.M., S.C.	21d
Vibrio™-Lepto-5	Anchor	Cattle	I.M.	21d
Vibrio-Lepto 5	Durvet	Cattle	I.M., S.C.	21d
Vibrio-Lepto 5	Premier Farmtech	Cattle	I.M., S.C.	21d
Vibrio Lepto 5 (oil base)	Aspen	Cattle	I.M.	60d
Vibrio-Lepto-5/Somnus™	Anchor	Cattle	I.M.	21d
Vibrio-Lepto 5 Vaccine	Aspen	Cattle	I.M., S.C.	21d
Vibrio/Leptoform-5®	Pfizer Animal Health	Cattle	I.M.	21d
Vib Shield®	Grand	Cattle	I.M., S.C.	21d

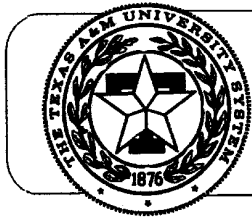
Withdrawal Time Charts

Withdrawal times listed correspond to label dosages only.

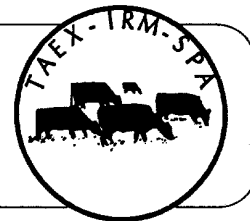
Product Name	Company Name	Species	Route of Administration	Meat
Vib Shield® L5	Grand	Cattle	I.M., S.C.	21d
Vib Shield® Plus	Grand	Cattle	I.M.	60d
Vib Shield® Plus L5	Grand	Cattle	I.M.	60d
Vigilante® Insecticide	Hoechst Roussel Vet	Beef cattle	Oral	-
Vilec-Sol	Vet-A-Mix	Beef cattle	Oral	-
Vinco® Vitapol® with Electrolytes	Vineland	Beef cattle	Oral	-
VIP Spray Formula	Loveland	Cattle	Topical	-
Note: Do not apply to calves under 6 months of age.				
Vira Shield® 2	Grand	Cattle	I.M.	60d
Vira Shield® 2+BRSV	Grand	Cattle	I.M.	60d
Vira Shield® 3	Grand	Cattle	I.M.	60d
Vira Shield® 3+VL5	Grand	Cattle	I.M.	60d
Vira Shield® 4	Grand	Cattle	I.M.	60d
Vira Shield® 4+L5	Grand	Cattle	I.M.	60d
Vira Shield® 5	Grand	Cattle	I.M.	60d
Vira Shield® 5+L5	Grand	Cattle	I.M.	60d
Vira Shield® 5+Somnus	Grand	Cattle	I.M.	60d
Vira Shield® 5+VL5	Grand	Cattle	I.M.	60d
Vision® 7 Somnus with Spur®	Bayer Corporation	Cattle	S.C.	21d
Vision® 7 with Spur®	Bayer Corporation	Cattle	I.M., S.C.	21d
Vision® 8 with Spur®	Bayer Corporation	Cattle	I.M., S.C.	21d
Vision® CD • T with Spur®	Bayer Corporation	Cattle	S.C.	21d
Vision® CD with Spur®	Bayer Corporation	Cattle	S.C.	21d
Vi-Sorbin®	Pfizer Animal Health	Beef cattle	Oral	-
Vita-B Complex	AgriLabs	Beef cattle	I.M., S.C.	-
Vita-Boost™ Bolus	AgriLabs	Beef cattle	I.M., S.C.	-
Vita Charge® Paste	AgriLabs	Beef cattle	Oral	-
Vita Drench B	AgriLabs	Beef cattle	Oral	-
Vita-Jec® A & D "500"	RXV	Cattle	I.M.	60d
Vita-Jec® A & D "500"	W.V.S.	Cattle	I.M.	60d
Vita-Jec® B Complex Fortified	RXV	Beef cattle	Oral	-
Vita-Jec® Vitamin A-D-B ₁₂	RXV	Cattle	I.M.	60d
Vita-Jec® Vitamin A-D-B ₁₂	W.V.S.	Cattle	I.M.	60d
Vita-Jec® Vitamin B ₁₂ (1,000 mcg/mL)	W.V.S.	Beef cattle	I.M., S.C.	-
Vita-Jec® Vitamin B ₁₂ (3,000 mcg/mL)	W.V.S.	Beef cattle	I.M., S.C.	-
Vita-Jec® Vitamin B ₁₂ (5,000 mcg/mL)	W.V.S.	Cattle	I.M., S.C.	-
Vita-Jec® Vitamin B ₁₂ (Cyano 1,000 mcg/mL)	RXV	Beef cattle	I.M., S.C.	-
Vita-Jec® Vitamin B ₁₂ (Cyano 3,000 mcg/mL)	RXV	Beef cattle	I.M., S.C.	-
Vita-Jec® Vitamin B-Complex	RXV	Beef cattle	I.M., S.C.	-
Vita-Jec® Vitamin K1 Injectable	RXV	Beef cattle	I.M., I.V., S.C.	-
Vi-tal	Loveland	Beef cattle	Oral	-
Vital E™-300	Schering-Plough	Beef cattle	I.M., S.C.	-
Vital E™+A	Schering-Plough	Beef cattle	I.M., S.C.	-
Vital E™-A+D	Schering-Plough	Beef cattle	I.M., S.C.	-
Vita-Lyte	Phoenix	Beef cattle	Oral	-
Vitalyte Soluble Powder	Vedco	Beef cattle	Oral	-
Vitamin AD ₃	AgriLabs	Cattle	I.M.	60d
Vitamin AD	Butler	Cattle	I.M.	60d
Vitamin A & D	Vedco	Beef cattle	I.M.	-
Vitamin A & D "500"	AgriPharm	Cattle	I.M.	60d
Vitamin A-D-500	Anchor	Cattle	I.M.	60d
Vitamin A D ₃ B ₁₂	Vet Tek	Cattle	I.M.	60d
Vitamin A-D ₃ -B ₁₂ Injection	ProLabs	Cattle	I.M.	60d
Vitamin A D B ₁₂ Injection	Vedco	Cattle	I.M.	60d
Vitamin AD ₃ Injection	A.H.A.	Cattle	I.M.	60d
Vitamin AD Injection	Aspen	Beef cattle	I.M.	-
Vitamin AD Injection	Phoenix	Beef cattle	I.M.	-
Vitamin B ₁₂	Butler	Beef cattle	I.M., S.C.	-
Vitamin B ₁₂ 1000	Vet Tek	Beef cattle	I.M., S.C.	-
Vitamin B ₁₂ 1000 mcg	Phoenix	Beef cattle	I.M., S.C.	-
Vitamin B ₁₂ 1000 mcg Injection	Aspen	Beef cattle	I.M., S.C.	-
Vitamin B ₁₂ 3000	Vet Tek	Beef cattle	I.M., S.C.	-
Vitamin B ₁₂ 3000 mcg	Phoenix	Beef cattle	I.M., S.C.	-
Vitamin B ₁₂ 5,000 mcg	Phoenix	Beef cattle	I.M., S.C.	-
Vitamin B ₁₂ Injection	A.H.A.	Beef cattle	I.M., S.C.	-
Vitamin B ₁₂ Injection 1000	Vetus	Cattle	I.M., S.C.	-

Product Name	Company Name	Species	Route of Administration	Meat
Vitamin B ₁₂ Injection (1,000 mcg/mL)	ProLabs	Beef cattle	I.M., S.C.	-
Vitamin B ₁₂ Injection 3000	Vetus	Cattle	I.M., S.C.	-
Vitamin B ₁₂ Injection (3,000 mcg/mL)	ProLabs	Beef cattle	I.M., S.C.	-
Vitamin B Complex	Aspen	Beef cattle	I.M.	-
Vitamin B Complex	Butler	Beef cattle	I.M., S.C.	-
Vitamin-B Complex	Durvet	Beef cattle	I.M.	-
Vitamin B Complex	Phoenix	Beef cattle	I.M.	-
Vitamin B Complex	Vedco	Beef cattle	I.M.	-
Vitamin B Complex Fortified	Aspen	Cattle	I.M., S.C.	-
Vitamin B Complex Fortified	Phoenix	Beef cattle	I.M., S.C.	-
Vitamin B Complex Fortified Injection	A.H.A.	Beef cattle	I.M., S.C.	-
Vitamin C	Butler	Beef cattle	I.M.	-
Vitamin C	Phoenix	Beef cattle	I.M.	-
Vitamin C	Vedco	Beef cattle	I.M.	-
Vitamin E	Phoenix	Beef cattle	I.M., S.C.	-
Vitamin E 300	Durvet	Beef cattle	I.M., S.C.	-
Vitamin E 500	Durvet	Beef cattle	I.M., S.C.	-
Vitamin E 500	Vet Tek	Beef cattle	I.M., S.C.	-
Vitamin E+AD	Durvet	Beef cattle	I.M., S.C.	-
Vitamin K ₁	Butler	Beef cattle	I.M., I.V., S.C.	-
Vitamin K ₁	Vet Tek	Beef cattle Calves	I.M., I.V., S.C. I.M., I.V., S.C.	- -
Vitamin K1 Injection	A.H.A.	Beef cattle	I.M., I.V., S.C.	-
Vitamin K ₁ Injection	Phoenix	Beef cattle	I.M., I.V., S.C.	-
Vitamins and Electrolytes	Durvet	Beef cattle	Oral	-
Vitamins and Electrolytes Concentrate	Durvet	Beef cattle	Oral	-
Vitamins & Electrolytes-“Plus”	AgriLabs	Beef cattle	Oral	-
Vita-Oral	AgriPharm	Beef cattle	Oral	-
Vita-Oral	RXV	Beef cattle	Oral	-
Vita-Plex SeE	Vet-A-Mix	Beef cattle	Feed	-
Vita-Start™ Powder	AgriLabs	Beef cattle	Oral	-
Volar®	Bayer Corporation	Cattle	I.M., S.C.	21d
VPL Trypzyme®-V Aerosol Spray	V.P.L.	Beef cattle	Topical	-
VPL Trypzyme®-V Liquid	V.P.L.	Beef cattle	Topical	-
VPL Xenodine®	V.P.L.	Cattle	Topical	-
VPL Xenodine® Spray	V.P.L.	Cattle	Topical	-
Warbex® Famphur Pour-On for Cattle	Mallinckrodt	Cattle	Topical	35d
Wart Shield™	Grand	Cattle	S.C.	21d
Wartsoff™	Creative Science	Beef cattle	Topical	-
Wart Vaccine	AgriLabs	Cattle	S.C.	21d
Wart Vaccine	Colorado Serum	Cattle	S.C.	21d
West-Vet® Prepodyne® Solution	WestAgro	Beef cattle	Topical	-
Wound-Kote Gentian Violet	Farnam	Beef cattle	Topical	-
Wound Protector™	LeGear	Beef cattle	Topical	-
Yellow Lite	RXV	Beef cattle	Oral	-
Zipcide® Co-Ral® 1% Dust	Loveland	Beef cattle	Topical	-

Appendix C



Texas Agricultural Extension Service
The Texas A&M University System



IRM-SPA HANDBOOK

Cow-Calf Enterprise Standardized Performance Analysis (SPA) Measures & Summary Description*

SPA-11
2/9/96

Cattlemen have been challenged to be lower cost producers, to be more competitive, and to increase market share and profits. The first step to lowering cost of production is to clearly determine the current cost of production and make a comparison to an alternative production system.

The first objective of SPA is to determine the production and financial performance of the producer's cow-calf enterprise. SPA helps identify potential areas for change and measures progress over time in meeting business objectives. The total farm and ranch financial reporting procedure will facilitate comparative analysis between production years, different producers, production regions and production systems.

Data will contribute to a national cow-calf enterprise performance data base. Having a standardized analysis terminology and calculation procedure would greatly enhance the educational efforts and analysis whether done by producers, consultants or Extension.

In 1992, the National Cattlemen's Association adopted the Standardized Performance Analysis (SPA) system developed through efforts of NCA producers, the National Integrated Resource Management Coordinating Committee and Extension Specialists. The SPA developers also endorsed the use of the Farm Financial Standards Guidelines developed by a national task force to facilitate preparation of total farm or ranch financial statements. These statements are used as a basis for the cow-calf enterprise financial analysis.

Total farm or ranch financial statements include; (1) the balance sheet, (2) an accrual adjusted income statement, (3) a statement of cash flow and (4) a statement of owner equity.

The NCA-IRM Guidelines for Production and Financial Performance Analysis for the Cow-Calf Producer: Cow-Calf SPA presents standardized analysis terminology, calculation procedures, interpretations and limitations of the performance measures for the cow-calf enterprise. Performance measures include both production and financial analysis measures in the following areas:

1. Reproduction Performance
2. Production Performance
3. Grazing and Raised Feed Land Use and Productivity
4. Marketing - Price and Method
5. Financial and Economic Performance

The following is a list of cow-calf enterprise IRM-SPA performance measures that have been chosen and field tested in sixteen states.

Reproduction:

- Based on Exposed Females
 - Pregnancy Percentage²
 - Pregnancy Loss Percentage²
 - Calving Percentage¹
 - Calf Death Loss¹
 - Calf Crop or Weaning Percentage¹
 - Female Replacement Rate²
- Calf Death Loss Based on Calves Born¹
- Calving Distribution²
 - Cumulative Distribution
 - Calves during first 21 days
 - Calves during first 42 days
 - Calves during first 63 days
 - Calves after first 63 days

*Written by James M. McGrann, Professor, and John Parker, Extension Assistant, at Texas A&M University. Cow-Calf SPA Guidelines can be acquired from the National Cattlemen's Association or by using the order form at the end of this factsheet.

Development and field testing of the SPA Cow-Calf guidelines was funded in part by cooperative agreement #91-E SPN-1-5155 from the Extension Service USDA, Washington D.C.

¹ Primary performance measures that must be supplied by the participant.

² Secondary performance measures that the participant may not be able to provide.

Production:

- Based on Exposed Females
 - Average Calf Weaned Age (months)
 - Actual Weaning Weight (lbs./hd.)¹
 - Steers / Bulls
 - Heifers
 - Average Weaning Weight
 - Pounds Weaned Per Exposed Female¹

Grazing and Raised Feed Land Measures:

- Acres Per Exposed Female¹
 - Grazing Acres per Exposed Female
 - Raised Feed Acres per Exposed Female
 - Crop Aftermath Acres per Exposed Female
- Pounds Weaned Per Acres Utilized by the Cow-Calf Enterprise¹
- Dominant Grazing Method - Exposed Females²
 - Continuous Grazing on Improved & Unimproved Native
- Pounds of Raised/Purchased Feed Fed per Breeding Cow²

Marketing and Financial Performance Measures

In no area of performance evaluation is there a greater need for standardization of terminology and calculation procedures than in the cow-calf enterprise financial and economic evaluation.

The following measures and their associated computational procedures, interpretation and identified limitations are based on accurate total farm or ranch financial statements and a complete cattle inventory. Enterprise financial data is developed from the operation's financial statements and/or direct enterprise records that are consistent with the operation's financial statements. Financial statements are statements both for the total operation and for the cow-calf enterprise.

Enterprise financial and economic procedural guidelines are outlined below.

Financial Expenses vs. Economic Costs

The financial and economic summary is calculated per breeding cow and per cwt. of calf weaned per breeding cow. It is important to have a clear understanding of the difference between financial and economic costs, as it is used in the development of these measures.

The financial enterprise analysis is taken directly from the income statement. Expenses are those typically found in an accounting income statement although some additional items

may be required for the enterprise analysis. Expenses include cash operating expenses, interest for operating capital, term debt and non-cash expenses. The financial analysis does not account for the economic opportunity cost of land, raised feed or equity capital invested in the enterprise. Actual land mortgage, livestock, machinery and operating capital interest expense are included in the financing expense.

The economic analysis accounts for the opportunity cost of resources used in production of the commodity in addition to expenses in the financial analysis. Land opportunity cost, for example, is the estimated rental rate that would be paid for land under an equivalent production system. Opportunity cost of capital is the rate of return that one could expect to earn on that capital in an alternative investment with similar risks. Details are identified with each measure to help explain the difference between the financial and economic analysis.

Marketing, Financial And Economic Performance Measures

Marketing Information:

- Marketing Information
 - Marketing method
 - Pricing method
 - Dominant breed
- Payweight Cattle Prices (\$/cwt.)

Calves	Culls
- Steers/Bulls	- Cows
- Heifers	- Bulls
- Weighted Average	

Financial Position³

- Investment Per Breeding Cow (Value of Assets)
 - Current assets
 - Livestock
 - Machinery and equipment
 - Other non-current assets
 - Real estate - land and improvements
 - Total investment
- Debt Per Breeding Cow (Enterprise Liabilities)
- Equity to Assets or Percent Equity

³ Based on cost and market valuation of assets.

Financial and Economic Performance Per Breeding Cow and Per cwt. of Calf Weaned

- Total Raised/Purchased Feed Cost
- Total Grazing Cost
- Gross Cow-Calf Enterprise Accrual Revenue
- Total Cow-Calf Enterprise Operating Cost⁴
- Total Financing Cost and Economic Return
- Total Cost Before Non-Calf Revenue Adjustment
- Net Income⁵
- Percent Return on Enterprise Assets (ROA)
- Unit Cost of Production (Economic Break-Even Price)
 - Total Non Calf Revenue
 - Total Calf Cost (Non-calf Revenue Adjusted)
- Rate of Economic Return on the Owned Real Estate Investment

Tables 1 to 4 illustrate the complete reports generated by SPA for a farm or ranch cow-calf enterprise. This information does not reveal the actual farm or ranch but the description does indicate its general location and land resource use. Tables 2 to 4 show the production and financial performance results. Table 5 shows a summary of the SPA 1991-1992 results from 360 herds with over 270,000 cows from 20 states. This table has the following general characteristics:

Item	Value
Precipitation	7-90"
Herds involved	360
Number of breeding cows	274,047
Cow-calf % of gross income	3% to 100%

Herd Size by Head	Number of Herds
1-49	44
50-99	54
100-199	55
200-299	52
300-499	45
500-999	49
1,000 +	61

Data requirements to implement SPA include the fiscal year financial statements. These statements include the beginning and ending balance sheets and an income or profit and loss statement. The farm or ranch depreciation schedule and the fiscal year IRS tax schedules are also needed. SPA software and support materials will facilitate organization and reporting of the financial information. Additional inventory and produc-

tion data is required on the cow-calf enterprise to calculate production performance measures. Financial data required include the following for the fiscal or tax year in which calves are weaned: IRS tax and depreciation schedule, loan payment schedules, financial statements prepared for the business analysis and lenders, cattle inventories and feed use, and production records. Most producers already have the necessary data to complete the SPA analysis. After completion of SPA, producers will have a clearer understanding of data requirements and will be able to improve the accuracy of the SPA analysis with better data over time.

The Texas Agricultural Extension Service has prepared software and worksheets to facilitate implementation of the SPA (see the order form at the end of this factsheet which describes the support materials and contains the actual ordering form). These "analytical" tools helped organize producers' existing production and financial data into a focused, well-defined, performance analysis that establishes the total farm or ranch and cow-calf enterprise actual performance. This standardized analysis facilitates comparative analysis between production years which is the primary use of the SPA analysis. Producers from different regions can be compared when the data is pooled to where individual data is not disclosed but regional performance averages and ranges can be observed. The recommended SPA measures are illustrated in the generated example reports in tables 1 to 4.

IRM-SPA Education Materials and Software

There are a number of IRM-SPA educational products available from the Texas Agricultural Extension Service (TAEX).

The distribution fee for educational materials and software must be paid by Extension employees and producers as these products are developed using TAEX resources and must be maintained by TAEX. If a state IRM coordinator wishes to acquire the educational materials and software and make copies for Extension employees, as well as producers, he/she can do this through a written request. However, the state IRM coordinator will be required to support the users of the software and educational materials he/she distributed. To acquire IRM-SPA products, please use the attached order form at the end of this factsheet.

⁴ These are pre-tax costs, thus they do not include income tax payments. Withdrawals are included in the cost calculation.

⁵ The net income is pre-tax income, but is not equal to IRS taxable income.

Table 1. Description Of The Farm Or Ranch Operation For The Cow-Calf Enterprise Performance Analysis

Fiscal Year **1993**
 - Beginning Date 01/01/93
 - Ending Date 12/31/93

Farm/Ranch Location - State: TX - County: xxxxx
 - Region: West - Zip Code: 00000-0000

Precipitation Inches
 - Normal Annual: 12.00
 - Fiscal Year: 16.00

Cow-Calf Enterprise Gross Revenue
 as % of Total Gross Revenue: 100 %

Size of Operation, in Number of Breeding Cows (S,M,L) Large

Management/Production Seasons	Breeding	Calving	Weaning
Beginning Date	04/15/92	01/25/93	10/20/93
Ending Date	08/01/92	05/13/93	10/25/93
Days Between Beginning & Ending	109	109	6

Grazing and Raised Feed	Grazing		Raised Feed	
	%- Ac.	Ac./Hd.	%- Ac.	Ac./Hd.
<i>Type of Pasture or Crop</i>				
Native Unimproved	100.00	29.13	0.00	0.00
Native Improved	0.00	0.00	0.00	0.00
Improved Perennia	0.00	0.00	0.00	0.00
Annual Pasture or Forage Crop	0.00	0.00	0.00	0.00
Woodland (Grazeable Forestland)	0.00	0.00		
Crop Aftermath	0.00	0.00	0.00	0.00

Acres Per Exposed Female 29.13 0.00

Dominant Grazing Method - Exposed Females:

Cont. Native Pasture

Pounds of Raised/Purchased Feed Fed Per Breeding Cow Lb./Hd.
270

Financial Data Source: Cash
 Data File Name: Sample.a93

Table 2. Spa Cow-Calf Enterprise Marketing Information Summary

	Dominant Marketing Method	Dominant Pricing Method	Payweight Prices *
Weaned Bulls	NA	NA	NA
Weaned Steers	Auction	Cash	\$96.99 /cwt.
Weaned Heifers	Auction	Cash	\$89.49 /cwt.
Weighted Average Weaned Calves			\$93.38 /cwt.
Aged Females:			
Culls	Auction	Cash	\$51.16 /cwt.
Breeding	NA	NA	NA
Aged Bulls:			
Culls	Auction	Cash	\$61.88 /cwt.
Breeding	NA	NA	NA

Data File Name: Sample.a93

Date Printed: 07/12/95

Table 3. Spa Cow-Calf Enterprise Summary Of Reproduction And Production Performance Values

Reproduction Performance Measures Based on Exposed Females	Percent
Pregnancy Percentage **	85.83
Pregnancy Loss Percentage **	0.78
Calving Percentage *	85.05
Calf Death Loss Based on Exposed Females *	3.50
Calf Crop or Weaning Percentage *	81.55
Female Replacement Rate Percentage **	12.62
Calf Death Loss Based on Number of Calves Born *	4.11
Calving Distribution **	
Beginning Calving Date:	01/25/93
Calves Born During First 21 Days	02/15/93
Calves Born During First 42 Days	03/08/93
Calves Born During First 63 Days	03/29/93
Calves Born After First 63 Days	6.39
Production Performance Measures:	
Average Age at Weaning (Months) *	8
Actual Weaning Weights *	Lb./Hd.
Bulls	NA
Steers	560
Heifers	520
Average Weaning Weight	540
Pounds Weaned per Exposed Female *	440
*Primary measure of performance	Data File Name: JMRanch.C93
**Secondary measure of performance.	Date Printed: 07/13/95

Table 4. Spa Cow-Calf Enterprise Summary Of Grazing And Raised Feed Acres And Feed Fed

Grazing and Raised Feed Land Measures:	Ac./Hd.
Acres Per Exposed Female	29.13
Grazing Acres per Exposed Female **	29.13
Raised feed Acres per Exposed Female **	0.00
Crop Aftermath Acres per Exposed Female **	0.00
Pounds Weaned Per Acre of Land **	Lb./Ac. 15.12
Dominant Grazing Method - Exposed Females **	
Cont. Native Pasture	
Pounds of Raised/Purchased Feed Fed per Breeding Cow **	Lb./Hd. 270

* Primary measure of performance.

Data File Name:

Sample.a93

** Secondary measure of performance.

Date Printed:

07/12/95

Table 5. Spa Financial And Economic Performance Summary

SPA Report #4 - Financial

Fiscal Year: 1993
File Name: JMRanch.\$93

Printout Date: 11/20/95
Printout Time: 10:37 AM

— INVESTMENT PER BREEDING COW (Average Asset Values) —

	COST BASIS	MARKET VALUE
	-----	-----
Total Current Assets	\$88.34	\$88.34
Noncurrent Assets		
Livestock	736.42	736.42
Machinery & Equipment	60.00	60.00
Real Estate Land & Improvements	3,148.69	3,294.32
Other Non-Current Assets	0.00	0.00
Total Investment Per Breeding Cow	4,033.45	4,179.08
Debt Per Breeding Cow (Enterprise Liabilities)	730.60	835.21
Equity to Asset or Percent Equity (%)	81.89 %	80.01 %

— FINANCIAL & ECONOMIC PERFORMANCE —

	FINANCIAL		ECONOMIC	
	\$/COW	\$/CWT *	\$/COW	\$/CWT *
	-----	-----	-----	-----
Total Raised/Purchased Feed Cost	\$34.95	\$7.94	\$34.95	\$7.94
Total Grazing Cost	82.28	18.68	80.23	18.22
<hr style="border-top: 1px dashed black;"/>				
Gross Cow-Calf Enterprise Accrual Revenue	431.50	97.98	431.50	97.98
Total Cow-Calf Enterprise Operating Cost	258.85	58.78	297.69	67.60
Total Financing Cost & Economic Return	61.75	14.02	38.54	8.75
Total Cost Before Non-Calf Revenue Adj. **	359.04	81.53	374.68	85.08
Net Income ***	72.46	16.45	56.83	12.90
Percent Return on Enterprise Assets (ROA)				
Cost Basis		3.33 %		
Market Value		3.21 %		

— UNIT COST OF WEANED CALF PRODUCTION ** —

Total Non Calf Revenue	20.28	4.60	20.28	4.60
Total Calf Cost (Non-calf Revenue Adjusted)	338.77	76.92	354.40	80.47

— ECONOMIC RETURN —

Rate of Economic Return on Real Estate Investment at Market Value NA %

* Dollars Per Cwt. of Weaned Calves

** These are pre-tax costs, thus they do not include income tax payments.

Withdrawals are included in the cost calculation.

*** The net income is pre-tax income, but is not equal to IRS taxable income.

Table 6. Summary Of Average Values For Select Spa Performance Measures 1991 - 1994 Data

	<u>National</u>
Production Based on Exposed Females	
Pregnancy Percentage	90.37
Calf Crop or Weaning Percentage	84.01
Actual Weaning Weight Steers/Bulls	528
Actual Weaning Weight Heifers	499
Actual Average Weaning Weight Per Calf	513
Pounds Weaned Per Exposed Female	433
Total Acres Per Exposed Female	18.05
Pounds Weaned Per Acre Utilized Per Exposed Female	54.20
Marketing	
Payweight Price - Bulls and Steers - \$/Cwt.	89.54
Payweight Price - Heifers - \$/Cwt.	85.42
Payweight Price - Average - \$/Cwt.	87.50
Financial and Economic	
Total Investment Per Breeding Cow-Cost Basis ²¹³⁵	
Percent Return on Enterprise Assets (ROA) at Cost - %	6.03
Total Investment Per Breeding Cow - Market Value ³⁴⁵⁰	
Percent Return on Enterprise Assets (ROA) at Market Value - %	3.12
	-- \$ --
Total Financial Raised/Purchased Feed Cost Per Breeding Cow	109.09
Total Financial Grazing Cost Per Breeding Cow	84.59
Total Financial Cost	401.71
Net Financial Income Per Breeding Cow	46.85
Weaned Calf Financial Cost - \$/Cwt.	79.82
Total Economic Raised/Purchased Feed Cost Per Breeding Cow	113.24
Total Economic Grazing Cost Per Breeding Cow	123.60
Total Economic Cost	504.82
Net Economic Income Per Breeding Cow	-57.29
Weaned Calf Economic Cost \$/Cwt.	104.35

Written Materials and Software Available to Support SPA use:

- **NCA-IRM-SPA Guidelines for Production & Performance Analysis for the Cow-Calf, Stocker/Feeder, and Seedstock Enterprises**

These are documents explaining in detail the computation, interpretation, and limitation of each SPA performance measure chosen by the NCA-SPA subcommittees for each of the three beef cattle SPA enterprises.

- **SPA Handbooks**

The SPA Handbook is a series of factsheets and worksheets that address specific SPA implementation issues for the three beef cattle enterprises. This three ring binder handbook contains nearly 50 articles that will be updated when new factsheets are developed for each of the beef cattle enterprise groups (cow-calf, stocker/feeder and seedstock). When software is purchased the SPA Handbook is included for the specific enterprise.

- **SPA Software and SPA Handbook**

SPA software generates the SPA reports including (1) description, (2) reproduction and production, (3) grazing and (4) the integrated financial and production performance information including among other measures cost of weaned calf production and enterprise return on assets (ROA). These are stand alone programs that run under the Microsoft MS-DOS operating system. The SPA Handbook is also included for each enterprise.

- **FINYEAR (Farm/Ranch Financial Statement Preparation Software)**

For producers without financial statements this software will generate the balance sheet, accrual adjusted income statement, statement of owner equity, and cash flow. The software follows the Farm Financial Standards Guidelines and calculates the 16 financial ratios. Available to use in LotusTM and ExcelTM for Windows.

- **Retained Ownership Decision Aids**

This is a set of 10 spreadsheets based on decision aids for projecting the performance and summarizing actual closeouts for (1) backgrounding (preconditioning), (2) stocker, and (3) custom feeding enterprises. The methodology used follows the Stocker/Feeder SPA Guidelines. A market decision aid helps evaluate using the future adoption marketing alternatives. The spreadsheet decision aids are available for the Windows version of LotusTM and also ExcelTM.

For More Information on SPA Contact:

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