

Cow/Calf Herd Health—An Idealistic Herd Health Program

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Introduction

A large proportion of U.S. beef originates in small (farm) cow herds. Two-thirds of beef breeding herds in the United States have fewer than fifty cows. Forty-one states have an average herd size of fewer than fifty cows. Nine North Atlantic states have an average herd size of only four cows. Only two percent of all U.S. beef herds have more than 500 cows. However, a minimum of 200 cows is generally considered necessary for an "Economic unit" or a "primary enterprise." These figures contrast with over forty percent of U.S. cattle "finished" being fed in fewer than 200 feedlots.

Challenges

Where beef cattle are part of an agronomic farming operation, they seldom command a majority of the farmer's attention. Cows are usually kept to utilize existing forage rather than forage being produced to feed the cows. As important as records are, a farmer will only keep records on cattle to the extent that he enjoys record keeping.

This does not suggest that cow/calf operations are not important to anyone. It shows, really, that a lot of people like to own cattle. People who own cattle usually care about their health and appearance. Cattle are produced even when a profit is very unlikely. The situation creates a challenge for veterinarians to provide acceptable and affordable preventive health programs in sometimes difficult or improbable circumstances. Health programs will necessarily vary somewhat, depending on locale, inherent diseases or health problems and management preferences.

The smaller the herd the greater will be the cost per animal for health maintenance. Adequate handling facilities can be especially expensive in small herds. Yet having "adequate" facilities is often the key to implementing and/or continuing a viable health maintenance program. Challenge No. 1 for the veterinarian may be to design adequate and affordable handling facilities for clients with small beef enterprises of

varied description. Handling facilities, like health maintenance programs themselves, must be tailored to individual needs.

The smaller the herd the less opportunity there is for the cattleman to gain needed experience in: distinguishing between normal and abnormal animal behavior, castrating and dehorning calves, giving injections, and handling calving. Frequency of repetition may be insufficient to adequately reinforce learning. Likewise, many veterinary practices serving farmers are less than 50% food-animal medicine. Beef cattle are often a rather small part of the practice of the veterinarian supplying their health services. The veterinarian may be given little opportunity to become proficient in rectal palpation. Special equipment needed, such as an electroejaculator, may be hard to justify.

Opportunities

Despite the difficulties of delivering adequate veterinary service at an affordable cost, preventive health programs are very important to the productivity of small beef herds. The death of one or a few animals before the cause is identified is relatively more costly in a small herd. Herd replacements are more apt to be bought than raised in a small herd, thereby increasing the risk of introducing disease. A one-bull herd is in the greatest jeopardy of delayed calving if the bull is not sound at breeding time.

The owner of a small herd can benefit greatly from the use of artificial insemination. He cannot afford to keep a variety of bulls to breed cows and to breed heifers and to produce the best breed combinations. He can afford to use better bulls through A.I. than he can afford to own.

The operator of a small herd will probably not personally become a proficient inseminator. Once-a-year breeding of a few cows is not sufficient for most people to develop and retain adequate proficiency. Professional inseminators are usually only available in areas with considerable dairying. More often, a dairyman who inseminates his own cows inseminates for a neighbor with beef cows. Superior health management is essential for artificial insemination to be successful. The veterinarian may be the appropriate supplier

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of A.I. service. It brings the practitioner and producer together on the positive note of improved production rather than the more negative concept of disease prevention. As provider of both herd health and A.I. service, the veterinarian will become better acquainted with the herd and its management. The availability of products to synchronize breeding, some of which are prescription drugs, have made veterinarian-provided A.I. service more practical and appropriate.

In some regards, a group practice may be better able to provide programmed preventive health service than a veterinarian practicing alone. One veterinarian in the group may be able to specialize in cattle or, at least, in food animals. In a group practice there is less interference with appointments by emergencies. This can be very important in keeping a client on a preventive health program. A producer should, however, be the client of one veterinarian. Rotating veterinarians on herd work, or sending whoever is available, negates much of the advantage of a herd health program.

Veterinarians providing health care to beef herds should be active members of local and state cattle-producer organizations and participate in planning sessions of the County Extension Council beef commodity group. Veterinarians within a geographic area should strive to give uniform recommendations to producers. They should also actively work toward uniform recommendations with other professionals giving advice in disciplines that overlap. Credibility and effect are diminished when producers receive conflicting advice. Conversely, repetition and replication reinforce good advice.

Products used in herd health maintenance are available to the cattle producer from a variety of suppliers. The veterinarian providing health care must directly address discrepancies in prices between sources. He must either: 1) convince clients that his advice provided with the product warrants higher charge; 2) write prescriptions and direct clients to a least-cost source, or 3) find a way to be cost-competitive with other sources. Disguising products or suggesting that one label is superior to another label of the same product is generally counterproductive. All non-prescription products widely-used by veterinarians in herd health work are available with over-the-counter labels.

Client-Education

One of the greatest challenges to veterinarians serving farm beef herds is to be adequately compensated for producer-education and consultation in a way acceptable to the producers. Client-education is a necessary and desirable part of an effective herd health program. As important as client-education is, many veterinarians, especially those in mixed practice, don't find time to provide much. Some veterinarians are not convinced that client-education is mutually beneficial. The fact is, the better a producer understands his problems and the proper solutions to those problems, the more he realizes the benefits of good

veterinary service. Client-education will be rewarded by better results from the veterinarian's efforts and, in most cases, it will lead to more demand for his services.

It is important for the veterinarian to understand and to emphasize to his clients the relative merit of each health management practice. For example, proper feeding is relatively more important than vaccination. Stress-load should be considered when scheduling herd work. Age and condition of animals, weather, and harshness of each intended procedure are all important considerations. Weaning results in considerable stress on calves and should not be combined with several other stressful procedures. Weaning should follow and/or precede major processing of calves by a minimum of three weeks.

The veterinarian providing health recommendations and services must remain acutely aware of the need to constantly caution against animals being slaughtered with potential drug residues. For example, cows are quite often treated with a pour-on for grub control at the same time they are examined for pregnancy and physical soundness. Treated cull cows may be immediately sent to slaughter if the owner is not reminded of withdrawal requirements of drugs used.

Raising herd replacements should be encouraged for disease prevention and genetic improvement. Buying replacements increases the risk of introducing disease into the herd and makes genetic progress difficult. The necessity for adequate quarantine and retesting of animals being introduced to a herd must be emphasized.

The cattleman should be trained in calving management: 1) He needs to know the importance of frequent observation. 2) He must be able to distinguish between normal parturition and dystocia. 3) He should develop competence and confidence within his capabilities. 4) He should be taught to seek professional help at the proper time.

Calf scours during calving season should be anticipated and prevented. The cattleman should be taught the principles of calf scours prevention. He should learn the importance of prompt and adequate treatment. Timely treatment should seldom require parenteral administration or a visit by the veterinarian. The relatively greater importance of combatting dehydration and acidosis compared to controlling the causative organism must be emphasized.

Castrating and implanting with a growth stimulant may best be done by the educated herdsman on an as-born basis. Dehorning and castration should not be put off until weaning or fall roundup. The earlier they can be done the easier it is on the calf. Dehorning can be done without attracting flies and using implants favors early castration. Calves need blackleg protection early. The importance of re-vaccination for long-term protection must be stressed.

Nutrition

A short calving season is a prerequisite to a workable preventive health program. Nutritional management is

the most important single factor in maintaining a short calving season. Heifers must be fed adequately from weaning to breeding if they are to calve at two years old. Puberty is a function of both age and weight. Failing to feed heifers adequately before breeding results in delayed skeletal development and calving difficulty in addition to a low pregnancy rate. If feed levels are excessive, heifers will become overly fat, dystocia will increase, milk production may be lowered, productive lifespan may be shortened, and feed costs will be prohibitive.

The limiting nutrient related to reproduction is usually energy. Feed requirements of cows vary during the reproductive cycle. The greatest demand occurs from calving to breeding. Protein is also an important consideration in feeding. Young growing animals are often underfed protein, whereas mature dry cows are often overfed protein. Lactating cows require twice as much protein as dry cows. Other nutrients which are frequently deficient and require supplementation include phosphorus and selenium. The beef cow's reproductive cycle and her varying nutrient requirements are illustrated in Tables 1 and 2.

TABLE 1. Beef Cow Year By Nutrient Requirement Periods.

Period 1 (82 days)	Period 2 (123 days)	Period 3 (110 days)	Period 4 (50 days)
Calving to breeding	Breeding to Weaning of calf	Weaning of Calf to 50 days	Last 50 days of pregnancy

TABLE 2. NRC Requirements For Beef Cows of Various Weights By Period.

Body Wt.	TDN	NE	Daily Requirements		Ca (gm)	P (gm)	Vit A (IUx 1000)
			Crude Protein (lb.)	Digestible Protein (lb.)			
Period 1 - Calving to Breeding*							
900	11-14	10.7-13.6	1.8-2.6	1.1-1.6	25-45	25-41	21-34
1100	12-15	11.6-14.6	2.0-2.8	1.2-1.7	27-46	27-43	24-38
1300	13-16	12.6-15.5	2.2-3.0	1.3-1.8	28-46	28-44	27-43
Period 2 - Breeding to Weaning Calf*							
900	9-11	8.7-10.7	1.5-2.1	0.9-1.3	22-41	22-37	21
1100	10-12	9.7-11.6	1.6-2.3	1.0-1.4	24-42	24-39	24
1300	11-13	10.7-12.6	1.7-2.4	1.1-1.5	25-42	25-39	27
Period 3 - Weaning Calf to 50 Days before Calving							
900	8.0	7.8	.82	.43	13	13	21
100	8.5	8.2	.90	.45	13	13	24
1300	9.0	8.7	.99	.49	14	14	27
Period 4 - Last 50 days of pregnancy							
900	8.8	8.5	1.0	.48	14	14	21
1100	10.0	9.7	1.1	.53	15	15	24
1300	11.1	10.8	1.2	.58	17	17	27

*Requirements depend on milking ability, age and condition.

Herd Health Calendar

A preventive health program is most easily understood and communicated on a calendar. Practices can be adjusted on the calendar for geographic area, for calving season, etc. The calendar concept emphasizes the need for a concise calving season. It provides a framework for integrating the recommendations from persons in the various disciplines serving beef herd enterprises. It is a starting place for veterinarians within a geographic area to work toward uniformity in their recommendations.

Example Health Calendar (March-April Calving)

January

Vaccinate fall-weaned calves against BVD, IBR and PI₃. This re-vaccination should be scheduled sometime between 30 days post-weaning and 30 days pre-breeding for replacement heifers that were vaccinated prior to weaning: 1) They will be over the stress of weaning. 2) They will be old enough to develop a solid, lasting immunity. 3) They should be away from the cows so there will be no danger of exposing pregnant cows to vaccine virus. 4) There will be no danger of interference with conception or pregnancy in the vaccinates.

Halter and tie replacement heifers. Having halter broke cows is worth the effort.

Feed supplemental magnesium to cows from 60 days before calving until start of breeding in areas where grass tetany is a problem.

Treat for lice twice within 21 days to break the louse life cycle if lice were not adequately controlled in the fall.

Inject Vitamin A if feed is deficient and dietary supplementation is impractical.

February

Begin calving heifers about three weeks ahead of calving cows: 1) They can be given the extra attention they need. 2) They will have the extra time they need to be cycling at start of breeding.

First colostrum from older cows should be available for heifers' calves that require it. This may necessitate keeping frozen colostrum from the previous year.

March-April

Calve cows and remainder of heifers.

See that calves get colostrum immediately for maximum absorption of immunoglobulins.

Have an effective calf scour prevention program in place.

Identify calves and record calving events for use in selection and culling.

Evaluate bulls for breeding soundness. This should include fertility determination, physical examination and mating behavior observation.

Dehorn and castrate calves early, before they reach four months of age.

Implant steer calves with a growth promotant at the time

they are castrated.

Vaccinate breeding herd against leptospirosis and vibriosis.

April-May

Deworm yearlings three weeks and six weeks after they are turned on pasture.

Deworm cows in areas where a "periparturient rise" is a problem. Worms do survive winter—both on pasture and in the cattle.

Initiate hornfly and facefly control. Apply insecticide ear tags at full label recommendation. Rotate products and take every precaution available to delay insecticide resistance in the fly population.

May-June-July

Breed replacement heifers 45 days only. Begin breeding heifers three to four weeks before starting to breed cows. Expose 50% more heifers than needed as replacements.

Breed cows for 65 days only.

Vaccinate calves for blackleg and malignant edema soon after all calves are born.

Complete castrating, implanting and dehorning calves.

August

Examine heifers for pregnancy. Select replacements from heifers pregnant after 45 days of breeding. Cull open heifers from the breeding herd.

Halter and tie all replacement animals. This should include pregnant yearlings and heifer calves that are prospective replacements.

Observe "Livestock Weather Safety Index" (Table 3) when working with cattle in hot weather.

Deworm suckling calves if location and environment indicate a need.

Re-implant steer calves according to schedule recommended for the product used.

September-October

Examine cows for pregnancy and physical soundness. Mark for culling those that are open, old or impaired.

Collect blood samples from the breeding herd. Achieve and maintain a "Brucellosis Certified Free Herd." Request blood samples be screened for anaplasmosis, leptospirosis and other diseases of concern for which test are reliable.

Vaccinate calves for leptospirosis, IBR-PI₃, BVD, blackleg-malignant edema, *Hemophilus somnus* and pasteurellosis.

Certify calves as "preconditioned" where a program is available. This will enhance the value of feeder calves. It will encourage extended ownership of stockers and development of replacements for the breeding herd.

Halter and tie all bred heifers and heifer calves that are prospective replacements.

Treat all cattle for grubs and lice. Re-treat within 21 days

TABLE 3. Livestock Weather Safety Index

Temperature of	Relative Humidity (%)																			
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
75									70	70	71	71	72	72	73	73	74	74	75	75
76							70	70	70	71	72	72	72	73	74	74	74	75	75	76
77						70	70	71	71	72	72	73	73	74	74	75	75	76	76	77
78				70	70	71	71	72	72	73	73	74	74	75	75	76	76	77	77	78
79			70	70	71	72	72	73	73	74	74	74	75	75	76	77	77	78	78	79
80		70	70	71	72	72	73	73	74	74	75	75	76	77	77	78	78	79	79	80
81		70	71	71	72	73	73	74	74	75	75	76	77	77	78	78	79	80	80	81
82		70	71	71	72	73	73	74	75	75	76	77	77	78	79	79	80	81	81	82
83	70	71	71	72	73	73	74	75	75	76	77	78	78	79	80	81	81	82	82	83
84	70	71	72	72	73	74	75	75	76	77	78	78	79	80	80	81	82	83	83	84
85	71	72	72	73	74	75	75	76	77	78	79	80	80	81	81	82	83	84	84	85
86	71	72	73	74	74	75	76	77	78	79	80	81	81	82	82	83	84	84	85	86
87	72	73	73	74	75	76	77	78	79	80	81	81	82	82	83	84	85	85	86	87
88	72	73	74	75	76	77	78	79	80	81	81	82	82	83	84	85	85	86	87	88
89	73	74	74	75	76	77	78	79	80	81	82	82	83	84	85	86	86	87	88	89
90	73	74	75	76	77	78	79	80	81	82	83	83	84	85	86	87	87	88	89	90
91	74	75	76	76	77	78	79	80	81	82	83	84	85	86	86	87	88	89	90	91
92	74	75	76	77	78	79	80	81	82	83	84	84	85	86	87	88	89	90	90	91
93	75	76	77	78	79	80	80	81	82	83	84	85	87	87	88	89	90	90	91	91
94	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	90	91	91	91
95	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	90	91	91	91	91
96	76	77	78	79	80	81	82	84	84	86	87	88	89	90	91	91	91	91	91	91
97	77	78	79	80	81	82	83	84	85	86	87	88	90	91	91	91	91	91	91	91
98	77	78	79	80	82	83	84	85	86	87	88	89	90	90	90	90	90	90	90	90
99	78	79	80	81	82	83	84	86	87	88	89	90	90	90	90	90	90	90	90	90
100	78	79	80	82	83	84	85	86	87	88	89	90	90	90	90	90	90	90	90	90
105	80	82	83	84	86	87	89	90	91	91	91	91	91	91	91	91	91	91	91	91

to preclude necessity of treating during the winter.

Vaccinate heifer calves against brucellosis. Age at vaccination will depend on other management practices and current regulations. Don't combine brucellosis vaccination with weaning or other severe stresses.

November–December

Wean and deworm calves.

Plan winter feeding program completely and carefully.

References

1. AABP-NCA: "Recommendations to improve reproductive performance in beef cattle."
2. AABP-NCA: "Recommended practices for the control of bovine respiratory disease in the cow-calf herd."



Correction

Lipomobilization Syndrome (Fatty Degeneration Syndrome) in the Dairy Cow.

M. Stober and G. Dirksen *Bov. Pract.* 1983, p. 162

The following table was published incompletely in the above issue. The editor regrets the error.

TABLE 4. Biochemical findings in lipomobilization syndrome.

Blood:

Ketone bodies >10 mg/dl

Glucose <40 - 50 mg/dl (can be normal or raised, however, in situations of stress, as long as liver glycogen is still available)

Pyruvate > 2.0 mg/dl

(Leucocyte count <4000/mm³ with left shift)

(PCV terminally >40%)

Serum/Plasma:

Albumin < 3.0 g/dl

Free fatty acids >10 mg/dl

Triglycerides < 7 mg/dl

(β -hydroxy-butyric acid >1.0 mmol/l

(Total cholesterol 100 mg/dl)

Total bilirubin >0.5 mg/dl

(AST, SGOT >40 U/l, is also influenced by muscle damage)

SDH > 7 U/l

OCT >20 U/l

BSP Retention (25 min) >5-10%

(Ca sometimes <8.0 mg/dl)

(terminally urea > 40 mg/dl)

Urine:

Ketone bodies >50 mg/dl (+ to +++)

Urochrome methylene blue test -to +

Milk:

Ketone bodies >10 mg/dl (+ to +++)

Liver: (Biopsy specimens)

Glycogen content <1 g/100 g wet weight

Fat content >20% V/V
