

# Cow/Calf Session III

“Integrated Resource Management and Practice Opportunities”

Moderator: David Nash

## Experience with an Established and on-going IRM Program in the Midwest

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### Summary of Nebraska's IRM Program

A major effort in Integrated Reproductive Management (IRM) began at the University of Nebraska under the Cooperative Extension Service and the Agricultural Research Division in 1983. Research in cow/calf systems modeling and reproductive management was developed and continues. Extension developed a five year demonstration herd project. A steering committee composed of beef producers, University extension specialists and researchers, and researchers from USDA (MARC) assembled to help guide the project. In February of 1984, the steering committee selected 9 cow/calf producers to cooperate as demonstration herds from 80 nominated by agricultural agents and veterinarians across Nebraska. Selected herds had resources “typical” of their respective areas.

An IRM team was developed for each cooperator composed of the local agricultural extension agent, an extension beef specialist, the veterinarian used by the cooperator, other university and non-university personnel (producer, industry representative) and the technical coordinator. The IRM team analyzed the cow/calf enterprise and recommended alternative management practices for the producer to consider that would optimize use of the available resources and increase reproductive efficiency.

Production information on the cow/calf enterprise was collected beginning in 1984 and ended in 1988. Financial inputs and feed used by the cow/calf enterprise were collected in 1987 and 1988 for enterprise evaluation. This information was used to monitor changes in the cow/calf

enterprise of cooperating herds. On average, percent calves weaned of females exposed increased 11.5 percentage points between 1984 and 1988. Actual and adjusted weaning weights increased 93 and 100 pounds, respectively, over the 5 years. Pounds of calf weaned per cow exposed increased 139 pounds between 1984 and 1988. Net cost per calf weaned in 1987 and 1988 was \$.73 and \$.74, respectively, for low cost producers and \$.99 and \$.92 for high cost producers.

Eight field days were held to discuss IRM concepts and profitable management practices. Numerous news articles, radio tapes, proceedings, extension publications, and educational meetings were developed using information collected in the IRM demonstration herd project. A cow/calf record-keeping program (PC-COWCARD) for microcomputer was developed and made available commercially to producers. Cooperators “integrated” recommendations made by agents, specialists, veterinarians, nutritionists, lenders,..... into a working management practice for their resources.

### Results

#### *Production:*

Production information is summarized in Table 1. The numbers are averages from each cooperating herd combined into an overall average. Calves weaned of females (cow and heifers) exposed was 79.5 percent in 1984. There

Table 1. Production Levels of Nebraska IRM Cooperating Herd<sup>a</sup>

Year	Calves Weaned of Females Exposed, (%)	Actual Weaning Weight, lbs.	205 Day Adjusted Weight lbs.	Pounds of Calf Weaned per Female Exposed <sup>b</sup>
1984	79.5	424	413	328
1985	84.9	449	470	399
1986	84.2	460	453	382
1987	84.5	490	484	409
1988	91.0	517	513	467
Change	+11.5	+93	+100	+139

<sup>a</sup>Data included from herds participating in the program from 1984 through 1988.

<sup>b</sup>Product of percent weaned and adjusted weight for comparison across years.

was an increase from 79.5 percent in 1984 to almost 85 percent in 1985. That 5 percentage point increase in calves weaned of females exposed was maintained in 1986 and 1987. In 1988 calves weaned of females exposed was 91 percent for an increase of 11.5 percentage points in five years. Calves weaned of females exposed is a measure of reproductive efficiency in the cow/calf enterprise.

Many factors influence reproductive performance of cows. One major factor is weather. Mild weather conditions impact favorably on reproductive performance. Weather conditions, especially during the winter, were considered mild between 1985 and 1988. However, other factors monitored in cooperating herds, not related to climatic conditions, also attributed to an increase in reproductive performance. Some common management practices that would attribute to increased reproductive performance include:

- properly planned nutrition program.
- feeding cows to be in moderate to good body condition at calving.
- feeding 1st-calf-heifers to be in good body condition at calving.
- using records to identify low fertility females --females that continually have a calving interval of greater than 365 days may have fertility problems and identifying and culling these individuals would increase overall fertility of the herd.
- fertility testing bulls prior to the beginning of the breeding season.
- designing herd health programs to fit the location of the herd and to reduce calf losses.

Loss of potential weaned calves and when these losses occurred is illustrated in Table 2. Loss of potential weaned calves due to cows failing to conceive during the breeding season, abortions and dystocia, and losses from calving to weaning decreased 4.0, 1.6 and 5.9 percentage points, respectively. Cows not conceiving increased between 1984 (8.3 percent) and 1985 (11.4 percent) and this increase was likely due to the extremely cold winter of 1984 that caused cows to enter the breeding season in poor condition. On the average, open cows at the end of the breeding

Table 2. Losses of Potential Weaned Calves -- When they Occurred<sup>a</sup>

Year	Percent of Potential Weaned Calves Lost per Period			
	Conception <sup>b</sup>	Calving <sup>c</sup>	Weaning <sup>d</sup>	Total Loss
1984	8.3	4.4	7.8	20.5
1985	11.4	1.6	2.1	15.1
1986	6.8	4.0	5.0	15.8
1987	7.8	2.9	4.8	15.5
1988	4.3	2.8	1.9	9.0
Change	-4.0	-1.6	-5.9	-11.5

<sup>a</sup>Data included from herds participating in the program from 1984 through 1988.

<sup>b</sup>Females palpated non-pregnant in fall or observed as such the following spring.

<sup>c</sup>Includes abortions, calves born dead, and calves dying during or due to birth.

<sup>d</sup>All losses after calving not attributed to c.

season is the major loss of potential weaned calves in these cooperating herds. The slight decrease in calf losses at calving may have been attributed to a decrease in calf losses by selecting bulls with low to moderate birth weights and by having additional needed help at calving time. The high percentage of calf losses from calving to weaning in 1984 was inflated by high losses occurring in one cooperating herd.

Actual and adjusted weaning weights are shown in Table 1. On average, actual and adjusted weaning weights increased 93 and 100 pounds, respectively. The primary focus of the program was not to increase weaning weight. Through use of sound management practices, these cooperators increased weaning weight of calves without changing the mature size (weight and height) of their cows. Management practices that would attribute to increased weaning weight include:

- Proper nutrition of cows and heifers prior to calving
- having females in moderate to good body condition at calving and a feeding program designed to meet the nutrient requirements after calving should enable cows to cycle and conceive early in the breeding season. Calves born early in the calving season should be heavier at weaning.
- Reducing the length of the calving season -- weaning weights of calves born over a short calving season on the average will be greater than weaning weights of calves born over a long calving season. Length of the calving season in most herds decreased from 1984 to 1988. Ways to reduce the length of the calving season include:
  - Design feeding program so that cows cycle early in the breeding season.
  - Calving heifers ahead of the cows so they have extra time to prepare for rebreeding and calves from heifers will be older and heavier at weaning.
  - Shorten breeding season -- therefore shorter calving season.
- Use of crossbreeding --taking advantage of heterosis.

- Selecting bulls with moderate birth weights and good growth traits.
- Using records to identify cows that continually wean calves that are not acceptable given the management and resources.
- Adopting a herd health program to eliminate diseases that would decrease the cow's ability to breed back early during the breeding season.

Improvements in weaning weights, reproductive performance, and length of the calving season cannot be changed rapidly while maintaining desired performance from the cow herd. Positive changes occur over time by setting goals and using planned methods to attain goals. For example, trying to reduce the length of the calving season from 100 days to 60 days in one year by limiting the breeding season to 60 days could result in a high percent of open cows. However, gradually reducing the length of the breeding season with a proper nutrition program can result in a more concentrated calving season without a decrease in reproductive performance.

#### **Results of Cooperator Herd -Dale Littell, Maywood, Nebraska**

This operation includes both irrigated and dryland corn, milo, cane for winter forage and native pasture, in addition to the cow herd. The 300 cow herd consists of black Angus and Amerifax x Angus crosses and the cows are mated to Amerifax and black Simmental bulls. The calving season begins February 10 and lasts about 60 days. The cow herd is very productive and the calves are heavy at weaning. The steer calves are sold at weaning in October and the heifers are backgrounded and sold in the spring. The cows are summered on native pasture and wintered on cornstalks, cane hay and alfalfa hay.

The management changes recommended by the IRM team included changes in nutrition and breeding programs, herd health and vaccination program, marketing methods and predator control. One major problem was a considerable calf loss during the calving season due to coyotes. A government trapper was contacted and killed 50 coyotes in the area the first winter. The nutrition program was changed due to thin body condition cows before and after calving. A liquid protein used on cornstalks was eliminated and replaced with good quality alfalfa hay as a protein source. Feed and hay samples were analyzed and the feed ration was balanced to meet the cows' requirements.

The breeding season for replacement heifers was shortened to 45-50 days. Bulls were fertility checked annually (four were sterile the first year) and cows were pregnancy checked at weaning time with open cows culled. Calf losses due to scours and bloat were reduced by vaccinating cows with Scour Guard III and Perfringens C and D before calving. Calves were also given 7-way Blackleg at branding. Since the growth potential of the calves was excellent, re-

tained ownership was suggested. Heifer calves were placed in a custom backgrounding lot and sold in the early spring for a profit.

#### **Five-year summary of production records.**

Item	1984	1985	1986	1987	1988
Percent calf crop weaned of cows exposed to bulls	84	87	86	84	94
Actual calf weaning weights, lb	509	475	542	537	562
205 day adjusted calf weights, lb	467	561	567	572	549

The table shows a summary of the production results over a five-year period. Because this was a productive herd at the beginning of the program, improvement was gradual. Percent calf crop weaned increased slowly until 1988 with a significant increase. Actual calf weaning weights generally increased over the years and varied between years due to different dates of weaning. Adjusted calf weights showed a substantial improvement in 1985 but leveled out in the following years.

This herd showed a 10% increase in calf crop weaned and about a 50 pound increase in calf weaning weights. The pounds of calf weaned per cow increased from 428 to 526 or 98 pounds. Assuming a calf price of \$.90 per lb, the gross return increased from \$385 to \$473 or \$88 per cow. This yielded over \$26,000 for the 300 cow herd.

#### **IRM Approach to Herd Health Management for the Practitioner**

In reviewing the data from the 9 IRM herds, there are many factors that influence the cost of producing a pound of weaned calf. It has been our experience that even the better managed herds have areas that can be improved and fine tuned for more efficient production. The practicing veterinarian, as a member of the management team, can set up and monitor the herd health program and serve as a positive influence to improve management. You should develop contacts with specialists in all areas of beef production to consult with and also refer client questions and problems.

Pregnancy examination, culling low fertility and broken mouth cows, fertility testing bulls and fine tuning the herd health program as conditions are diagnosed in the herd all improve production efficiency. Diagnosis and prevention of subclinical disease are greatly enhanced with the team approach to herd health management.

Individual identification and a good record system are a must for the cow herd to establish a level of production. A careful study of these records will give indications of areas where improvement is needed and progress can be monitored. There is a real opportunity for veterinary clinics with computers to provide a cow herd record service. Two software systems that look promising are the PC-COWCARD developed by Ivan Rush and Ron Roeber,

University of Nebraska, and the COWCALF program developed by Gary Rupp who is now at MARC.

The practicing veterinarian who has a sincere interest in production medicine has an excellent opportunity to work with selected producers as a member of the management team to improve the herd health, management and efficiency of production. Good records and financial data can demonstrate improved profitability and justify consultation fees.

### **Nebraska's IRM - Phase II**

For beef producers to remain competitive in future years, cow/calf production records and financial enterprise records are needed to aid producers in making accurate management decisions. Individual cow, as well as, herd production records are necessary to evaluate ranch output and changes needed in management practices. Enterprise records are needed to determine costs of production (cost of pound of calf weaned per cow exposed) and to identify areas to reduce costs. Without good records, objective management decisions are difficult to make.

### *Objectives for an Expanded IRM Program:*

1. Promote the use of cow/calf production record-keeping systems such as PC-COWCARD, a microcomputer program, *Calving Books* and *Nebraska Beef Cow Record Cards* that are hand-kept systems.
2. Develop worksheets to summarize production records, ranch questionnaires and checklists for producers and extension agents to evaluate production records, management practices and resources available.
3. Conduct producer workshops and provide consultation by extension specialists and agents to evaluate resources, management practices, marketing alternatives and help initiate management changes that improve profitability.
4. Encourage development of IRM on a county or area basis to address the needs of producers in the area, and seek solutions to problems specific to the area. The local IRM groups will be supported by the University of Nebraska Cooperative Extension Service and Nebraska Cattleman Association.
5. Develop a checklist of items needed for financial analysis of the cow/calf enterprise.
6. Develop decision-aiding computer models.