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Why do dairy cows have reproductive problems? How can we solve those reproductive problems?

J.S. Britt

Why do dairy cows have reproductive problems? How can we solve those reproductive problems?

Abstract
Except for very low producing herds, management of reproduction does not seem to have much effect on the herd's level of production. To counter this statement, we must ask the question: "If they did not manage reproduction, what would their production level be?" Dairy cows develop reproductive problems from three major categories of causes: man-made, biological, and environmental.; Dairy Day, 1989, Kansas State University, Manhattan, KS, 1989; The 1989 Annual KSU Dairy Day is known as Dairy Day, 1989

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WHY DO DAIRY COWS HAVE REPRODUCTIVE PROBLEMS? HOW CAN WE SOLVE THOSE REPRODUCTIVE PROBLEMS?

Jenks S. Britt, DVM[1]

Why Manage Reproduction?

The following table gives reproductive information from the DHIA records of 4,566 herds involving 502,260 cows sent to the Dairy Records Processing Center at Raleigh, NC.

Table 1. Reproductive Traits of 502,260 DHIA Cows

Rolling herd average, lb	Minimum calving interval, mo	Services per conception	Average days open	First service conception rate, %	Average days to first service
<10,999	14.8	1.7	169	63	94
11,000-11,999	14.8	1.8	146	59	90
12,000-13,999	13.9	1.9	142	57	89
14,000-15,999	13.6	2.2	134	50	87
16,000-17,999	13.4	2.3	128	47	86
18,000-19,999	13.3	2.2	126	46	87
20,000-21,999	13.4	2.3	128	44	88
>22,000	13.5	2.3	129	46	91

Except for very low producing herds, management of reproduction does not seem to have much effect on the herd's level of production. To counter this statement, we must ask the question: "If they did not manage reproduction, what would their production level be?"

[1]Animal Health Management Service, Bov-Eq Embryo Transfer, P. O. Box 787, Russellville, KY 42276-0787.

Causes of Reproductive Failure

Dairy cows develop reproductive problems from three major categories of causes: man-made, biological, and environmental.

Man-made Causes

1. Poor cow ID (identification) — We know she is in heat but she doesn't have a tag, brand, or an identification that we can read.
2. Inadequate record system — When did we breed her last? How many services has she had? Did she have problems at calving? How did we treat her last vet check? Does she have a lifetime health card? Is she on the computer? Is correct information supplied to the DHIA supervisor?
3. Heat detection — Who is responsible? Do we have a heat prediction system? Was she marked with a heat detection aid? Was her heat date recorded?
4. Nutrition — Is her ration balanced for health and reproductive needs? Is this ration being fed? Is the cow eating this ration?
5. AI — is proper AI technique being used? Are the people doing the breeding retrained on a regular basis? Are we using quality semen that is stored properly?
6. Reproductive evaluations — Is the herd on a regular reproductive health management program with a veterinarian?
7. Records — Do we ever look at the DHIA or reproductive record summary and see if goals are being met?
8. Education — Is an effort made to educate all herd workers in the importance of getting cows pregnant?

Biological Causes

1. Calving time problems — Did the cow have difficulty calving? Did she clean up? Mastitis, D.A., feet, ketosis? Other problems?
2. Infectious or toxic abortions — Did the cow have vaccinations against known bacterial and viral diseases? Was she exposed to molds?
3. Semen quality, bull power — Was semen of known quality used on the cow? Was the bull evaluated for breeding soundness?
4. Genetic — Is the cow a DUMPS carrier? Are there inherited breeding problems?
5. Nutrition — Are the feeds we utilize in our ration used by the cow's digestive system?

Environmental Causes

1. Heat stress — Do we stop breeding when the environmental temperature goes above 80 degrees?
2. Weather stress — Do we watch heats when snow covers the cow lots? Do we "cold shock" semen in the winter?
3. Footing — Are cows on slick concrete or do they have access to dirt lots?

Reproductive Management

Management of reproduction requires effort in the following areas: 1) Cow ID (identification), 2) individual cow records, 3) disease prevention, 4) heat detection, 5) nutrition, 6) AI, 7) reproductive status evaluation of the cow, 8) treatment of reproductive problems, 9) record analysis, and 10) client and labor education.

Cow ID

All cows should be identified with large readable numbers. Brands or double ear tags work best. All employees should be able to identify the cow. Some type of permanent ID is needed for cows that lose tags.

Individual Cow Records

A sample record card is enclosed (Figure 1). This lifetime card can be used for all records related to health. Large herds must use computers to keep adequate information on all cows.

Disease Prevention

Vaccination to prevent disease can be a major expense on many farms. Before a vaccination program is started, one should consider a rationale for vaccination, including: 1) threat of disease, 2) effectiveness of the vaccine, 3) duration of immunity, 4) ease of administration, 5) shelf life, 6) multi-valent, and 7) cost $$ vs risks.

An attempt should be made to diagnose abortions, even though success may be limited.

Heat Detection

Heat activity increases 50% or more when cows are off concrete and on dirt. Heat activity increases more than 100% when more than one cow is in heat at a time. Single cows that try to mount other cows from the front are usually in heat. About 80% of the cows doing the riding are in heat or will be in heat in 48 hr. Many cows exhibit heat 6 hr or less. Observe for heat 4× daily when cows ARE NOT being fed. Moving cows through a lane often increases heat activity. ONE PERSON on each farm should be responsible for heat detection. Heat detection aids should be used, such as crayon marking, heat detector patches, heat prediction charts, and teaser animals.

Nutrition

Rations should be balanced for energy, protein (degradable, soluble, and by-pass), fiber (including effective fiber), minerals, and vitamins. Clean water, free of organisms and toxins, is important for the cow. Effective fiber is a "scratch factor" and should be at least 5 lb daily of dry matter that is longer than 1". Lack of effective fiber causes the 3 L's, (low fat test, lack of fetuses, lame feet). Milking cows should receive 400 units of vitamin E and 6 mg of selenium daily.

AI

The most accurate time to inseminate a cow is 12 to 16 hr after LH peaks in her blood. This LH peak is very closely associated with the first signs of standing heat. Ovulation occurs 25 hr after the LH peak. Breeding should occur 12 hr before anticipated ovulation. The AM/PM rule is still best for an AI program. The best thawing temperature for both straws and ampules is 95^0F. Don't thaw more semen than will be used in 15 min. Retraining of AI personnel on the farm is important; compare conception rates among technicians on each farm. Horn breeding probably only assures proper placement of semen by the technician. About 94% of the semen deposited in the uterus is no longer there 12 hr later. Most is lost through the cervix. Conception rates of cows will drop below 20% in the three summer months, but heifer rates will stay at 50% or better. Use young sire semen in the summer and use the most expensive semen on heifers. Solar stress reduces reproductive performance, and a 60-d lag period is associated with heat stress.

Reproductive Exams

An examination of all postpartum cows that have not been previously approved for breeding is recommended. In large herds, this may be limited to cows fresh more than 3 wk plus any cow fresh less than 3 wk that had a difficult birth or retained placenta. Cows bred more than 30-35 days can be examined for pregnancy. The practitioner should establish his or her own cutoff date for early pregnancy checks. This date may be different in heifers or young cows than in older cows. Anestrous cows, cows that have cystic-like conditions, or problem breeders should be examined. REMEMBER: MOST PROBLEM BREEDERS PROBABLY HAD A PROBLEM 100 TO 180 DAYS AGO WHEN THEY CALVED, AND THIS IS THE BASIS OF THEIR LOW CONCEPTION RATE. A milk progesterone test should be run on cows that have a cyst-like condition. The use of rump marking with crayons to designate "estrus watch", "pregnancy", and "treatments" helps the herdsman to observe these cows in the next few days.

Treatments

Very few reproductive problems require treatments. The failure of most cows to settle is a result of poor timing of insemination, poor AI technique, not being in estrus, or having a uterine-oviduct-ovarian problem that cannot be palpated. The major treatments that we use in practice are listed below.

1. Prostaglandin is used for cows having palpatable luteal tissue that will respond to prostaglandin and cause estrus.
2. GnRH is used on third service or later cows to increase conception rates. It is used with restraints on semen cost, time of year, and cost of the GnRH. It is also used on cystic cows.
3. HCG is used when cows fail to respond to GnRH.
4. Syncro-Mate-B implants are used for some cystic conditions or to induce estrus in static young cows that have limited ovarian activity.
5. Progesterone in sesame oil is used at 75 mg daily for 12 days to get a response similar to that from Syncro-Mate-B.
6. Infusions. Uterine infusions of cows infected with pathogenic bacteria may be effective in returning the uterus to a condition that will maintain pregnancy. Our choice of products

in the early postpartum cow is oxytetracycline. After 30 days postpartum, we use penicillin. "Exotic" infusion mixtures may cost more, but they are not any more effective. RESIDUE AVOIDANCE MUST BE ADDRESSED BY THE INDIVIDUAL HERD AND PRACTITIONER. We recommend use of the DELVO - P test.

Record Analysis

Too many reproductive management programs fail because managers do not spend enough time looking at performance of the program. Records are only as good as the information that goes into them. DHIA summary information is a good source of data to evaluate herd breeding successes. EXTRA effort must be made by the herdsman to report ALL data on the DHIA system. We look at the following factors:

1. Average days to first service — a goal is 70 days. Many herds on a base milk system may have cycles in this trait.
2. Average days open — a goal is 110 days. However, many high-producing herds are only reaching 130 days.
3. First service conception rate — a goal is 50% for milking cows and 70% for virgin heifers. Herds that continue to breed during the three summer months will have poorer conception rates.
4. Services per conception — a goal is 2.0 or less. However, early breeding and good heat detection may raise this figure. Summer breeding will also raise this figure.
5. Technician % pregnant — if more than one technician is breeding on the farm, data on each technician will evaluate "who" should be the primary breeder. EACH FARM SHOULD HAVE ONE PRIMARY TECHNICIAN.
6. Summer Breeding — a decision to breed or not to breed during the summer months must be made. If cows are bred, use young sire semen, and save the most costly semen for heifers. When summer conception rates reach 15% or below, it takes about 17 units of semen to get one female replacement that will live to enter the milking string.

Client and Labor Education

This is a continual process and goes on as the work is being done on each farm visit. Repeated instructions must be used to convey the message to the farm workers. Visual aids, hands-on training, incentives, and client education seminars are all necessary for an effective program.

Tips from our Reproductive Seminar

1. 85% of the cows doing the riding in a herd are in heat or will be in heat in 1 to 3 days.

2. Cows trying to ride several other cows are probably in heat, even though no cows try to ride them.

3. A cow trying to mount other cows from the front is almost always in heat.

4. Cows on dirt show a 50% increase in riding activity and a 4-hr increase in time they stay in heat.

5. The best time to breed cows is 12 hr after the FIRST STANDING HEAT. It makes no difference how long a cow stays in heat; the important thing is when she came in heat and first stood.

6. The best thaw temperature for semen is 95^0F, and semen should be in the cow within 15 minutes of the time it leaves the tank.

7. Horn breeding may improve conception by making the technician more aware of proper placement of the semen.

8. LOW EFFECTIVE FIBER in the diet causes low fat test, lame feet, and lack of fetuses (open cows).

9. Clean calving areas are the most critical part of a good reproductive health program.

10. Most cows that don't settle had a problem 60 to 120 days earlier near the time of calving.

11. The size of the cervix 2 wk after calving is a good indicator of uterine health and rebreeding potential.

12. Cows with feet problems won't show good heats or breed back.

13. ONE PERSON should be responsible for the heat detection on each farm. Each farm should have ONE primary AI technician.

14. Conception rates in June, July, and August will be below 20% on milking cows. Conception rates on heifers will be much better and may be near 50% or higher.

15. Avoid summer breeding. If you do breed cows during the three summer months, use young sire semen. Use your best semen on heifers.

16. Three simple goals for a breeding program:

    a. Calve all heifers by 25 mo of age.
    b. Maintain a 12- to 13-month calving interval.
    c. 90% of the cows in the herd should breed back.

17. If you infuse over 5% of the cows in your herd, look at sanitation in your calving and fresh cow pens.

18. SOLAR STRESS (sunlight) can reduce the reproductive performance of dry cows; SHADE should be provided.

19. HEAT STRESS lasts for 30 to 60 days after the weather begins to cool. This is why conception rates may be low in September.

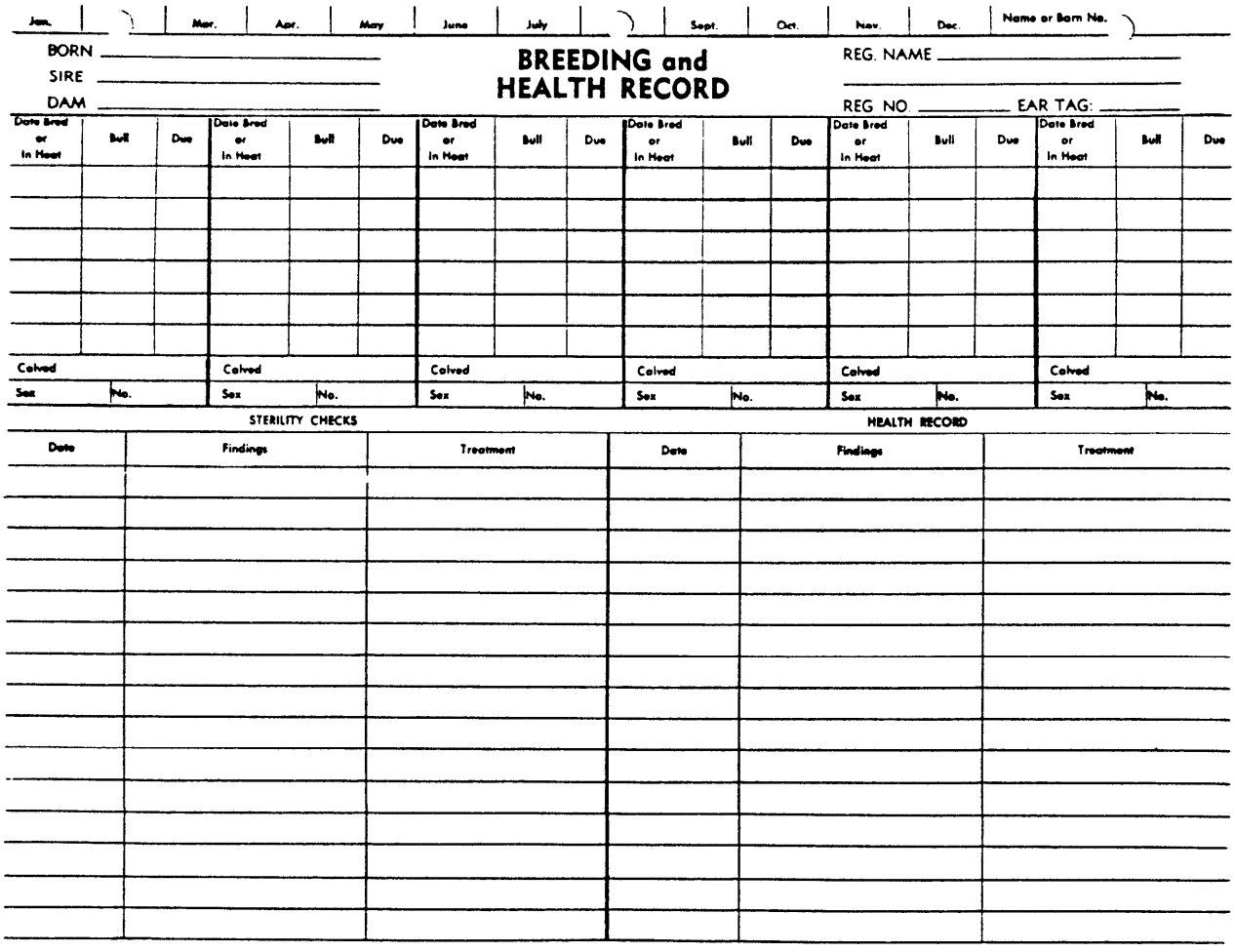

Figure 1. Breeding and Health Record.