



for the West, about the West, from the West

Getting those repeat breeders bred

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A “repeat breeder” is typically defined as any cow that has been inseminated at least three times, but returned to heat or for a 4th timed artificial insemination. This syndrome can be one of the more frustrating problems affecting reproductive management of a dairy herd.

Commonly, herds with normal conception rates range between 35 and 45 percent for lactating Holstein cows. This makes the percentage of repeat breeders range from 28 to 17 percent, respectively (Table 1). As shown in Table 1, the lower the conception rate the more repeat breeders you have to contend with. As a result repeat breeders become a significant problem weighting down farm fertility, but more importantly reducing farm profitability.

Cost of Repeat Breeders

Estimating the cost of repeat breeders is variable depending on each dairy’s situation. The value of a pregnancy can depend on many factors such as future expected production, age of the cow, current days in milk (DIM), stage of pregnancy, price of milk, cost of average replacement etc. Two main factors to be considered are milk production and DIM. Generally, the highest percent of repeat breeders will

be later in lactation as one would expect.

The value of a pregnancy by milk production and DIM is shown in Figure 1. As illustrated, the value of getting a cow pregnant increases the further into lactation she goes, demonstrating the importance of

more profitable to cull this animal and replace her with a heifer.

Why do I have repeat breeders?

If the number of repeat breeders on your dairy is above 30 percent then you may have a significant repeat breeder problem. Why is this? The first thing you should do is diagnose if you have a repeat breeder problem and why. This can be difficult because a variety of causes can contribute to a cow being a repeat breeder. Some of these can be from a cow/herd problem, and/or a management problem. Problems that can affect both the herd and/or individual cow, increasing the cows chances of becoming a repeat breeder, include:

1. Uterine infections (metritis and endometritis).
2. Cervical and vaginal infections.
3. Infectious diseases due to bacteria, viruses and protozoa.
4. Endocrine and ovulation disorders (cystic ovaries, anovulation, and delayed ovulation).
5. Anatomical defects of the reproductive tract.
6. Reduced ova quality and early embryonic or fetal death.

Problems due to management or lack there of, are:

1. Improper timing of insemination (to late, early, already pregnant etc.).
2. Insemination of cows not in estrus/
3. Poor compliance with resynchronization programs.
4. Inadequate estrus detection.
5. Improper semen handling and insemination techniques.
6. Use of low fertility sires.
7. Infertile bulls.
8. Improper cooling and cow comfort.
9. Poor transition and nutrition.

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Table 1: Expected Repeat Breeders at Various Conception Rates ¹

conception (%)	cows conceiving in 3 services (%)	repeat breeders (%)	cows conceiving in 5 services (%)	open after 5 services (%)
70	97	3	100	0
60	94	6	99	1
50	88	12	94	3
40	78	22	92	8
30	66	34	83	17
20	49	51	67	33

¹: Based on Dairy Reproduction Simulation Model – Jeff Reneau and B.J. Conlin, University of Minnesota, 1984

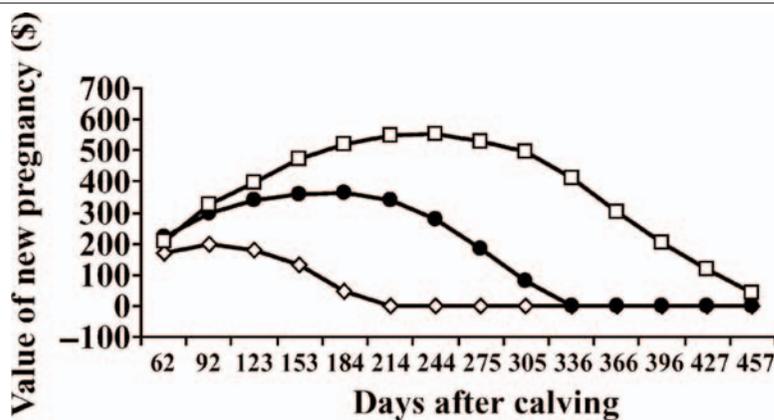


Figure 1: Value of a new pregnancy during second lactation by days after calving and relative milk yield (low (◇) medium (●), high (□) compared with an average lactation curve. Adapted from De Vries et al., 2006.

getting repeat breeders bred, which are generally later in lactation. However, there is a point where the value will drop drastically (depending on milk production), meaning at a certain time it will become

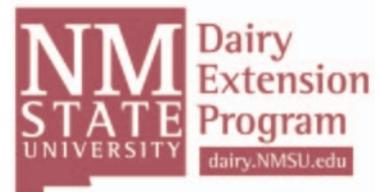
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Repeat breeders . . .

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Solutions to reduce the number of repeat breeders

If you were to exclude repeat breeders with anatomical defects, an almost normal pregnancy rate can be achieved with a single service. Thus, most repeat breeders are not sterile. Rather, they suffer from lowered fertility. Below are a few suggestions for getting those repeat breeders bred.

1. Consult your team. A good start to diagnosing and solving the problem is to get all parties involved with your herd health and reproductive program to evaluate the problem and review herd records together. This is a rewarding approach to evaluating your herd, since this frequently identifies factors not only affecting reproduction but other factors that may be negatively affecting your herd. In addition, ensure that you have an adequate vaccination program in place and check the repeat breeders for any reproductive abnormalities.

2. Strengthen estrus detection.

Inadequate estrus detection is frequently a cause of cows becoming repeat breeders. Since estrus detection is less than 60 percent on many dairies (i.e. for every 10 cows cycling only 6 are inseminated), there is a substantial need for accurate and efficient heat detection. Utilize a combination of estrus detection aids to improve both accuracy and number of animals getting inseminated in estrus. Using secondary signs is effective in increasing accuracy and the number of cows truly in estrus. Research studies have shown that 7 to 20 percent of cows bred on detected estrus are not truly in estrus.

3. Establish and improve compliance to a resynchronization program. Resynchronization protocols are continually improving and have become an effective strategy to improving fertility in repeat breeders. This is also effectively used in combination with breeding upon detected estrus. Consult with your reproduction management team to ensure you have a good resynchronization program in place.

Continually strive to improve compliance to resynchronization programs. You must get the right shots into the correct cows if timed artificial insemination is going to be effective.

4. Administer GnRH at insemination. Stevenson et al., (1990) summarized the effects of GnRH given at the time of insemination in repeat breeder cows (Table 2). The difference in conception rates between GnRH and control ranged from -15 to +15 percent. Across all studies, GnRH increased conception 7.6 percent; however, a treatment by study interaction was detected, indicating that the effect of GnRH on conception rates was different across studies. Factors contributing to the variability in response to GnRH between studies warrant further investigation.

5. Ensure proper semen handling, storage and insemination techniques.

Make sure your A.I. technician utilizes proper semen handling and storage techniques. There are many resources available on the web explaining proper techniques. In addition, you can contact your semen distribution company for additional materials and/or training.

A study in Pennsylvania used radiography to evaluate proper insemination technique among 20 professional technicians and 20 owner-inseminators. Analysis of radiographs of all inseminations indicated that only 40 percent of the dose of semen was located in the uterine body or was equally distributed in both uterine horns.

Table 2: Conception rates following injection of GnRH at insemination of repeat breeders

study ¹	µg GnRH	— control —		— GnRH —		diff.	significance ²
		no. cows	pregnant	no. cows	pregnant		
1	100	161	47.8%	185	73.0%	+25.2%	**
2	100	469	37.7%	492	47.0%	+9.3%	**
3	100	275	36.4%	145	46.9%	+10.5%	*
4	100	53	50.9%	44	65.9%	+15.0%	NS
5	100	103	38.8%	37	54.0%	+15.2%	NS
6	100	43	46.5%	49	55.1%	+8.6%	NS
7	100	468	39.3%	495	43.2%	+3.9%	NS
8	250	302	53.0%	59	44.1%	-8.9%	NS
9	100	65	55.4%	62	40.3%	-15.2%	NS
10a	100	318	30.2%	367	37.3%	+7.1%	*
10b	100	207	35.3%	204	37.8%	+2.5%	NS
10c	100	192	33.3%	194	43.8%	+10.5%	*
11	100	96	39.6%	283	55.1%	+15.5%	**
all		2,752	41.9%	2,616	49.5%	+7.6%	

¹: Studies 1-10 in Stevenson et al., 1990; Study 11, Roussel et al., 1988.

²: * P < 0.05, ** P < 0.01; Treatment Adapted from Thatcher and Risco, 1993 Florida Dairy Production Conf. Proceedings

The remaining 60 percent of the semen was located in the cervix or disproportionately in one uterine horn. This illustrates the importance of continual training on proper insemination techniques.

6. Cow comfort and cooling. Many dairies tend to treat repeat breeders differently without realizing it, overall decreasing their chances of becoming pregnant. Sometimes dairies tend to give the most attention to high lactation and/or early lactation cows, and later lactation animals are moved to pens with less cooling, different herd mates, perhaps poorer quality corral conditions, and possibly a different ration. This imposes physiological, nutritional, and behavioral stresses that can lower fertility.

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Ensuring that your late lactation cows (most likely the largest concentration of repeat breeders) have adequate cooling to maintain normal body temperatures will improve fertility.

7. Continue A.I. vs. natural service. Another management issue that increases the chances of a cow becoming or continuing to remain a repeat breeder, may be how extensively you use and manage your bull breeding program. Often times cows are presented to the bull for natural service at a certain DIM (i.e. 180 DIM) or after a certain number of A.I. breeding attempts (i.e. > 3 A.I.). Consequently, many dairies across the U.S. utilize a reproductive program that combines A.I. and natural service (NAHMS, 2002).

Many dairymen turn to natural service because it bypasses human error such as poor estrous detection accuracy and efficiency, particularly during heat stress situations. However, by electing to use natural service instead of A.I. dairymen forgo genetic progress and potential economic gain resulting from increased milk production.

It has been shown that cows sired by proven A.I. sires produced 3,080 more pounds of herd lifetime actual milk and were \$148 more profitable than cows sired by non-A.I. sires (Cassell et al. 2002). In addition, Overton (2005) showed that natural service averaged approximately \$10

more cost per cow per year compared to A.I.

Another negative effect of utilizing natural service is fertility problems related to heat stress. Heat stress significantly impairs semen quality when bulls are continually exposed to ambient temperatures of 86°F for 5 weeks or 100°F for 2 weeks, despite no apparent effect on libido. Heat stress decreases sperm concentration, lowers sperm motility, and increases percentage of morphologically abnormal sperm in an ejaculate (Ott, 1986). After a period of heat stress, semen quality does not return to normal for approximately 2 months because of the length of the spermatogenic cycle, adding to the carryover effect of natural service on reproduction.

A possible strategy to bypass the negative effects of natural service and reduced estrous expression during the summer is continued timed A.I.

If you use natural service as a part of your reproductive management, be sure that an intensive bull management program is in place for your new and current breeding bulls.

Conclusions:

A comprehensive analysis of your reproductive program is key to determining if there is a repeat breeder problem. Getting your consulting team (i.e. veterinarian, nutritionist, A.I. technician, etc.) together frequently to discuss herd records and breeding programs is the first step toward getting those repeat breeders bred.

References available upon request.