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 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 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.
7. Improper timing of insemination (to late, early, already pregnant etc.).
8. Insemination of cows not in estrus.
9. Poor compliance with resynchronization programs.
10. Inadequate estrus detection.
11. Improper semen handling and insemination techniques.
12. Use of low fertility sires.
13. Inferior bulls.
15. Poor transition and nutrition.

(continued on next page)
Repeat breeders . . . (continued from previous page)

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 warding 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 heat 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 programs 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 detect ed, indicating that the effect of GnRH on conception rate 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 2000 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.

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. Otherwise 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 estrus 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 86ºF for 5 weeks or 100ºF 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 to use 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) together frequently to discuss herd records and breeding programs is the first step toward getting those repeat breeders bred.

References available upon request.

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

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