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Troubleshooting Cattle Reproductive Problems

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For a cow-calf operation, good reproductive rates are critical to operational success and profitability. It is generally expected that each breeding age female in the herd produces a healthy calf each year and successfully raises each calf until a planned weaning time. Cows that do not produce calves on at least an annual basis use resources that could be better utilized to support more productive cattle. Closely monitoring cattle reproductive efficiency and quickly identifying and addressing reproductive problems helps protect and improve operational profitability.

Assessing Reproduction

It is first important to develop goals for reproductive rates in the herd. Base these goals on the economic needs of the operation. Consider both the revenues needed from each calf crop and the costs associated with producing each calf crop. Several key indicators of reproductive success can be evaluated. Measures of reproductive efficiency include:

Conception rate = *Number of cows conceiving / Number of cows exposed to breeding x 100*

Conception rate or percent conceiving is typically not measured due to the difficulty in determining if conception has take place. Some cattle may conceive and then suffer early embryonic death and may not be distinguishable from cattle that never conceived.

Pregnancy rate = *Number of cows diagnosed pregnant / Number of cows exposed to breeding x 100*

Pregnancy rate or percent pregnant is a measure of breeding season success.

Live calving rate = *Number of live calves born / (Number of cows exposed to breeding – Number of cows sold or died + Number of pregnant cows purchased) x 100*

Live calving rate or percent birth calf crop is a measure of the collective results of the breeding and calving seasons. Cows must not only conceive, but they must also give birth to live, healthy calves. Reproductive losses between breeding and calving may be due to reproductive disease.

Weaning rate = *(Number of calves weaned + Number of calves sold preweaning) / (Number of cows exposed to breeding – Number of cows sold or died + Number of pregnant cows purchased) x 100*

Weaning rate or percent calf crop weaned is the single most descriptive measure of herd reproductive performance. It evaluates conception, pregnancy, calving, and preweaning success or failure.

Calving interval = (Age in days at first calving – age in days at last calving) / number of calvings

Calving interval is the number of days between successive calvings. It measures reproductive success over the last year. Calving interval should ideally be 365 days or less and not average more than 365 days over multiple years to maintain the desired calving season and produce a marketable calf on an annual basis.

Causes of Reproductive Failure

Many factors affect reproductive success. Knowing some of the more common reproductive problem culprits and the timing during which they typically occur can help in narrowing down the source of a particular problem. Infectious causes of infertility or abortion include anaplasmosis, bovine viral diarrhea virus (BVDV), brucellosis (Bangs), infectious bovine rhinotracheitis (IBR), leptospirosis, neospirosis, trichomoniasis, and vibriosis (*Campylobacteriosis*). In addition, there are many different noninfectious causes of reproductive failure. Poor nutrition, toxins, heat stress, nonpuberty in replacement heifers, insufficient bull power (cow to bull ratios too high), subfertile bulls, and fetal genetic defects can lead to reproductive problems. Poor artificial insemination results can be due to poor heat detection, improper semen storage and handling, and improper artificial insemination technique.

Excellent record keeping is critical when trying to determine which factors might be causing a problem with reproduction. Using a controlled breeding and calving season helps in monitoring herd reproductive efficiency. Besides monitoring measures of reproductive efficiency, producers can look for signs of reproductive failure such as failure to show estrus, lack of conception, early embryonic death, fetal mortality, stillbirth, premature birth, and weak or dying calf.

Potential causes of failure to show detectable estrus include transportation, overcrowding, heat stress, ovarian cysts, anatomical abnormalities, hormonal abnormalities, genetics, low body condition, deficient dietary energy, low dietary phosphorus, low dietary vitamin A, poor heat detection, and uterine infection. Lack of conception can occur due to low body condition, nutritional competition, weight loss during breeding season, low postpartum dietary energy levels, genetics, prolonged calving season, subfertile bulls, insufficient bull power, poor artificial insemination management, uterine infection, leptospirosis, or BVDV infection.

Early embryonic death occurs less than 45 days after conception. It can be caused by genetics, poor nutrition, heat stress, neospirosis, trichomoniasis, or vibriosis. Fetal death is considered to occur between 45 and 260 days of gestation. Fetal mortality can be the result of genetics, poor nutrition, insufficient dietary vitamin A, or high nitrate intake. Early fetal mortality can be caused by trichomoniasis, and mid-gestation fetal losses can be caused by vibriosis. Late gestation fetal mortality can be due to IBR, brucellosis, anaplasmosis, and sporadic bacterial and mycotic causes. Both BVDV and IBR can cause fetal losses anytime between 45 and 260 days of gestation.

Stillbirth happens from 260 days gestation to term. Potential factors leading to stillbirth include dystocia, genetics, leptospirosis, brucellosis, foothill abortion, and pine needle

consumption. Premature birth occurs from 260 gestation days to term and can be the result of genetics, IBR, BVDV, brucellosis, foothill abortion, or neospora. Weak or dying calves may be due to stress in late gestation, dystocia, low dietary phosphorus intake, low dietary vitamin A intake, low dietary protein intake, or aflatoxin consumption. Infectious causes of weak or dying calves include IBR, BVDV, brucellosis, leptospirosis, late gestation infection, foothill abortion, and neospora.

Reproductive Management

Evaluate reproduction from both the male and female side. One or both may contribute to reproductive failure. On the male side, breeding soundness evaluations (BSEs) are a tool that can be used to assess whether or not a bull is a satisfactory potential breeder. They are based on a physical examination, scrotal circumference measurement, and semen evaluation for morphology (sperm shape) and motility (sperm movement). Breeding soundness evaluations do not rate the libido (sexual drive) of a bull, so even bulls that pass a BSE may not be good breeders. Injuries or illnesses during breeding season can also impact bull breeding effectiveness. Consider the age of each bull amongst other factors when determining how many females to place him with during a breeding season.

On the female side, make sure that heifers are developed properly and reach puberty prior to breeding. Reproductive tract scores can be used to indicate reproductive maturity in heifers. Pelvic measurements also can be used as a culling tool for weeding out extremely small birth canals that may lead to calving difficulty.

Always keep detailed, accurate breeding and calving records. Watch for returns to heat. Determine pregnancy status in exposed females within a reasonable time after breeding, preferably within 60 days or less after breeding exposure to allow for early decisions on marketing non-pregnant cattle. Rectal palpation, ultrasound pregnancy diagnostics, and blood pregnancy tests are methods available for pregnancy checking. Calculate reproductive efficiency measures as soon as the needed data become available.

Constantly look for signs of potential reproductive problems, and then investigate likely causes. A veterinarian can assist with managing infectious causes of infertility. Proper nutrition, animal handling, and genetic management are essential to establishing and maintaining high reproductive rates in the herd. For more information about beef cattle production, contact an office of the Mississippi State University Extension Service.