

BEEF HERD REPRODUCTIVE WORKSHEETS



BASICS

OVERVIEW

- Reproduction is a continuum, not a series of unrelated breeding seasons. Data should be used to evaluate the farm management, not just a specific breeding group. Combine evaluations of virgin replacement pool, yearling heifers, bred heifers, first-calf heifers, and adult cows within the year and between years in the assessment of herd reproductive performance and bottlenecks.
- Reproductive worksheets can be paper, computer spreadsheets, or databases depending on the needs and interests of the practitioner and producer.
- Worksheets and graphs are often necessary to communicate and summarize reproductive measurements taken on farms.
- Worksheets and graphs also can serve a valuable role in providing diagnostic information to work up suboptimal reproductive performance.

INCIDENCE/PREVALENCE

- N/A

GEOGRAPHIC DISTRIBUTION

- Worldwide

SYSTEMS AFFECTED

- Reproductive

PATHOPHYSIOLOGY

- Beef cattle reproductive performance is affected by males and females fertility as well as epidemiological situation of the herd regarding infectious disease.
- Bull factors include all conditions affecting sperm production, sperm quality and serving capacity.
- Cow factors include anestrus (mostly due to nutritional deficiencies) and infectious diseases
- Human factors including handling and technique particularly in artificial insemination programs

- Each of these factors affecting reproductive efficiency is discussed separately in this publication.

HISTORICAL FINDINGS

- Worksheets are used to monitor herd reproductive efficiency and to help in the investigation of poor reproductive performance

SIGNALMENT

Beef cattle

PHYSICAL EXAMINATION FINDINGS

- Worksheets should include evaluation of BCS

GENETICS

- N/A

CAUSES AND RISK FACTORS

- Causes of poor reproductive performance including poor cyclicity, male infertility, infectious causes of pregnancy loss.



DIAGNOSIS

DIFFERENTIAL DIAGNOSES

- The production/veterinary goal is to have a high percentage of heifers and cows calve in the first 20 to 40 days of the calving season.
- Worksheets should be developed that allow practitioners to evaluate the reproductive success of the herd and to aid in the diagnosis of suboptimal reproductive performance.
- Because male problems, female problems, and pregnancy loss due to disease could each negatively impact herd reproductive performance, information must be collected for each of these aspects.

Male Problems

- Breeding soundness examination of bulls (BSE) worksheets
- Pregnancy percentages by 20- or 21-day intervals (number pregnant in 20-day period/number not pregnant at beginning of period)
- Pregnancy rate by bull groups: Number of females pregnant in a single bull group at post-breeding pregnancy exam / total number of females in a said bull group at risk of becoming pregnant x 100. Low rates could indicate poor serving capacity, low libido, venereal disease, or bull injury.

Female problems

- Reproductive tract score of prebreeding heifers (percentage cycling at start of breeding season)
- Body condition score precalving and prebreeding
- Percentage of cows cycling at start of breeding season: percentage in estrus in 2-day period $\times 10$, or percentage of random subset with palpable CL $\div 0.55$
- Pregnancy Rate: Number of females in the herd pregnant at post-breeding pregnancy exam / total number of females at risk of becoming pregnant $\times 100$
- Pregnancy percentages by 20- or 21-day intervals (number pregnant in 20-day period/number not pregnant at beginning of period)
- Calving percentages by 20- or 21-day intervals—discrepancy from pregnancy percentage by 20-day intervals can indicate inaccurate fetal age estimation or pregnancy loss during a particular time period.

Disease problems

- Gestational loss: percentage pregnant on pregnancy diagnosis (transrectal palpation of other methods)—percentage that calve
- Stillbirth percentage: percentage pregnant as determined by uterine palpation—percentage stillborn

Estrous Cycles and Detection of Estrus

For herds that use estrous synchronization and artificial insemination (AI), additional components of reproductive efficiency become important—the successful synchronization of estrous cycles and the accurate detection of estrus. Evaluation of estrous synchronization systems and estrus detection:

- Success of synchronization protocol
 - Percentage of synchronization-treated cattle detected in estrus during the predicted estrus period
 - If only timed insemination is used the percentage of synchronization-treated cattle that become pregnant to AI
- Estrus detection efficiency
 - Clinical signs used to diagnose estrus (Standing heat, increased walking, vocalization)
 - Percentage of females detected in estrus that become pregnant to AI
 - Percentage of females that were detected in estrus and bred by AI that display estrus 17-23 days later
 - Percentage of females not detected in estrus during the predicted estrus period that become pregnant
 - Percentage of females not detected in estrus during predicted estrus period that display estrus 17–23 days later
 - If timed insemination is used following period of estrus detection—percentage of time-inseminated cattle that become pregnant to AI
 - If timed insemination is used, percentage of females that do not show signs of estrus but do become pregnant from AI

Semen Handling and Fertility

- Percentage of females detected in estrus that become pregnant to AI
- Percentage of females that become pregnant from timed insemination
- Percentage of females bred AI that display estrous 17–23 days later
- Percentage of females that become pregnant to AI by Technician
- Percentage of females that become pregnant to AI by bull

Summary: Information to Gather

Worksheets that capture

- Breeding soundness examination of bulls results
- Body condition score — precalving, prebreeding, and mid-gestation
- Prebreeding evaluation of breeding soundness examinations of heifers (reproductive tract score, weight, pelvic area)
- Percentage of mature cows cycling at the start of the breeding season
 - Pregnancy rate of herd
 - Pregnancy rate by bull group
- If estrous synchronization and AI are used:
 - Percentage of synchronized heifers/cows that are detected in estrus (and clinical signs that were used to establish diagnosis of estrus)
 - Percentage of heifers/cows that were detected in estrus that became pregnant to AI
 - If timed insemination is used, the percentage of heifer/cows that were not detected in estrus that became pregnant to AI
 - Percentage of heifers/cows that display estrus 17–23 days after synchronized estrous period
- Gestational age estimation from early pregnancy examination to develop conception histograms
- Calving dates to develop calving histograms by 20- or 21-day intervals
- Archive worksheets for future reference. Producer needs a copy and veterinarian needs a copy.



TREATMENT

THERAPEUTIC APPROACH

- Herds should develop with their veterinarian a sound parasite control and vaccination program
- Selection of estrus synchronization programs should be based on the herd characteristics and capabilities

SURGICAL CONSIDERATIONS AND TECHNIQUES

- N/A



MEDICATIONS

DRUGS OF CHOICE

- Parasite control and vaccine product should be selected based on the epidemiological characteristics of the region
- Hormones for estrus synchronization

CONTRAINDICATIONS

- Appropriate milk and meat withdrawal times must be followed.

PRECAUTIONS

- N/A

POSSIBLE INTERACTIONS

- N/A



FOLLOW-UP

EXPECTED COURSE AND PROGNOSIS

- N/A

POSSIBLE COMPLICATIONS

- N/A

CLIENT EDUCATION

- Importance of record keeping
- Importance of animal identification
- Bull breeding soundness examination and reproductive tract scoring

PATIENT CARE

- N/A

PREVENTION

- N/A



MISCELLANEOUS

ASSOCIATED CONDITIONS

- Stillbirths, repeat breeders, pregnancy wastage, and bull infertility

AGE-RELATED FACTORS

- Reproductive Tract Score results in heifers
- Weight and size (height at the withers) as specific ages

ZOONOTIC POTENTIAL

- N/A

PREGNANCY

- Pregnancy rates worksheet depend on method and frequency of pregnancy diagnosis.
- Early pregnancy diagnosis using ultrasonography or pregnancy associated glycoproteins (PSPB) provide additional information on early pregnancy loss

BIOSECURITY

- Any diagnostic or screening test results for replacement females and bulls (BVDV, BLV, *Neosporosis*, *Trichomoniasis*, *Campylobacteriosis*)

PRODUCTION MANAGEMENT

- Breeding soundness examination of bulls results
- Body condition score—pre-calving, pre-breeding, and mid-gestation
- Pre-breeding evaluation of breeding soundness examinations of heifers (reproductive tract score, weight, pelvic area)
- Percentage mature cows cycling at the start of the breeding season
- Pregnancy rate – herd
- Pregnancy rate by bull group
- Calving rate by 20 day interval

SYNONYMS

- N/A

SEE ALSO

- Abortion: Bovine
- Artificial Insemination: Bovine
- Body Condition Scoring: Beef (www.fiveminutevet.com/ruminant)
- Bovine Viral Diarrhea Virus
- Campylobacter
- Estrus Synchronization: Bovine

- Neosporosis
- Parasite Control Program: Beef
- Pregnancy Diagnosis: Bovine
- Reproductive Pharmacology
- Trichomoniasis

ABBREVIATIONS

AI = artificial insemination

BSE = breeding soundness examination

CL = corpus luteum

Suggested Reading

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