

## **Standardized Performance Analysis (SPA) Replacement Heifer Reproduction Performance: Critical Dates, Data Worksheet and Calculation of Reproduction Measures**

Cow-Calf SPA Subcommittees of the National Cattlemen's Association (NCA), in cooperation with the National Integrated Resource Management (IRM) Coordinating Committee, defined this cow-calf enterprise analysis system in 1991. Cow-Calf SPA includes performance measures for reproduction, production, grazing and feed use, marketing, and financial and economic performance. SPA is an integrated analysis linking both financial and production performance.

Reproduction is the key to profitable cow-calf production. Calculating reproduction performance based on exposed females is often the most difficult part of the SPA implementation. Starting the analysis when the breeding season begins reduces the time to do SPA and improves accuracy. Use of SPA has proven that **what is measured is managed**. All begins by measuring reproduction performance.

The purpose of this spreadsheet is to provide the data organization, definitions of terms, and the calculation necessary **to complete only the reproduction performance** analysis part of **SPA for replacement heifers**. A critical measure of performance is the replacement heifer reproduction.

Collection and timely use of reproduction data is critical to accurate SPA. Timely recording reproduction dates and data reduces the time required completing SPA. It is very important to accurately record the exposed female numbers and make the necessary adjustments. The exposed females are the divisor for SPA reproduction measures.

The production cycle includes breeding, pregnancy testing, calving, and weaning. The weaning dates determine the SPA year that is being analyzed. The production cycles overlap fiscal years. The year the calves are weaned is a year after females were exposed for spring calving cows.

Users are advised to read definitions and review examples before starting SPA. It's very important to enter the beginning and ending days of the breeding season and then follow through to weaning the calves. For first time users a sheet is provided to record breeding season dates by category of exposed females. Use a separate analysis for each breeding season, i.e. spring or fall.

A data collection spreadsheet is included to record pregnancy testing, marked or worked calves and weaned calf production. Include all weaned calves, whether they are market calves, retained ownership calves, calves retained for herd replacement. Weights should be at the time of weaning. Include any calves that were sold or transferred out prior to weaning if not sold in cow-calf pairs.

Key SPA measures calculated are pregnancy and weaning percent, average weaning weights and pounds weaned per head of exposed females by age category. Dates and length of the breeding seasons are important herd management indicators.

Two spreadsheets are provided including: 1. Replacement heifer SPA that has a sheet to collect production data and also do the calculations. This option is set up where artificial insemination is used. 2. Replacement heifer SPA using date from the ranch data collection. Both options calculate the SPA values through weaning. Data and calculations provide for evaluation of artificial insemination (AI) reproduction results.

Figure 1. can help organize the dates and numbers to the spring breeding season. Crossing two fiscal years does create the challenge in implementation of SPA.

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## **Key SPA Reproduction Definitions for Numbers and Calculations**

1. **A total female exposed at the beginning of the breeding season** is the number of females in the beginning inventory that are exposed either to bulls or in an artificial insemination (AI) program. The number should correspond to the number on the **beginning date** of the breeding season.
2. **Adjusted exposed females including sales, transfers, purchases of pairs and exposed and pregnant females** -- is an inventory of exposed females that results from the beginning inventory plus all the adjustments. This is the most critical number that must be generated by the inventory in the reproduction and production performance measures of the cow-calf enterprise. The accuracy of this value will determine the overall accuracy of the productivity analysis. The key is to carefully monitor monthly inventory maintenance and consistency between operating cycles. This number begins with the beginning inventory on day one of the breeding season, subtracts culls not intended to be bred, as well as sales or transfers out of the breeding herd and adds purchases or transfers in. The net result is used to determine the weaned calf percentage and other production measures of performance.
3. **Number of exposed females that are pregnancy tested** will be the base number used to calculate the pregnancy rate after adjustments. Include females, which were pregnancy tested and sold or transferred out after the breeding season.
4. **Number of females diagnosed as pregnant** is the actual number of the exposed females diagnosed as pregnant. The accuracy of the pregnancy rate improves when all females that are exposed are pregnancy tested. Include females, which were diagnosed as pregnant, but sold or transferred out of the breeding herd after the breeding season.
5. **Pregnancy percentage** -- expresses the number of females diagnosed as pregnant as a percentage of the number of exposed females that are pregnancy tested.
6. **Number of females diagnosed as open** is the number of females diagnosed as not being pregnant or the total number pregnancy tested minus those diagnosed as being pregnant. Includes females, which were diagnosed as open but sold or transferred out of the breeding herd after the breeding season.
7. **Pregnancy percent based on exposed females is the key SPA measure** and is the number of pregnant females divided by the adjusted number of exposed females (see definitions 1. and 2).
8. **A pound weaned per exposed female** is a very important measure of performance for producers selling weaned calves. It is calculated by multiplying weaning percent by average weight. Combining weaning weight and reproduction truly measures production.

**The date sheets that follow can assist in organizing data by date for exposed females. Recall that dates are needed for mature cows, first calf heifers and open heifers. For spring of fall calving herds.**

Spring \_\_\_\_\_

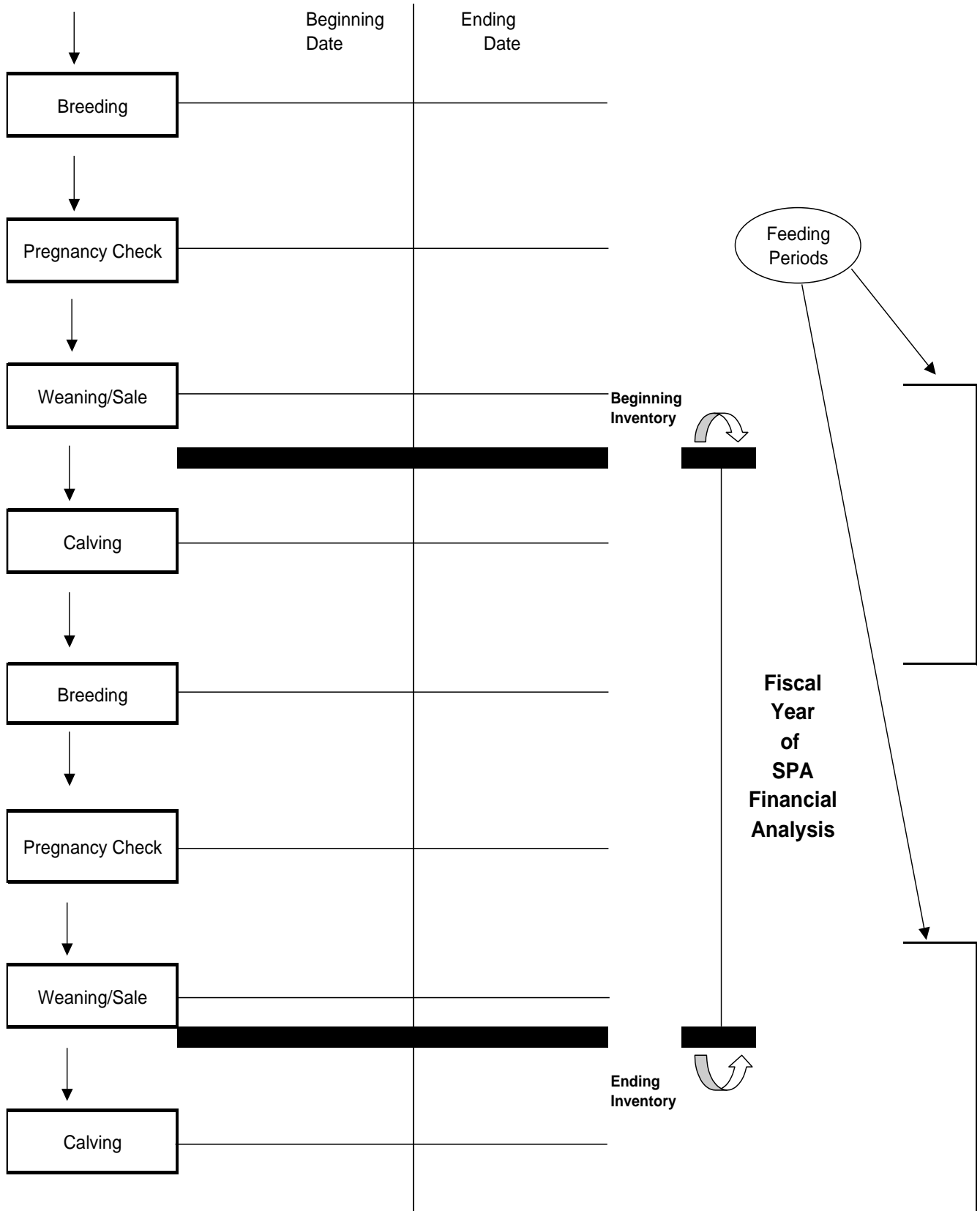


Figure 1. SPA Production Cow-Calf Spring Calving Season and Calendar Fiscal Year Key Data Areas.

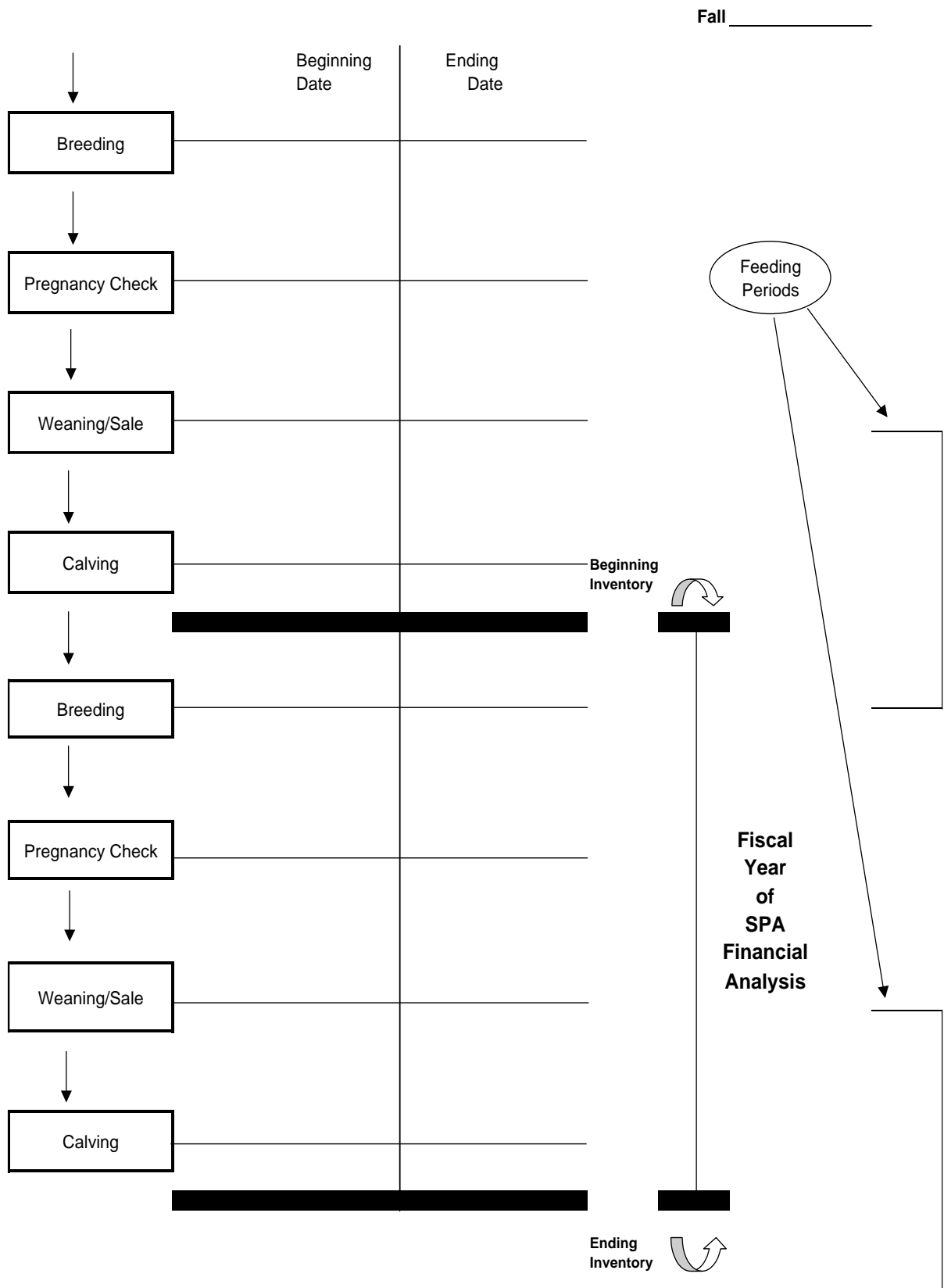


Figure 2. SPA Production Cow-Calf **Fall Calving Season** and Calendar Fiscal Year Key Data Areas.