

# Early Conception Factor (ECF) Dipstick Test™ for Non-conception Determination in Cattle

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## Materials and Methods

The Early Conception Factor (ECF) Test is a lateral-flow technology using a nitrocellulose matrix that allows for the measurement of glycoprotein present in serum or milk from pregnant cows between 6 and 15 days after breeding. This is a patented process utilizing monoclonal antibodies to the early conception factor as well as polyclonal antibodies conjugated to gold colloids. The test is performed by placing 1 drop of either serum or milk using a supplied dropper pipette into the sample well, followed by addition of 4 drops of a running buffer prepared to enhance the specificity and sensitivity of the test. After a 2-hour incubation at room temperature, the presence of 1 line indicates an open cow while the presence of 2 lines indicates the cow has conceived. Cows numbered 436, used for the serum testing portion of this project and 275 cows were used for the milk portion.

## Results

Of the 436 cows serum-sampled in this project, 201 cows were diagnosed pregnant by palpation. The ECF test determined 18 of these animals to be open and the remaining 183 cows to be pregnant. Of the 18 cows diagnosed non-pregnant by ECF test and pregnant by palpation, 7 cows failed to calve. There were 235 cows diagnosed non-pregnant by palpation, while the test showed 109 non-pregnant and 126 pregnant. Of the 131 cows diagnosed pregnant by palpation, the milk test indicated that 127 had conceived and 4 were non-pregnant. Of the 144 cows diagnosed non-pregnant by palpation, 6 were diagnosed pregnant by the ECF test.

## Discussion

The ECF test on serum diagnosed non-conception correctly (as based upon calving results) in 190 of 201 (94.5%) cows at 7 to 8 days following breeding. The test reported 5.5% of the pregnant cows were open. As the cows advanced in gestation to 8 months, the test became 100% accurate. The test determined that 126 of 235 non-pregnant cows were pregnant (53.6%) and 109 cows were non-pregnant (46.4%). The reason for the non-pregnant animal being diagnosed pregnant could have been due to early embryonic death prior to the transrectal palpation examination. The pregnant animals may have been determined to be non-pregnant due to a delay in fertilization or production of the ECF by the fertilized oocyte. The milk test performed as described was 97.8% accurate for diagnosing pregnant cows pregnant and was 95.7% accurate in diagnosing non-pregnant cows as open.

## Summary

The use of the ECF test in this group of cows indicated there was a correct non-pregnancy diagnosis of 94.6% at 6 to 8 days following breeding. Therefore, this test can be used commercially to save valuable breeding time in those animals which were bred and found non-pregnant by the test. These cows can be given prostaglandin F2 alpha following corpus luteum maturity and rebred, saving approximately 10 days of reproductive time. Cows exhibiting a negative test result can be retested later to determine if the embryo is lost between 6 to 8 days, and when rectal examination for pregnancy is normally performed.