

# Jacob Bubolz, Animal Science

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## Effect of lactation on blood progesterone concentrations in dairy cattle

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Dairy farmers are constantly trying to find better ways to maximize production and increase overall farm efficiency. Reproduction in dairy cattle can be difficult to manage and without proper knowledge of the underlying biology, reproductive efficiency can be lost. Progesterone is a hormone that is found in the blood stream of cattle and controls the estrous cycle and pregnancy. This hormone is used to track the estrous in dairy cattle because standing heat is not displayed in greater than 50% of all estrous periods (Van Eedenberg et al. 1996 and Roelofs et al. 2005). Lactation increases energy needs and therefore can affect hormone production. The current study used blood progesterone levels in cattle to determine the interval to first ovulation in lactating and non-lactating cattle. Researchers are also measuring the differences in progesterone concentration between lactating and non-lactating cattle after breeding and this study addressed that question as well. To determine differences in reproduction, dairy cattle were randomly assigned to two groups, lactating (N=10) and non-lactating (N=7). After parturition, cattle were milked or not milked according to assigned group and blood samples were taken thrice weekly and ultrasound data was collected on Mondays. Blood samples were centrifuged and plasma was tested for progesterone concentrations by using radioimmunoassay and compared with ultrasound data. Analyses completed thus far (n=6 lactating and n=4 non-lactating) demonstrated that non-lactating cows cycled earlier postpartum when compared with lactating cows. Concentrations of blood progesterone in lactating and non-lactating cows were statistically similar after breeding. There was, however, a numeric trend for lower blood progesterone in non-lactating cows. The data imply that lactation may delay when a cow cycles but that once cycling that lactating cow may have greater progesterone in blood.

