Higher Production and Twinning

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The birth of twins in dairy cattle is considered undesirable because twins result in increased problems and associated increased cost. Dairy farmers have reported an increase in twinning rate in recent years.

Research done in Wisconsin has shown that age of the dam and level of milk production are two key factors influencing the rate of double ovulation. Double ovulation in first lactation cows was 9%, second lactation 11% and third lactation 20%. Of the cows which produced less than 88 pounds of milk per day at the time of ovulation, 7% had double ovulations. Of the cows which produced more than 88 pounds of milk per day at the time of ovulation, 20% had double ovulations.

The Wisconsin research has not explained why higher producing cows have more twins but has shown some trends which are interesting. We need to cover some background information before I tell you what they think is causing more double ovulations in higher producing cows.

Ovarian follicles grow in waves. A new follicle is recruited from the pool of follicles in the ovary about every 8 hours and starts to grow. There is a point in a normal follicular wave where one follicle starts to grow faster and becomes the dominant follicle of that wave. The other follicles quit growing and disappear. The follicle which is dominant when a cow comes in heat ovulates. In cows that ovulate two follicles simultaneously, something is allowing both the dominant follicle and the follicle recruited right behind it to continue to grow.

Estrogen and follicle stimulating hormone (FSH) are two important reproductive hormones. FSH stimulates follicle growth and maturation. Follicles produce estrogen and as they get larger they produce more estrogen. There is a negative feedback of estrogen on FSH so as the blood estrogen level increases less FSH is released. Higher producing cows have higher dry matter intakes and increased blood flow through the liver. Estrogen is removed from the blood in the liver so more blood through the liver results in less estrogen in the blood. Less estrogen in the blood results in the release of more FSH.

The Wisconsin folks think the following scenario is what is happening in higher producing cows. In the high producing cow dry matter intake is higher, blood flow to the liver is higher, the liver removes more estrogen, less estrogen allows more FSH, more FSH stimulates the follicle which would be dominant in the normal situation and the follicle right behind it and both follicles continue to grow resulting in two dominant follicles and two ovulations.