# Too Much of a Good Thing

**Having reproductive problems in females grazing irrigated pasture? Maybe your cattle are suffering from too much protein.**

*by* ***Troy Smith***

So, you developed that irrigated pasture to supplement your native grass. With some hot-wire fence, you divided the pasture into multiple paddocks. Once some additional watering sites were added, you implemented a rotational grazing strategy. It takes quite a bit of irrigation water and ample fertilizer to get the forage growth you want, but that irrigated pasture has allowed you to extend your grazing season.

You've been able to put cattle on grass earlier in the spring. It's saved on supplemental feed, and that lush, green forage sure seems to put cows in great shape by breeding season. Why then, has your pregnancy rate declined?

Variations on the preceding scenario are becoming more common. At least there seems to be an increase in producer complaints about lower reproductive rates among heifers or cows that have grazed irrigated pasture during the breeding season and very early gestation. Assuming the females are in adequate body condition, and ruling out problems related to disease, semen quality or a bull's lackluster libido, it might be that those females are suffering from too much of a good thing.

Feeding & Feedstuffs

## Protein overload

Excessive dietary protein could be the problem. Producers also have reported lowered fertility among breeding herds grazing lush wheat pasture. It can happen to bunk-fed females in confinement, too, if their diet contains very high levels of protein — and particularly if they are receiving an inadequate supply of energy. Early-season grasses often are high in protein, but low in energy.

The negative effects of excess rumen degradable intake protein (DIP) have been demonstrated repeatedly by the dairy industry and documented in research literature. But now, in areas where use of irrigated pasture is increasing, more beef producers claim to have experienced the protein-fertility conundrum. Anecdotal evidence suggests negative effects may vary from a 5% increase in open females to what is best described as a total wreck. Yet, there are producers who have used irrigated pastures for years without any increase in reproductive problems.

When trouble does occur, it is suspected that excessive protein may result in higher blood urea nitrogen levels, which lead to lowered pH within the female's reproductive system. The environment may become too acidic for an embryo to survive.

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This creates a real management challenge because, according to University of Nebraska Range and Forage Specialist Jerry Volesky, some practices that promote forage growth in irrigated pastures may contribute to faulty female fertility. There may be multiple factors involved, but fertilization programs and grazing management schemes designed to optimize both forage quality and quantity can set the stage for reproductive failure in the grazing cow or heifer. It's sort of a catch-22 situation.

Volesky explains that cool-season irrigated grass, for example, usually needs some nitrogen fertilization for adequate growth. However, higher levels of nitrogen fertilization increase the protein content of the forage. In addition to nitrogen fertility, forage maturity affects its protein content. Rotational grazing and manipulation of stocking rate are management tools used to keep pastures in a vegetative state instead of allowing the plants to mature. Green, growing forage is of higher quality. Volesky says vegetative grass can contain as much as 28% crude protein (CP).

The situation becomes more complex if legumes are part of the irrigated pasture's forage mix. Legumes, like alfalfa and clovers, typically are high in protein, but they also contain substances called phytoestrogens. These substances are similar to the female hormone, estrogen. When breeding females consume high levels of phytoestrogens, their bodies produce less of the natural hormone, which can negatively affect fertility.

## Management considerations

So, with all of this in mind, how does a producer adapt management of a breeding herd on irrigated pasture? And why is it that some producers don't have trouble? Volesky's Nebraska colleague, reproductive physiologist Rick Funston, says timing of breeding may make a difference.

Producers using later breeding seasons may experience less difficulty because their cattle are consuming forage that is more mature, so the protein content is lower. The amount and maturity of legumes present in the forage stand are additional considerations.

Funston says feeding supplemental dry hay can help mitigate problems. Some producers routinely provide supplemental dry feed during the breeding season. For example, setting racks of hay on the corners of irrigated pasture under center-pivot systems allows access to dry feed that can boost the level of energy in the diet and slow the feed passage rate of cattle grazing forage that is high in protein but washy.

Producers may want to review their fertilizer program as well. Fertilizer isn't cheap. Applying too much nitrogen is wasteful, and it may be costing even more if it raises forage protein levels to the point that reproductive performance suffers.

Some producers believe heifers may be more susceptible to lowered fertility on irrigated pasture than mature cows, but Funston says there is no research to substantiate such claims. Cows may be less sensitive because their reproductive systems are more fully developed or because they are more acclimated, but producer-observed differences between cows and heifers can't be explained with any certainty.

One thing he says with certainty is that too little is known about this subject and more research is needed to address best management practices to optimize reproduction in breeding herds grazing irrigated pasture.

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