



Effects of Vegetable Fat Supplementation on Reproductive Performance

Key Points

- Research indicates vegetable fat may be needed in the diet of reproductive females to maximize reproductive performance.
- Feeding supplemental vegetable fat is one management practice that can be employed to assure target weights are met.
- Research results indicate supplemental dietary vegetable fat can affect reproductive performance of replacement heifers and pregnant lactating brood cows.
- Research suggests adding vegetable fat to the diet during the final 50 to 60 days of gestation can have a beneficial impact on reproductive performance.

Nutritional management plays a key role in maintaining maximum performance and profitability of cow/calf operations. Meeting nutrient requirements of the replacement heifer plays a vital role in optimizing days to puberty. Ensuring pregnant and lactating females' nutrient needs are met is of critical importance in achieving peak reproductive performance and maximizing the percent of cows weaning calves. Nutrient requirements include the need for protein, energy, minerals, vitamins, and water to satisfy growth, maintenance, and reproductive needs. Research indicates vegetable fat may be needed in the diet of reproductive females to maximize reproductive performance.

Cow Reproductive Performance

Work conducted at the USDA-ARS, Livestock and Range Research Laboratory in Miles City, Montana, by Dr. R. A. Bellows confirms the advantages of vegetable fat

supplementation to reproductive performance. In two studies, dams were fed control diets with no added vegetable fat or diets containing supplemental vegetable fat. Results showed calves from the dams that received supplemental vegetable fat during gestation responded to cold stress better than calves from dams that did not receive the added vegetable fat. Calf birth weights, calving difficulty scores, and calf vigor were not affected by feeding the high vegetable fat diet. However, pregnancy rates were greater in dams that received vegetable fat supplementation during gestation (Table 1).

At the University of Wyoming, no reproductive performance advantage was noted for brood cows provided with supplemental vegetable fat. However, in a second study an increase in fertility rate was observed for brood cows fed supplemental vegetable fat. Serum cholesterol concentrations were increased with vegetable fat supplementation in both studies. Cholesterol is the main precursor for the synthesis of progesterone, which is responsible for preparing the uterus for implantation of the embryo and maintenance of the pregnancy. Increased

Table 1. Effect of Gestation Dietary Fat on Calf and Dam

| | Gestation Diet | |
|-------------------|----------------|-----------|
| | Control | Added Fat |
| Birth weight, lb | 80 | 81 |
| Dystocia score | 1.7 | 1.6 |
| Pregnancy rate, % | 56 | 70 |

Source: USDA-ARS, Bellows; studies 1 and 2 combined



plasma progesterone concentrations have been associated with improved reproductive performance in lactating cows.

In a study supported by ADM Animal Nutrition at the University of Georgia, cows fed a range cube containing 10% soybean oil gained 53.3 lb more weight and had a 554% increase in serum cholesterol levels over controls not fed cubes containing soybean oil. In work conducted at ADM Animal Nutrition's Beef Research Unit, brood cows supplemented with a protein tub containing 20% soybean oil lost less weight (23.3 vs. 49.8 lb) and had heavier calves compared to brood cows receiving protein supplementation only.

Growth & Development

Beef replacement heifers should be managed to reach 60% to 65% of their mature body weight by the time they are bred. Feeding supplemental vegetable fat

is one management practice that can be employed to assure target weights are met. Work by Dr. Bellows at the USDA-ARS, Livestock and Range Research Laboratory in Miles City, Montana, showed the effects of vegetable fat supplementation to heifers. Diets were formulated to contain equal amounts of energy and protein with additional vegetable fat added to the treatment diets. Diets were fed for an average of 65 days to examine the effects of supplemental vegetable fat on subsequent reproductive performance of heifers. Feeding vegetable fat resulted in a non-significant increase in calf birth weight and in the incidence and severity of calving difficulty. A 13 percentage point increase in fall pregnancy rate and a 30 lb increase in calf weaning weights were observed with the addition of vegetable fat to heifer diets. A University of Wyoming study indicated prepubertal heifers fed 3% soybean oil had higher average daily gains and improved feed efficiency

when compared to control heifers. Heifers fed 3% soybean oil also conceived 10 days earlier than control heifers.

Summary

Research results indicate supplemental dietary vegetable fat can affect reproductive performance of replacement heifers and pregnant lactating brood cows. Research suggests adding vegetable fat to the diet during the final 50 to 60 days of gestation can have a beneficial impact on reproductive performance. ■