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Use of an Ionophore in a Molasses-Based Supplement for Developing Replacement Heifers

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Ionophores, marketed under the names of Rumensin and Bovatec, are commonly used in the stockering and feedlot industries to increase rate of gain and feed efficiency in growing cattle. Ionophores increase animal performance, for the most part, by altering the rumen bacterial population so that more of the volatile fatty acid, propionate, and less acetate is produced. Similar alterations in the rumen can be achieved by increasing the grain or concentrate portion of the diet. Ionophore addition to a primarily forage diet can be likened to adding about two lbs. of grain. By altering the proportions of acetate and propionate in the rumen, significant changes in the animal's circulating concentrations of energy metabolites, such as glucose, and metabolic hormones, such as insulin and insulin-like growth factor I, also occur. These changes in energy metabolism have been associated with earlier onset of puberty in heifers. Most successful applications for enhancing puberty in replacement heifers have been incorporation of an ionophore into the dry freed or concentrate portion of the diet. Research with ionophore addition to a molasses-based liquid supplementation program is limited and has yielded mixed results with respect to enhancing gains in replacement heifers.

The first year of a study at the Ona Research Center involving the use of an ionophore in a molasses-based supplementation program has been completed. Simbrah- and Senepol-sired heifers were fed six lbs. per head per day of a molasses-cottonseed meal slurry (82 percent molasses, 15 percent cottonseed meal, two percent Ona mineral and one percent salt, as fed), with or without addition of Bovatec (200 mg lasalocid per head per day) from October (about one month after weaning) through April (end of a 60-day breeding

season). Heifers grazed five-acre bahiagrass pastures (six heifers/pasture) throughout the study and were offered good quality stargrass hay from mid-December through the end of the breeding season. Heifers weighed approximately 500 lbs. at the start of the study and gained about 0.62 lbs./day from the start of the study to the start of the breeding season (140 days). Blood levels of glucose were not affected by addition of an ionophore (97.4 mg/dl for controls and 94.8 mg/dl for Bovatec heifers), but blood urea nitrogen levels were higher in heifers fed Bovatec compared to controls (14.3 mg/dl for Bovatec vs. 13.1 mg/dl for controls). Ruminal acetate: propionate ratios tended to decrease in heifers fed Bovatec compared to controls during days 28 through 84 of the trial, indicating that the ionophore was causing a slight shift in rumen bacterial populations. Despite positive evidence of ionophore function, addition of the ionophore did not enhance weight gain, body condition score or hip height in these heifers. Pregnancy rates were similar between the two treatments (54.2 percent for control heifers and 62.5 percent for Bovatec heifers). We plan to repeat this study at least one more year at the Ona Center to determine if ionophore addition to a molasses-based supplement can predictably and consistently influence development of replacement heifers to be successfully bred as yearlings.