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# COMPARISON OF MELENGESTROL ACETATE AND PROSTAGLANDIN WITH TWO INJECTIONS OF PROSTAGLANDIN FOR ESTROUS SYNCHRONIZATION IN BEEF HEIFERS

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## Summary

Crossbred beef heifers were used to compare conception rate when synchronizing estrus with melengestrol acetate (MGA) and prostaglandin or two injections of prostaglandin. Melengestrol acetate was fed to one group of heifers for 16 days and prostaglandin injected 16 days after MGA removal or two injections of prostaglandin given 11 days apart in the other group. The MGA group had a higher conception rate ($P<.05$) to timed AI, but there was no difference between the two groups for the breeding season. It appears MGA with prostaglandin results in increased conception to a timed insemination.

(Key Words: Beef Heifers, Synchronization, Melengestrol Acetate, Prostaglandin.)

## Introduction

Considerable research has been conducted over the past years controlling the estrous cycle in cattle with varying results. For artificial insemination (AI) to be implemented on a large scale in the beef cattle industry estrous control becomes more important. Low conception rate following estrous synchronization has been due to noncycling animals due to inadequate management or nutrition. Several products are presently available for estrous synchronization and results are satisfactory when good management and nutritional regimes are utilized. Melengestrol acetate has been used in the feedlot to improve gain and efficiency and suppress estrus in intact open females but is not presently cleared for estrous synchronization. It is a synthetic hormone with similar activity and structure of progesterone. Recently research with MGA and prostaglandin has indicated its possible use to synchronize estrus. The purpose of this study was to evaluate the effectiveness of MGA in controlling the estrous cycle of beef heifers when used in conjunction with a prostaglandin.

## Materials and Methods

Two methods of synchronization were compared to determine the effectiveness of MGA as a synchronizing agent. In July, 62 head of yearling, crossbred beef heifers were started on trial at the SDSU Research Farm near Centerville. The heifers were purchased as fall calves and fed a ration of corn silage, corn and alfalfa:grass hay to gain 2 lb per day. All heifers were maintained in small lots of 7 to 9 head per pen. In October, MGA was fed for 16 days in the ration to heifers in four of the eight pens. Sixteen days after MGA withdrawal a prostaglandin (Lutalyse[4]) was administered to the heifers that had been fed MGA. The other four pens were injected with Lutalyse 11 days apart, with the second injection given at the same time the Lutalyse injection was given to the MGA-fed heifers. Seventy hours after administering Lutalyse the heifers were inseminated. Eighteen days after AI, clean-up bulls were put with the heifers and remained for 28 days. The heifers were palpated for pregnancy 140 days after AI. Conception data to AI and clean-up bulls were analyzed by Chi-square analysis.

## Results and Discussion

Having heifers conceive early in the breeding season results in older, heavier calves at weaning. In the MGA group a higher number ($P<.05$) of heifers conceived to AI than in the group given two prostaglandin injections (Table 1). There was no difference between the two groups in conception rate for the breeding season which included AI and the clean-up period.

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TABLE 1. CONCEPTION RATE IN HEIFERS WHEN SYNCHRONIZED WITH MGA AND PROSTAGLANDIN OR PROSTAGLANDIN ALONE

| | Conception rate | |
|---|---|---|
| | Synchronized estrus | Breeding season |
| MGA and prostaglandin | 17/30 (56.7%) | 21/30 (70.0%) |
| Two prostaglandin injections | 11/32 (34.4%) | 20/32 (62.5%) |

Since the AI conception rate for MGA-fed heifers was larger, this would indicate an advantage for that group. However, in this study an additional 16 days were used for MGA feeding and 16 more days until the heifers were synchronized. The 16 days after MGA withdrawal were used so one estrus following MGA administration had occurred before synchronization. Research has indicated the second estrus after MGA is more fertile. This adds 32 days to the MGA-fed heifers and may eliminate the advantage of the higher conception rate early in the breeding season for MGA-fed heifers. However, conception rate to time insemination was higher probably because more heifers were cycling at breeding in the MGA group.