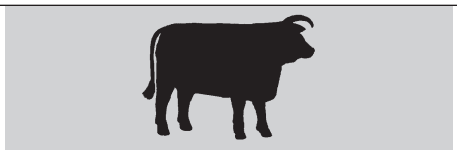
The Professional Animal Scientist 32 (2016):90–98; http://dx.doi.org/10.15232/pas.2015-01440



Production practices and value of artificial insemination and estrus synchronization programs of United States beef producers

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ABSTRACT

An online survey of AI users was developed to determine how industry segment (commercial, seedstock, or multiple segments) influenced profitability and current management practices used in conjunction with AI and estrus synchronization in the United States beef industry. Survey results came from 42 states and included 425 completed instruments. Value of replacement heifers (80%) and reducing calving difficulty (55%) were the most common ways AI contributed to profitability. Commercial producers ($187 ± 79) assigned a lower ($P < 0.05$) value to AI-sired calves than did seedstock producers ($709 ± 63). Producers used estrus synchronization always (46%), usually (26%), sometimes (28%), rarely (6%), or never (4%). Insemination after observed estrus was the most common method of insemination (42%), followed by single fixed-time AI (34%), and then AI after observed estrus with cleanup timed AI (24%). The most frequently used system for synchronization of estrus in cows and heifers was a 7-d CO-Synch + controlled internal drug-releasing insert protocol. Use of reproductive tract scoring, temporary calf removal, and natural service sires on synchronized heats was relatively low, ranging from 20 to 28%, and did not differ among industry subgroups. Seedstock producers were 2.5-times more likely ($P < 0.05$) to use pelvic measurements than commercial producers. Producers identified nutrition, heat detection, and skilled labor as key components of successful AI programs. Survey data pointed to opportunities to increase producer awareness on management issues related to AI and estrus synchronization, in particular, the success and convenience of fixed-time insemination protocols.

Key words: beef, artificial insemination, synchronization of estrus, production practices, survey

INTRODUCTION

Artificial insemination and estrus synchronization (**ES**) remain underused by United States beef producers. The most recent National Animal Health Monitoring Survey (**NAHMS**; USDA–APHIS–VS–NAHMS, 2009) reported 7.6% of producers used AI and 7.9% used ES. The most common reason cited for not using various reproductive technologies was time and labor, followed by cost and difficulty. Use of reproductive technologies is likely greater in the seedstock industry; over 53% of Angus registrations were reported to be AI sired in the 2014 Angus Association Annual Report.

Some seedstock producers receive significant premiums on elite individuals; however, little is known about how those operations might perceive value differences between AI-sired or natural service–sired calves on the average. Profitability of AI for commercial producers has been estimated at weaning (Johnson and Jones, 2008) or a slaughter endpoint (Miller et al., 2004), but actual producer estimates are limited (Rodgers et al., 2012).

Little information is available on actual management practices used by producers who do use AI and ES and their value to such operations. Barao (1992) suggested that the failure of

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producers to adopt technology may relate to the belief that the technology will not work beyond the university setting. More information directly from AI users may help producers incorporate the technology into their own operations. The objective of the current study was to characterize management practices of herds that use AI and ES and the value associated with AI-sired calves produced and differences due to role in the industry.

MATERIALS AND METHODS

An online survey tool was developed and pretested on a subset of producers and extension professionals and refined according to that input. A link to the online survey was sent to e-mail addresses of those who registered with the Iowa Beef Center when they downloaded the Estrus Synchronization Planner software used to schedule AI programs. Survey respondents who participated could elect to enter a drawing for AI supplies at the completion of the survey. In addition, a link to the survey was promoted through electronic extension publications, contact lists, and cooperating news media.

For questions referencing estrus synchronization protocols, diagrams shown in Figure 1 (heifers) and Figure 2 (cows) were provided. Where possible, protocol nomenclature developed by the Beef Reproductive Task Force was used (Johnson et al., 2011).

Respondents were asked to describe their involvement in the cattle industry by indicating one or more of the following classifications: commercial cow/calf producer, seedstock or purebred herd, commercial heifer development, doctor of veterinary medicine, AI technician, or other. A single classification was indicated by 59.5% of respondents, whereas the remaining 40.5% indicated they were involved in 2 or more segments of the industry. Because of small numbers of respondents in some segments (commercial heifer development, veterinarian, AI technician, other) and allowance for multiple areas of activity, a new group defined as the "multiple-segment" group was created for responses with any combination of 2 or more areas of industry involvement. Responses for multiple-segment, commercial, or seedstock industry groups numbered 164, 90, and 136, respectively.

Logistic regression (PROC LOGISTIC; SAS 9.3; SAS Institute Inc., Cary, NC) was used to determine differences in practices due to segment of the industry. The number of owned cows inseminated was used as a covariate in the analysis. Continuous variables of value of AI-sired calves, semen cost, years of AI experience, and number of owned cows and heifers inseminated were tested using PROC GLM of SAS.

RESULTS AND DISCUSSION

The survey was accessed by 546 individuals, and 425 completed the survey. Responses came from 42 states, with the most from Kansas at 10%, followed by Iowa at 7%.

When asked to describe all areas of involvement in the cattle industry, respondents represented seedstock herds (67%), commercial cow/calf herds (56%), AI technicians (18%), veterinarians (18%), commercial heifer development (14%), and other (11%; club calf common). It is not surprising that use in seedstock production led all categories given that 53% of Angus registrations were AI sired as reported in the 2014 Angus Association Annual Report and 26% of registrations in 2013 for the American International Charolais Association were AI sired (Robert Williams, 2015, formerly American International Charolais Association, Kansas City, MO, personal communication).

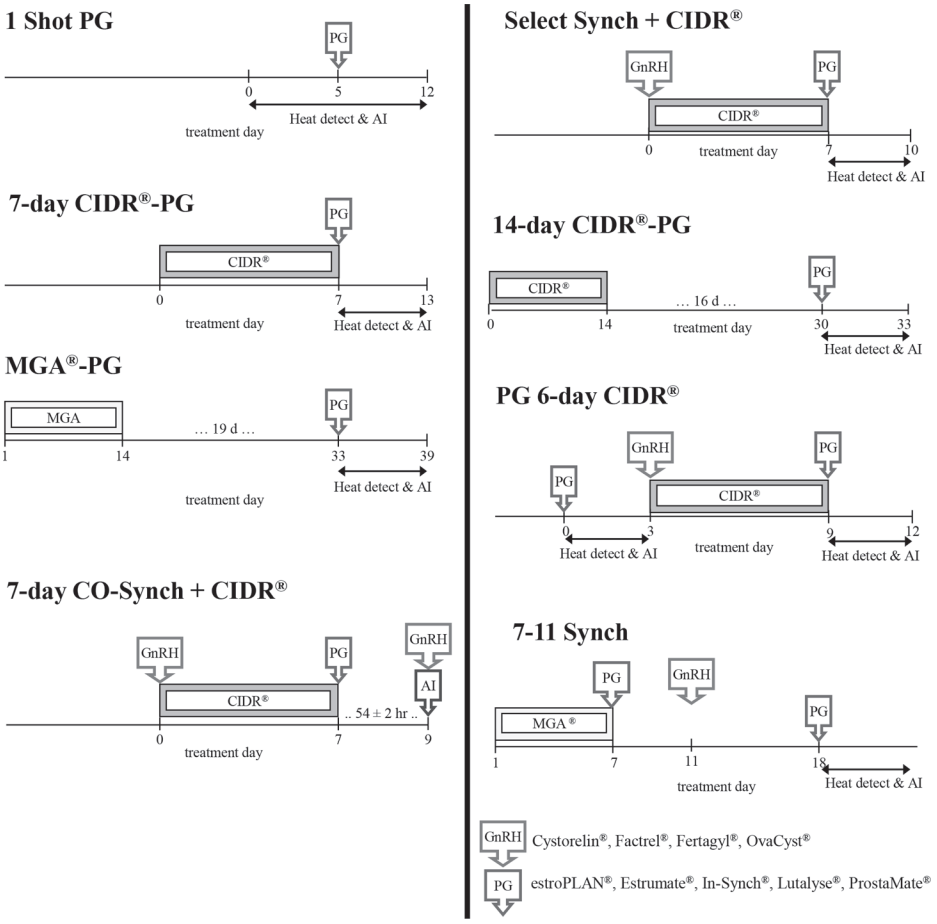

Figure 1. Estrus synchronization protocols shown next to question "What is your preferred system for synchronizing estrus in heifers?" PG = prostaglandin; CIDR = controlled internal drug-release insert; MGA = melengestrol acetate; GnRH = gonadotropin-releasing hormone.