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Epidemiology of synchronization programs for breeding management in US dairy herds

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INTRODUCTION

- Synchronization programs such as Ovsynch are commonly used to manage reproduction in dairy herds is US and worldwide.
- Because the type of breeding program (AI to estrus, Ovsynch, etc) is not always recorded in farms, there are very few reports describing the frequency of TAI at state/country level.
- The problem of standardization of breeding codes associated to an AI event will unlikely be solved in short-mid term, even for main herd-management softwares available.
- However, evaluating the distribution of inseminations throughout the days of the week might represent a valuable tool to estimate the use of synchronization programs across US dairy herds.

OBJECTIVES AND HYPOTHESIS

- Our main objective was to estimate the use of synchronization programs in US dairy herds.
- The hypothesis was that herds located in the Midwest use synchronization programs more frequently than in other areas of US.

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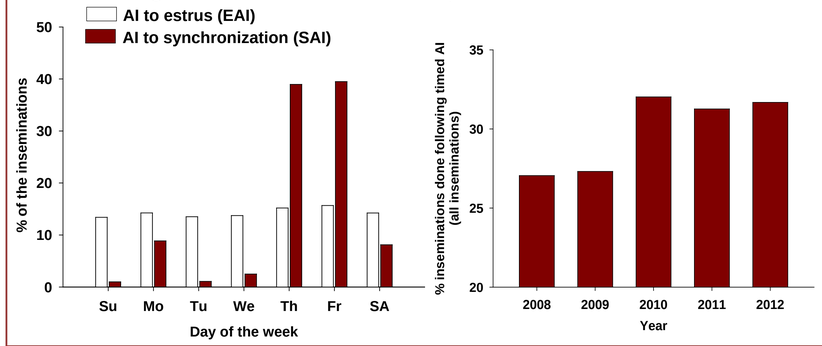
MATERIALS AND METHODS

- Reproductive records from DHIA (AGSource, Agritech, and DRMS) were used for analysis.
- The final dataset included all postpartum AI records from 2008 to 2012 (US dataset) or only for 1st postpartum AI for 2010 (WI dataset) and restricted to records with confirmed pregnancy outcome.
- Only herds reporting at least 30 AIs in the last 12 months were included.
- A total of 1,142,821 breeding records from 40 states were available for the 1st analysis for US-herds;
- 207,506 1st postpartum AIs for WI-herds with over 100 lactating cows/herd were available in the second dataset.
- Breeding codes were classified within herd into either AI-to-estrus (EAI) or synchronized-AI (SAI) based on weekly insemination profile for each herd.
- Within-herd, SAI were assumed when more than 30% of the AI happened on the same day of the week. Remaining AIs were considered non-synchronized.
- Proc GLIMMIX used to compare binomial-distributed data, with herd used as random variable in the logistic regression models.

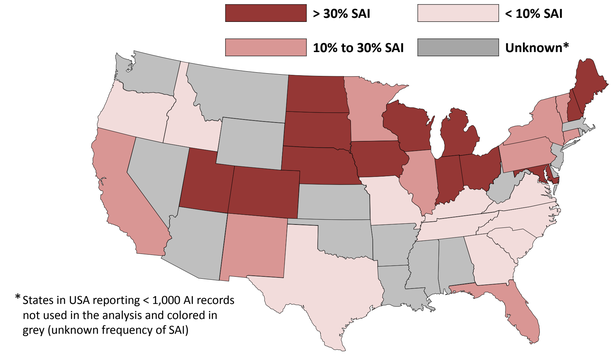
RESULTS

- Out of all SAI inseminations, 78% happened on Thursdays and Fridays. But were evenly distributed throughout the week for EAI.
- Use of SAI grew around 5% in the last 5 years.

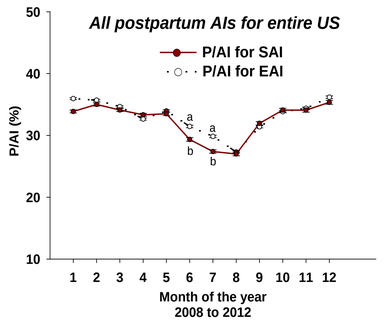


RESULTS

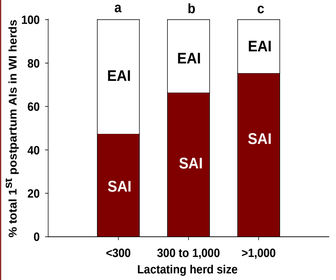
- Across US dairy herds, 29.9% of the AIs were SAI, but with great variation throughout states.
- There were no significant differences in conception results between SAI (32.6%) and EAI (33.4%).



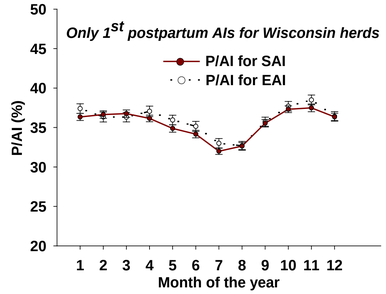
*States in USA reporting < 1,000 AI records not used in the analysis and colored in grey (unknown frequency of SAI)



- Use of SAI or EAI by herd size and at 1st postpartum AI in WI herds was available for further analysis.
- Dataset included all DHIA recorded AIs in 2010 for WI-Holstein herds with > 100 lactating cows.



Herd size	Type	n	P/AI (%)
<300	EAI	28,484	36.8
	SAI	25,715	36.2
300-1000	EAI	30,056	35.8
	SAI	59,280	35.4
>1000	EAI	15,781	34.9
	SAI	48,190	35.2



CONCLUSIONS

- Collectively, no significant differences in conception results were observed between SAI and EAI.
- Herds located in Midwest and Northeastern US seem to use SAI more intensively than other areas in US.
- In WI, larger herds use SAI more frequently than smaller herds, and there were no interactions between type of AI (SAI or EAI) and herd size or month of insemination for 1st postpartum AIs.