An integrated Approach to Improve Dairy Cow Fertility

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United States Department of Agriculture

National Institute of Food and Agriculture

OVERALL OBJECTIVE

To improve reproductive efficiency of lactating dairy cows using an interdisciplinary extension and research team that will identify and remove barriers to reproductive success and link outcomes of basic and applied research with an innovative extension delivery program

Specific Aim 1:
Characterize the contributions of specific management factors to the observed variation between commercial dairy farms in cow fertility.
Aim leader: K.A Weigel and V.E Cabrera
PhD students: Saleh Shahinfar and Afshin Kalantari

Specific Aim 2:
Determine the impact of specific nutritional components on reproductive performance of lactating dairy cows.
Aim leaders: R.D. Shaver and M.C. Wiltbank
PhD student: Matt Akins

Specific Aim 3:
Identify the impact of mastitis on fertility and pregnancy loss in lactating dairy cows.
Aim leaders: P.M. Fricke and P.L Ruegg; Milk Quality laboratory technician: C. Hulland
Ph.D. Student: Maria Jose Fuenzalida Valenzuela

Specific Aim 4:
Evaluate the economic impact of reproductive management strategies on overall farm sustainability under a variety of management scenarios.
Aim leaders: V.E. Cabrera and K.A. Weigel
PhD Students: Saleh Shahinfar and Afshin Kalantari

Specific Aim 5:
Generate measurable improvement in the reproductive performance of dairy herds by developing and implementing an integrated team-based extension program that builds on existing professional relationships within the farm community.
Aim leaders: P.L. Ruegg, V.E. Cabrera, P.M. Fricke, K.A. Weigel, and R.D. Shaver
Extension Outreach Specialist: Connie Cordoba

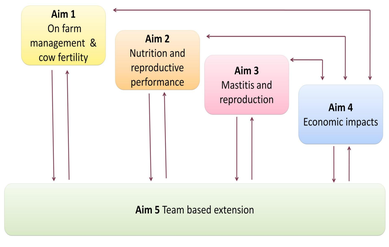

Figure A: Interdependence and flow among the 5 Specific Aims in the project

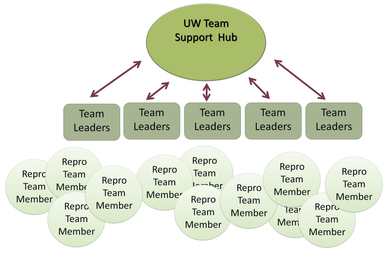

Figure B: Feedback cycle of the interrelationships and multiplier effect of the Reproductive Management Teams.
•Each team has 3-6 team members (veterinarians, farm workers, consultants, nutritionists, etc)
•Each team leader (20-40) working with 5-10 teams.

Project Progression

Selection of 200 dairy farms throughout Wisconsin → Collection of on –farm data to characterize aspects of reproductive, nutritional and mastitis control management &performance → Data submitted to centralized database & analyzed → Data collected used to identify farm specific critical control points for successful reproductive performance → Best Management Practices Identified Tools Developed & Sent back to Team to be implemented on farms

❖Data Collection

Through and agreement with Ag Source beginning on January 2010, we have access to direct digital download of raw data from participating farms at cow level .

Records collected as of January 1st 2010 to date

Test day milk records	cows with test-day milk records	# herds that provided milk production records	Reproduction events	Cows with reproduction events	herds that have provided reproduction events
3,035,801	648,037	4,501	2,139,059	682,111	3,269

❖Expected decision support tools

User-friendly and interactive dairy management tools

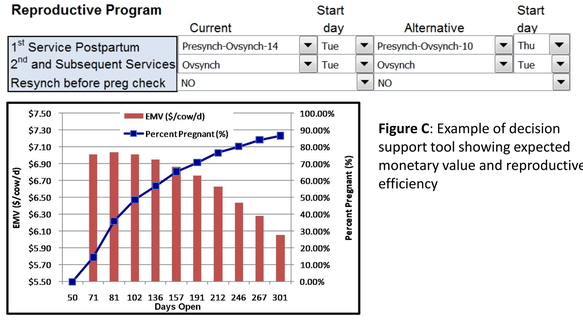

Figure C: Example of decision support tool showing expected monetary value and reproductive efficiency

Expected results

Initial Outcomes	Long –term outcomes
Dairy producers will improve reproductive success by:	Benefits for Wisconsin's Dairy industry and across the US:
✓Being aware of nutrition and mastitis impacts on cow fertility ✓Implementing mastitis and nutritional programs	✓Results from this project will be transferred throughout the US via collaboration with extension
✓Improved skills to implement enhanced reproductive programs	✓Improved nutrition, mastitis control and other reproductive factors will improve the efficiency in fertility of dairy cows.
✓Gain skills in the use of DSS tools to improve reproductive success	✓Improvement in dairy farm net revenue du to an improvement in dairy cow fertility

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