



Successful NIFA AFRI grants, what is it, how it works & what it takes to be successful?

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United States
Department of
Agriculture

National Institute
of Food
and Agriculture



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NIFA

- Federal component of a nationwide extramural research, education, and outreach system that supports the global, science-based agricultural enterprise and accomplishes its mission in partnership with land-grant and non-land-grant scientific organizations.
- Supports full spectrum of: innovation, education, discovery, technology development, training, extension, and outreach

AFRI

- Agriculture Food and Research Initiative Competitive Grants Program
- Formerly: National Research Initiative (NRI)
- The Secretary of Agriculture, through AFRI, makes competitive grants for fundamental and applied research, education, and extension to address food and agricultural sciences.

AFRI Priority Areas

1. Plant health and production and plant products;
2. Animal health and production and animal products;
3. Food safety, nutrition, and health;
4. Renewable energy, natural resources, and environment;
5. Agriculture systems and technology; and
6. Agriculture economics and rural communities

NIFA AFRI Grants: How they work?

1. Request for Applications (RFAs)

- RFAs provide potential applicants with detailed information about particular funding opportunities and instructions on how to apply

2. Where to find RFAs

- Funding opportunities (Grants) at: nifa.usda.gov
- All required info should be there available
- A number of those are INTEGRATED that normally require at least 2 components out of: extension, research, and instruction

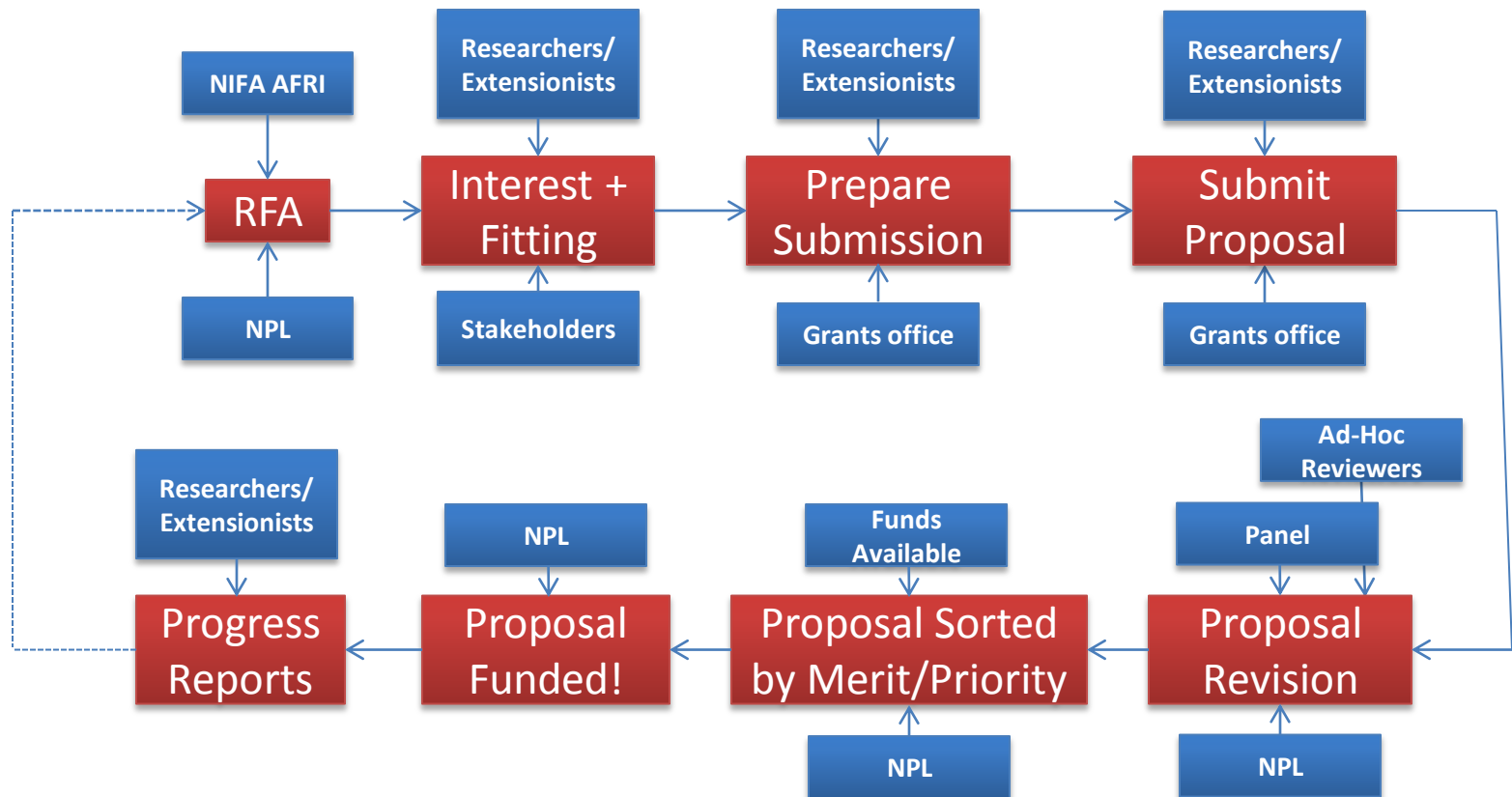
NIFA AFRI Grants: How they work?

3. Where to go for questions regarding RFAs?
 - Contact individuals listed in the RFAs. Preferable the National Program Leader (NPL) of the specific program
4. Decided to apply?
 - Inform the Grants Office (E.g., ANRE: Chris Whalen)
 - They will guide, support, and help in all the submission process

NIFA AFRI Grants: How they work?

The most important recommendation:

Read, read, and read once more the RFA!



What it Takes to be Successful?

A Case Study

Title	An Integrated Approach to Improving Dairy Cow Fertility
Team	Cabrera, V.E., Fricke, P., Ruegg, P., Shaver, R., Weigel, M., Wiltbank, M.
Term	48 months March 2010 - February 2014
Amount	\$1,000,000
Ranking	1 out of 25 (65 Letters of Intent)
Funded Projects	4 (\$4,000,000 available)
Sponsor	<u>INTEGRATED</u> Solutions for Animal Agriculture Agriculture Food and Research Initiative National Institute of Food and Agriculture
More info	http://dairymgt.uwex.edu/projects/repro.php http://fyi.uwex.edu/repromoney/



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"This project is supported by
Agriculture and Food Research
Initiative Competitive Grant no.
2010-85122-20612 from the USDA
National Institute of Food and
Agriculture." Project started
March 1st, 2010

What's the Project About?

- **Improve the reproductive efficiency of dairy cattle using an interdisciplinary team approach that will identify and remove barriers to reproductive success by linking outcomes of basic and applied research with an innovative producer responsive extension program**
 - 1. Characterize the contributions of specific management factors to cow fertility in commercial farms**
 - 2. Determine the impact of specific nutritional components on reproductive performance of lactating dairy cows**
 - 3. Identify the impact of mastitis on fertility and pregnancy loss in lactating dairy cows**
 - 4. Evaluate the economic impact of reproductive management strategies on overall farm sustainability**
 - 5. Generate measurable improvement in the reproductive performance of dairy herds by developing and implementing an integrated team-based extension program**

The Team

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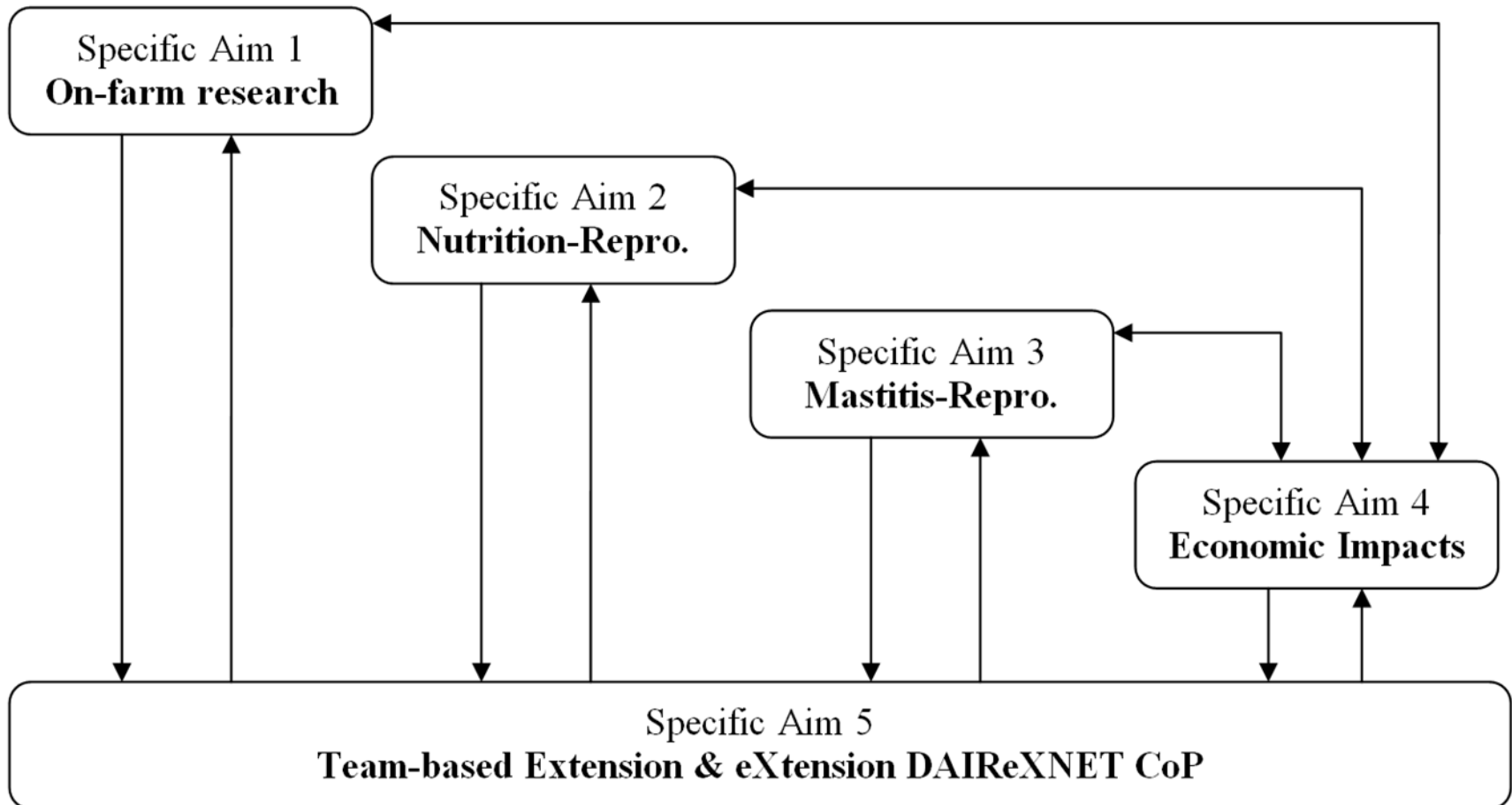
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How it Connects?

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



Why it was Successful?

- **Extension-Research Integration**
 - **Panel: “...extremely well-integrated...(extension/research)”**
 - **Reviewer: “...with most of the investigators having extension appointments, the relationship with county extension personnel and ability to conduct applied research is evident...”**
 - **Reviewer: “...combination of internationally recognized, research-based state specialists, effective county-based extension agents, modern dairy research units, diverse commercial operations, and state-of-the-art laboratories...”**
 - **Reviewer: “...bridge between research (modeling) and applied use (decision-making tools) is novel and much-needed...”**

Why it was Successful?

➤ High Scientific Merit

- Panel: “...well-designed by leaders in the field...”
- Panel: “...application is well-written...”
- Reviewer: “...approach, procedures and methodologies are aggressive and novel...”
- Reviewer: “...results are measurable and possibly from the largest data set to date...”
- Reviewer: “...sufficient evidence of institutional capacity and competence in proposed areas of work...”
- Reviewer: “...high merit as the objectives for all components of the program are addressed...”
- Reviewer: “... innovative and multidisciplinary approach to a very difficult problem ...”

Why it was Successful?

- **Interdisciplinary Team**
 - **Reviewer: “...collectively an outstanding collection of scientific abilities...”**
 - **Reviewer: “...evidence of previous collaboration among team members...”**
 - **Clear flow of activities between objectives and team members**
 - **High collaborative effort**
 - **PIs have built a strong track of research and extension work on the subject area**

Why it was Successful?

- **Innovative and Proven Extension Model**
 - **Panel: “...Reproductive Management Teams is a particular strength...”**
 - **Panel: “...extensive collaboration with county Extension faculty is also a significant strength...”**
 - **Reviewer: “...the concept of using farmer directed Reproductive Management Teams of advisers for 200 herds is of merit...”**
 - **Reviewer: “...the concept of Management Teams is an extraordinary utilization of extension resources between the field and the university...”**
 - **Reviewer: “...integration of a novel extension program that will be transferred throughout the US...”**

Why it was Successful?

- **High Probability of Positive Impacts**
 - **Panel: “...expected to result in significant impacts and improvements...”**
 - **Reviewer: “...translation of information into user-friendly decision making tools is critical to the long-term success...”**
 - **Reviewer: “...plans to disseminate the models, their accuracy, and effectiveness are excellent...”**

Why it was Successful?

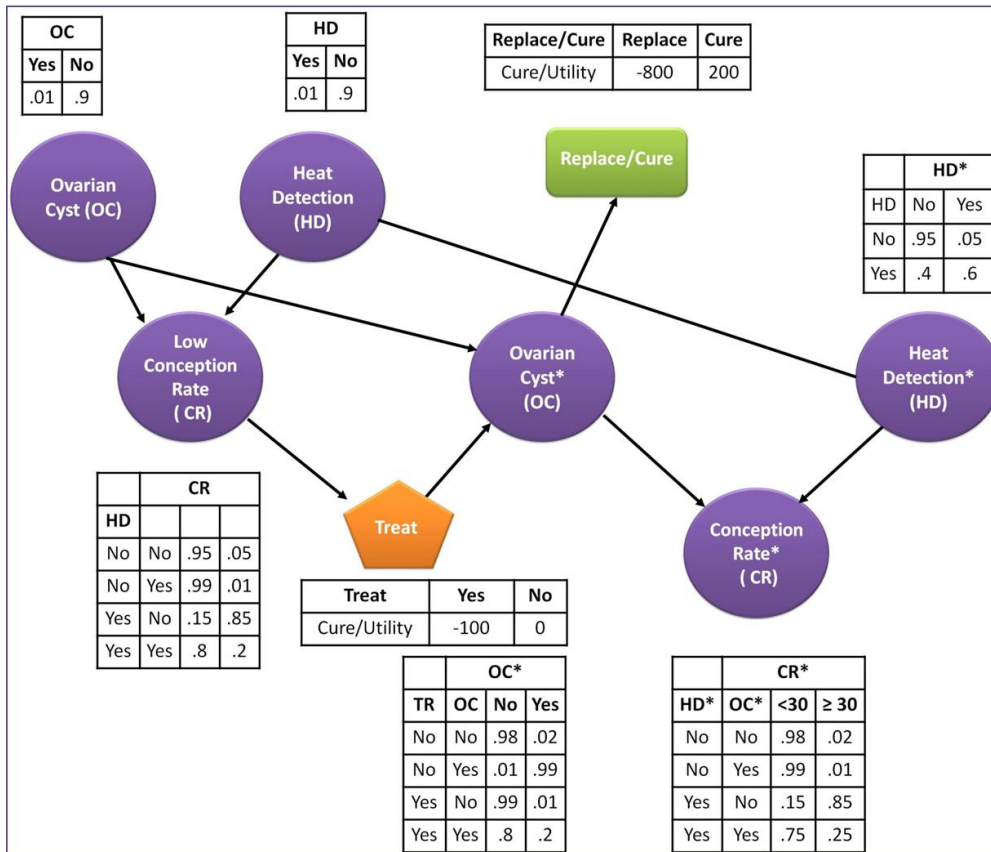
- **Additional Elements**
 - **Well thought Logic Model**
 - **Subcontract with eXtension DAIReXNET CoP**
 - **Well designed Management Plan**
 - **Strong and numerous letters of support (24)**

Project Update

Aim 1: Characterize the contributions of specific management factors to the observed variation between commercial dairy farms in cow fertility.

Aim leaders: K.A Weigel and V.E Cabrera

Ph.D. Students: Saleh Shahinfar and Afshin Kalantari



The conditional probability distribution of conception rate is affected by **heat detection rate** and presence or absence of **ovarian cysts**. In the transition from one state space to the next, the conditional posterior probabilities are influenced directly by the conditional probabilities at the new state spaces (denoted with asterisks) and indirectly by the decision of whether or not to treat the animal for ovarian cysts. This leads to a final conditional probability table based on all prior and posterior conditional probabilities and decisions that were made. **In this aim, influence diagrams are being used to evaluate reproduction-related management decisions based on the benefits of alternative actions and the probability of various events.**

Project Update

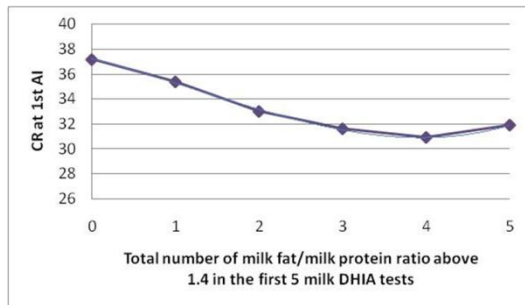
Aim 2: Determine the impact of specific nutritional components on reproductive performance of lactating dairy cows.

Aim leaders: R.D. Shaver and M.C. Wiltbank

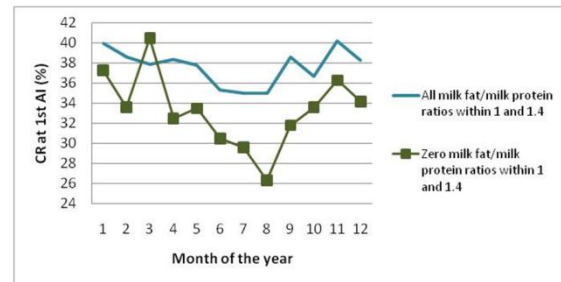
Post Doctoral fellow: Alexandre Souza

Experiment 1: To test whether if milk fat/milk protein ratios indicative of metabolic disorders or nutritional origin such as ketosis (ratio >1.4) and/or subclinical acidosis (ratio <1.0) have an impact in conception rate (CR) at 1st postpartum artificial insemination AI.

CR at 1st TAI according to milk fat/protein ratio

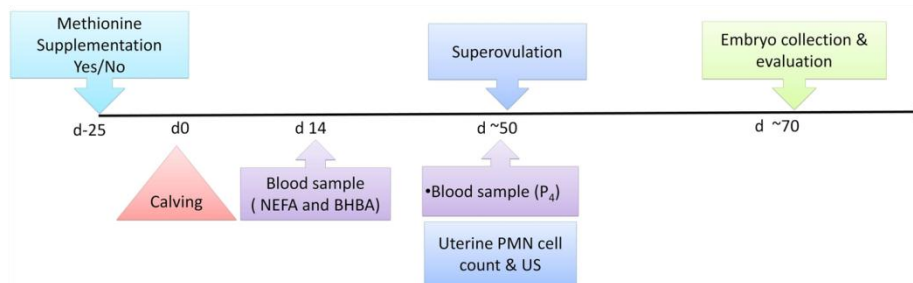


CR at 1st Timed AI for cows having either all or non fat/protein ratio tests within ideal range in the first 5 milk DHIA tests.



N=300,000 1st postpartum services from first 5 milk tests provided by AgSource Cooperative Services, Verona, WI

Experiment 2: Protocol to evaluate the effects of supplementing Methionine near calving on uterine health and embryo quality in high producing cows.



Project Update

Aim 3: Identify the impact of mastitis on fertility and pregnancy loss in lactating dairy cows.

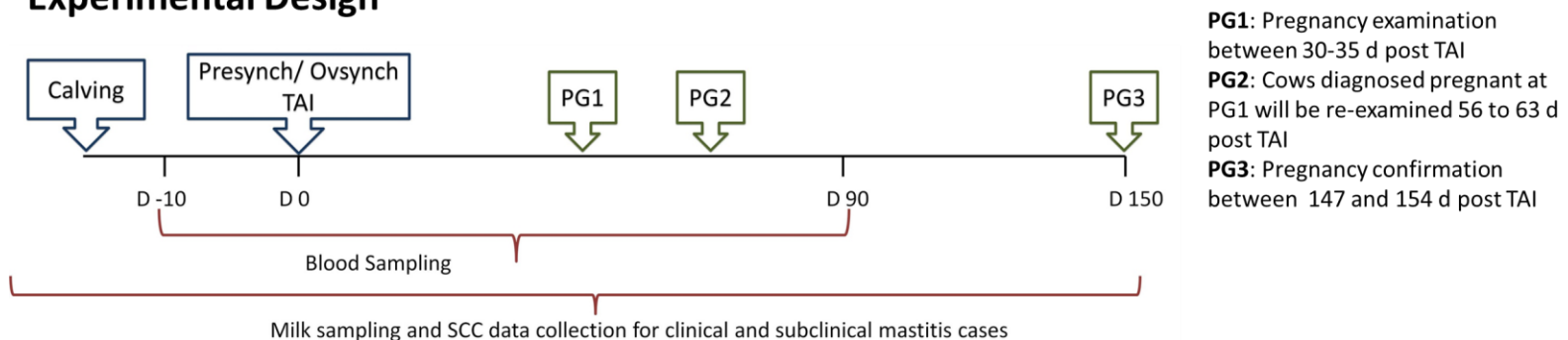
Aim leaders: P.M. Fricke and P.L Ruegg; Milk Quality laboratory technician: C. Hulland

Ph.D. Student: Maria Jose Fuenzalida Valenzuela

Materials and Methods

- ❖ 2,800 cows from four large commercial dairy herds are being enrolled from calving until confirmed pregnant at 150 days post-AI
- ❖ Blood samples will be collected weekly to determine pregnancy status based on Pregnancy-Specific Protein B which will allow estimating the timing of pregnancy loss.
- ❖ Milk samples will be collected for all of the enrolled cows that present a clinical mastitis case during the enrollment period.

Experimental Design



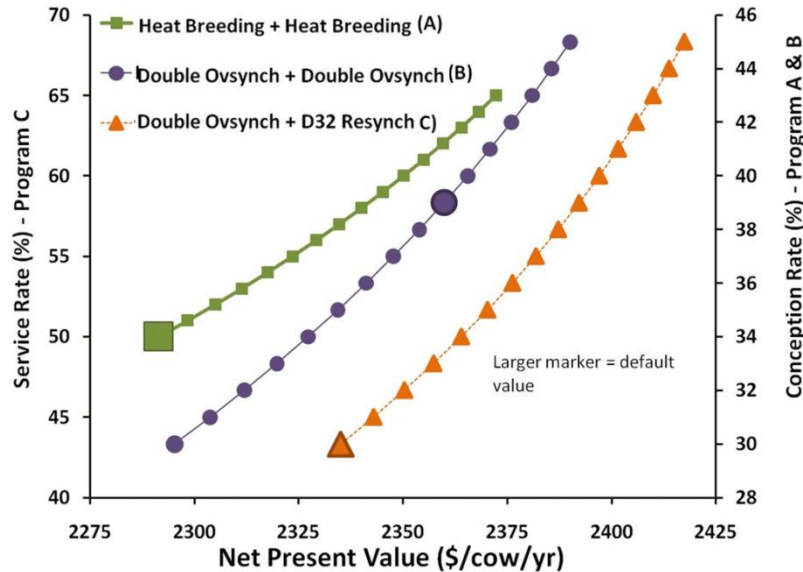
Expected Results The occurrence of pregnancy loss will be greater in cows that experience mastitis. In addition, this study will help to elucidate associations between mastitis case severity, pathogen type, and pregnancy loss.

Project Update

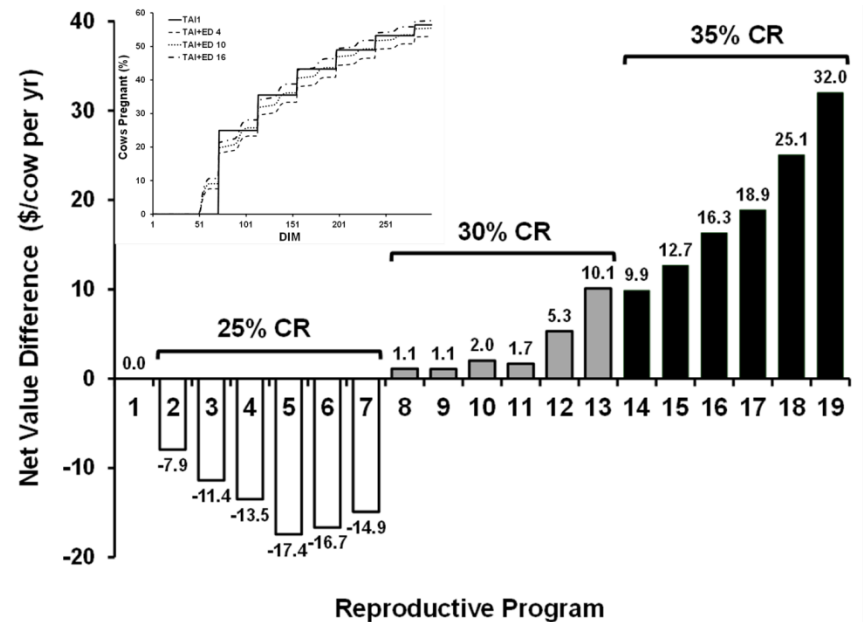
Aim 4: Evaluate the economic impact of reproductive management strategies on overall farm sustainability under a variety of management scenarios.

Aim leaders: V.E. Cabrera and K.A. Weigel

Ph.D. Students: Saleh Shahinfar and Afshin Kalantari



Giordano, J. O., P. M. Fricke, M. C. Wiltbank, and V. E. Cabrera. 2011. An economic decision-making support system for selection of reproductive management programs on dairy farms. *J. Dairy Sci.* (*in press*).



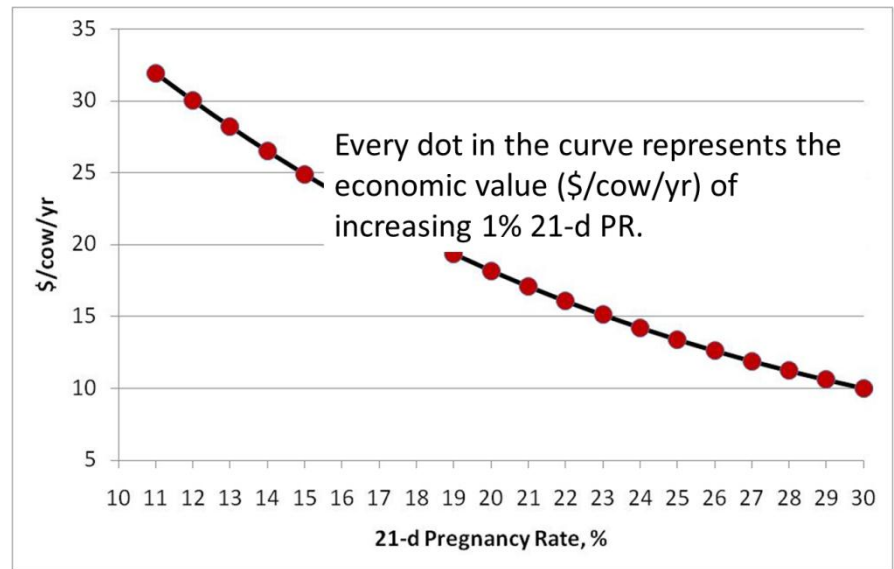
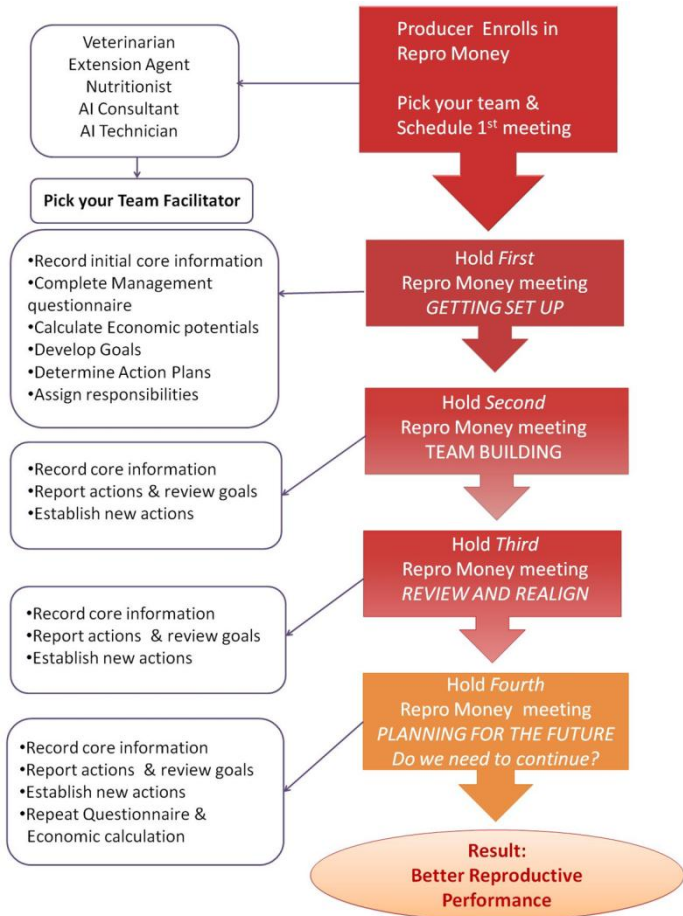
J. O. Giordano, A. S. Kalantari, P. M. Fricke, M. C. Wiltbank, and V. E. Cabrera. A Daily Herd Markov-Chain Model to Study the Reproductive and Economic Impact of Reproductive Programs Combining Timed Artificial Insemination and Estrous Detection. *J. Dairy Sci.* (*submitted 9/23/11*).

Project Update



Aim 5: A team based Program to Improve the Reproductive Performance of Dairy Herds

Aim leaders: P.L. Ruegg, V.E. Cabrera, P.M. Fricke, K.A. Weigel, and R.D. Shaver
 Extension Outreach Specialist: Connie Cordoba



NIFA AFRI 2011 RFAs and Current Opportunities

<http://www.nifa.usda.gov/funding/rfas/afri.html>



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	Program	Released	Letter of Intent	Application
1	Foundational Program	1/7/2011	---	---
2	Childhood Obesity	1/26/2011	---	---
3	Food Safety	5/25/2011	Jul 2011	Oct 2011
4	Climate Change	9/21/2011	Oct-Nov 2011	Dec 2011, Jan 2012
5	Food Security	9/29/2011	Nov 2011	Jan-Feb 2012
6	Sustainable Bioenergy	9/29/2011	Oct 2011	Dec 2011
7	NIFA Fellowship	9/21/2011	Nov 2011	Jan 2012