Awards issued prior to January 20, 2025, were funded under previous Administrations and may not reflect the priorities and policies of the current Administration.

United States Department of Agriculture
Project Initiation

Project Data for Accession Number 7007131

Project Title

NC2042: Management Systems to Improve the Economic and Environmental Sustainability of Dairy Enterprises.

Project Details

Sponsoring Institution National Institute of Food and Agriculture	**Project Status** ACTIVE
Funding Source NIFA Formula	**Grant Year** 2024
Grant No.	**Cumulative Award Amt.** N/A
Proposal No.	**Multistate No.** NC2042
Project Start Date Apr 23, 2024	**Project End Date** Sep 30, 2028
Program Code	

Project Director

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Recipient Organization

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Performing Department

Agri Economics

Non Technical Summary

Summary: Title. Financial Feasibility and Environmental Implications of Adopting Automatic Milking Systems by Dairy Farms in Wisconsin and Minnesota Problem. In recent years, dairy farmers experienced substantial market volatility, hiring challenges and rising labor cost. These factors, and the substantial time that farmers must dedicate to their dairy operations are forcing an exodus from this industry. Automatic milking systems (AMS) offer a potential solution to these issues. This technology also decreases the reliance on labor while improving animal welfare and resource management. However, AMS requires a significant investment, and its net economic benefits depend on several aspects including daily milk production, herd size, and infrastructure needed to accommodate the milking robot in the barn. As a result, small farms are constrained financially to adopt this technology. Goal. This project will assess the financial sustainability and environmental implications of AMS adoption in Wisconsin and Minnesota dairy farms. Three farm typologies are considered: traditional non-adopters (particularly small-sized operations), farms transitioning to AMS and established AMS adopters. The projectrsquo;s aims are: 1. Identify and quantify demographic, economic,

and environmental attributes that influence dairy farmersrsquo; decisions to adopt or transition into AMS. 2. Evaluate changes in labor skills profile required among AMS adopting farms and explore labor-hiring challenges and alternatives for dairy farms with traditional labor-intensive milking production. 3. Assess the overall feasibility of AMS technology by analyzing financial and operating management practices required to adopt AMS and determining specific sets of business strategies that optimize farm profitability for each of the three farm typologies. Outcomes Learning outcomes. Dairy farmers will learn about the financial feasibility and environmental implications of adopting AMS. Smaller farms will also gain a clearer grasp of labor savings and key factors to consider when deciding to install robotic milking. Action outcomes. Dairy farmers will use financial decision benchmarks to determine the feasibility of implementing AMS depending on their farm characteristics and milk production. Project Objectives: The projectrsquo;s goal is to exhaustively study the feasibility of AMS in Wisconsin and Minnesota from the financial and sustainability perspective. The outcomes expected from our study are: Learning outcomes. Dairy farmers will learn about the financial feasibility and environmental implications of adopting AMS. Smaller farms will also gain a clearer grasp of labor savings and key factors to consider when deciding to install robotic milking. Action outcomes. Dairy farmers will use financial decision benchmarks to determine the feasibility of implementing automatic milking systems depending on their farm characteristics and milk production

Research Effort Categories

Basic	10%
Applied	50%
Developmental	40%

Classification

Knowledge Area (KA)	Subject of Investigation (SOI)	Field of Science (FOS)	Percent
601	3499	3010	100%

Knowledge Area

[601] Economics of Agricultural Production and Farm Management

Subject Of Investigation

[3499] Dairy cattle, general/other

Field Of Science

[3010] Economics

Keywords

Goals / Objectives

(1) Improve calf and heifer growth, health, and welfare through enhanced nutrition, housing, and management. (2) Improve dairy cow performance and welfare through enhanced forage production and utilization, nutrition, housing, and management. (3) Integrate data and technology to enhance environmental, economic, and social sustainability of the dairy enterprise.

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Project Methods

Methods. This project employed several analytical methods. An extensive producersrsquo; survey will be conducted in both states. Supplementary qualitative evidence wascompiled from focus group discussions, case studies and a choice experiment (measuring farmersrsquo; monetary valuation of AMS attributes). Moreover, analyses extend to a comprehensive financial assessment of AMS adoption and non-adoption decisions, and a benefit-cost analysis to evaluate the financial feasibility of implementing AMS. Participating farmers provided valuable inputs as members of our advisory committee and focus groups, and in the validation of project results. Human subject work was completed lin 2023 under IRB approved3-27-2022