

Assessing Feeding Management Practices on Maryland Dairy Farms: Identifying Needs and Opportunities

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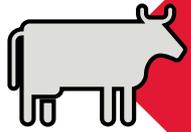
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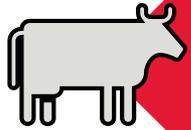
PI: Dr. Fabiana Cardoso



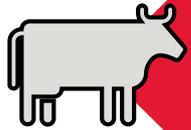
Outline



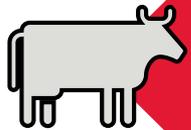
Introduction and Objective



Materials and Methods

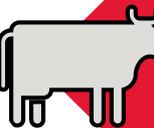


Results

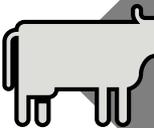


Conclusions and Future Directions

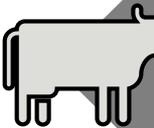




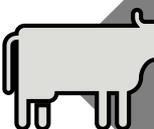
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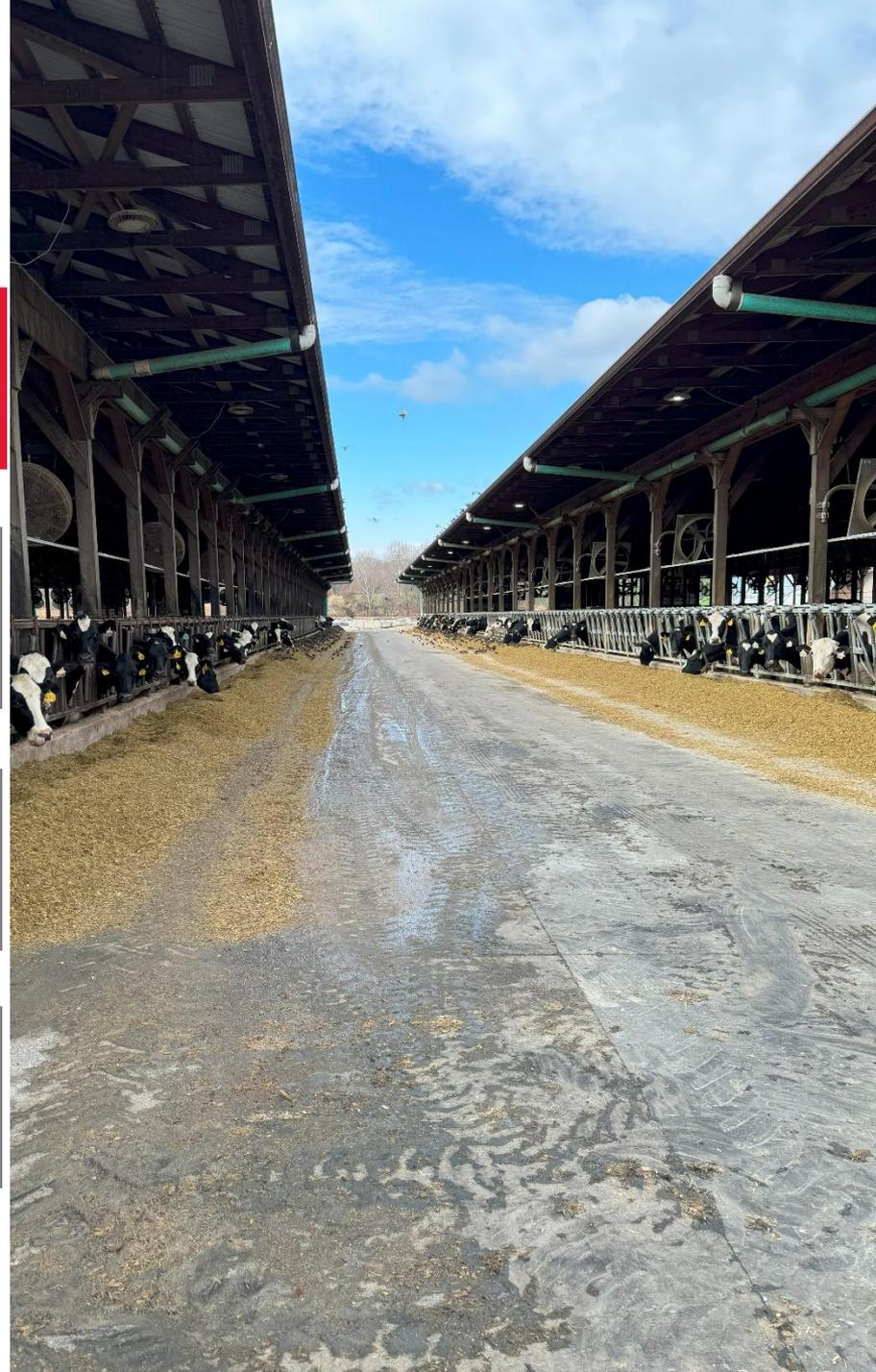
Materials and Methods



Results



Conclusions and Future Directions



The dairy industry then and now

Until the 1850's

Dairy industry consisted of the family cow to provide fresh milk, cheese, butter.

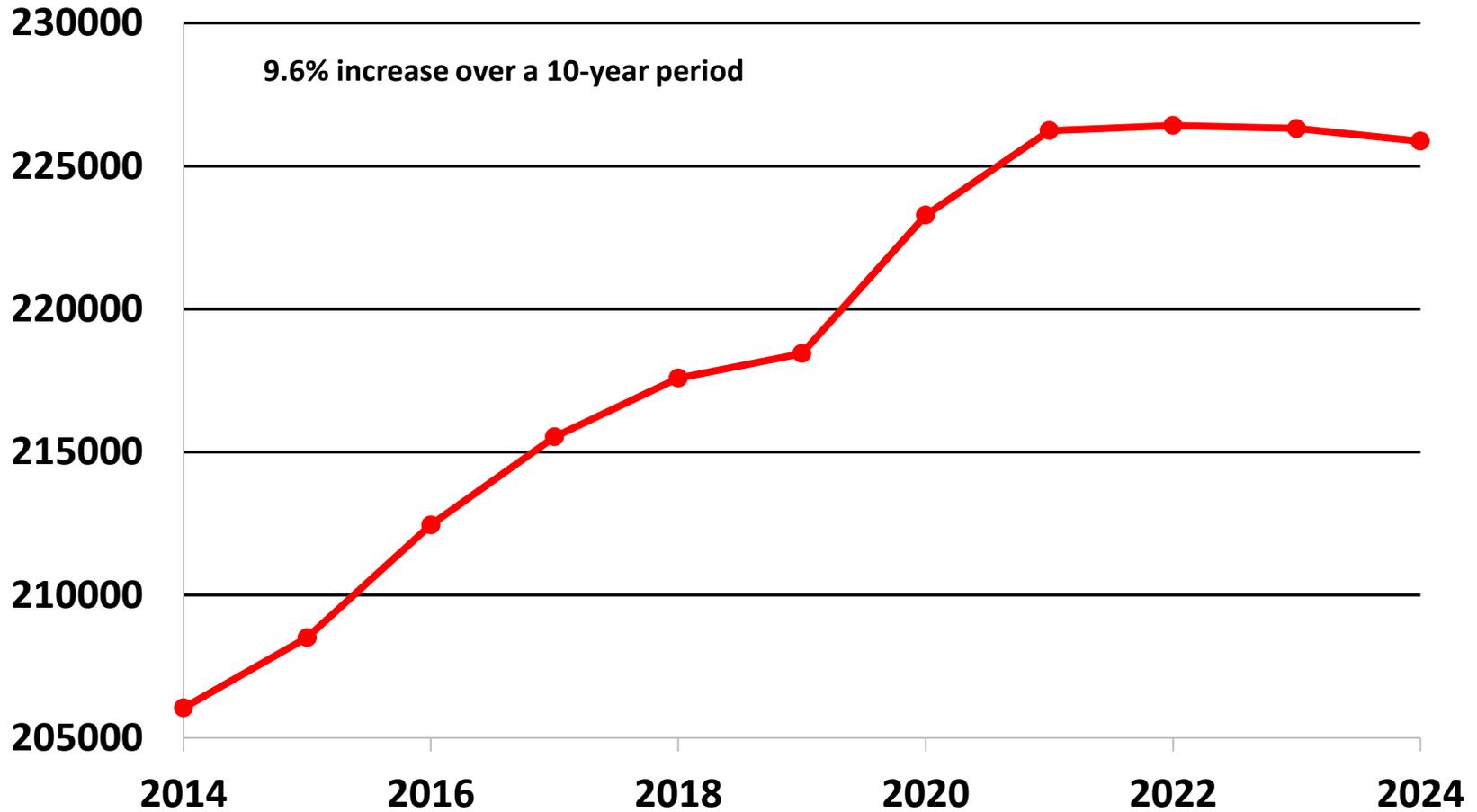


Today

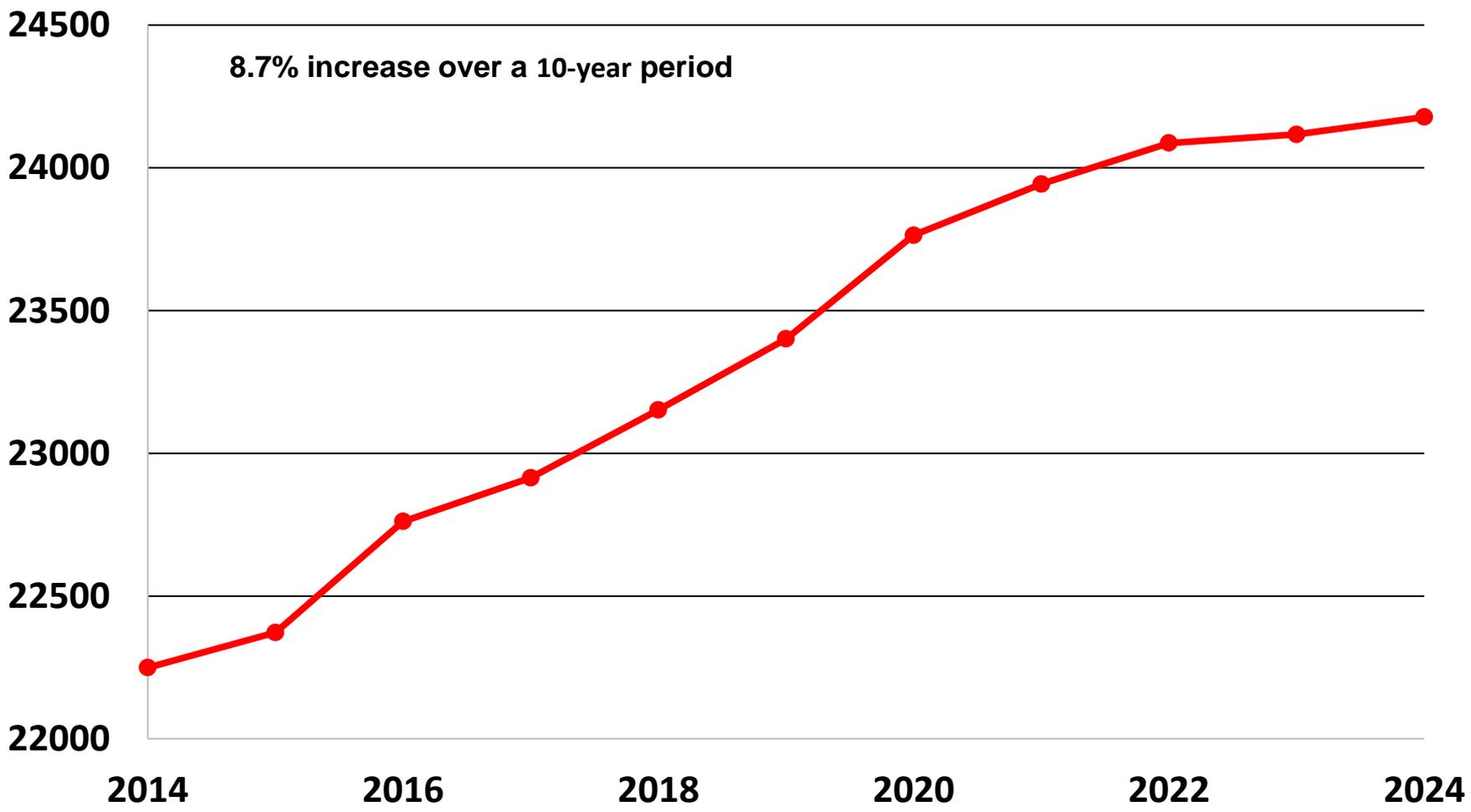
The dairy industry has transformed into a commercial activity with products reaching all corners of the country.



Milk Production (Million pounds), 2014-2024 United States

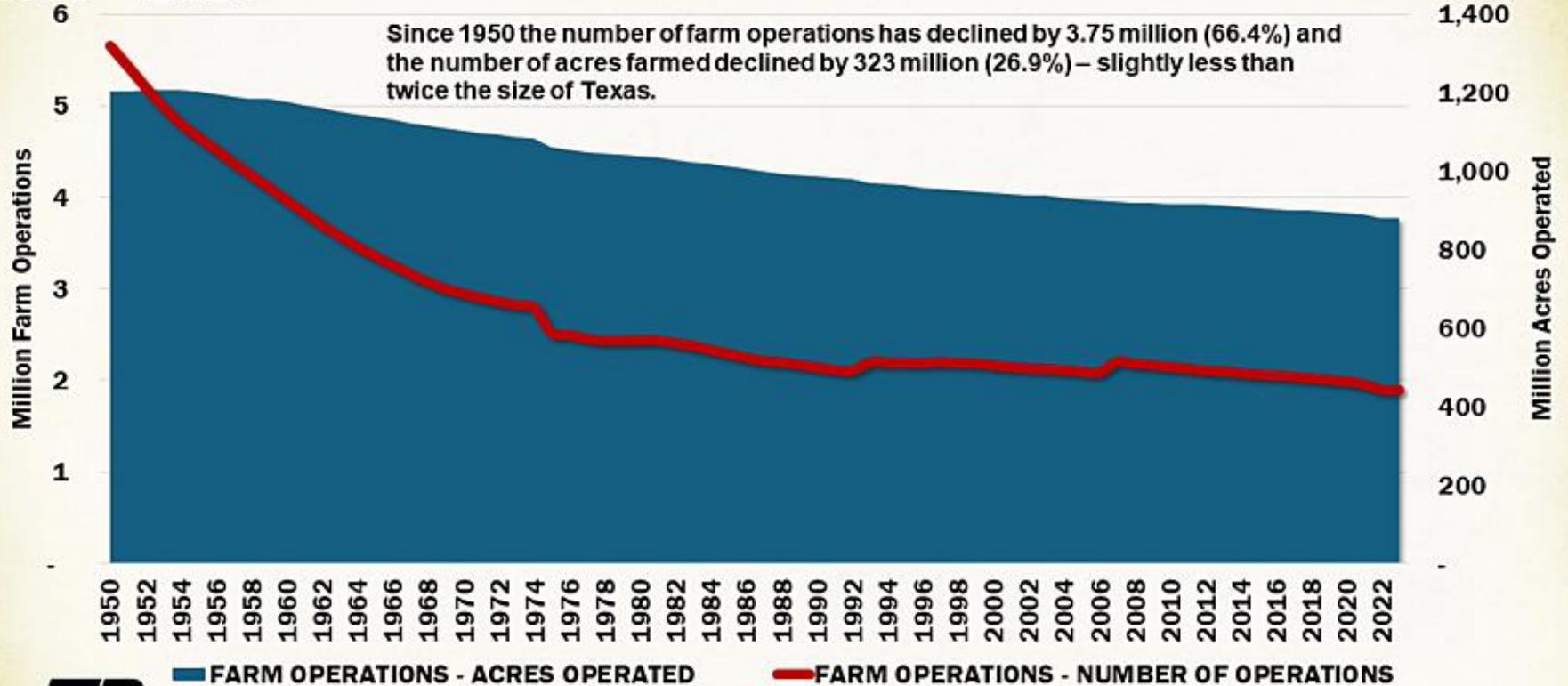


Production per cow (pounds), 2014-2024 United States



Number of farms have decreased

FIGURE 1: CHANGE IN NUMBER OF FARMS AND ACREAGE OPERATED 1950 - 2023



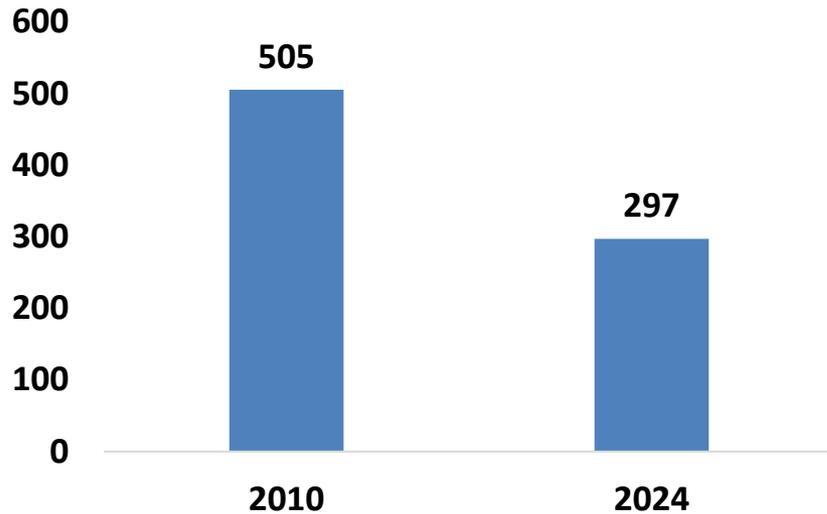
AMERICAN FARM BUREAU FEDERATION*

Source: AFBF Calculations, USDA NASS Survey

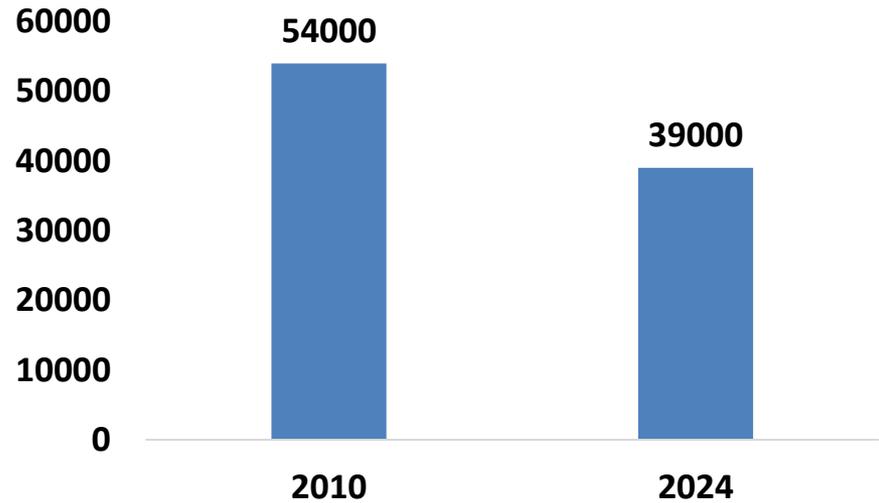


Maryland Dairy Industry Overview

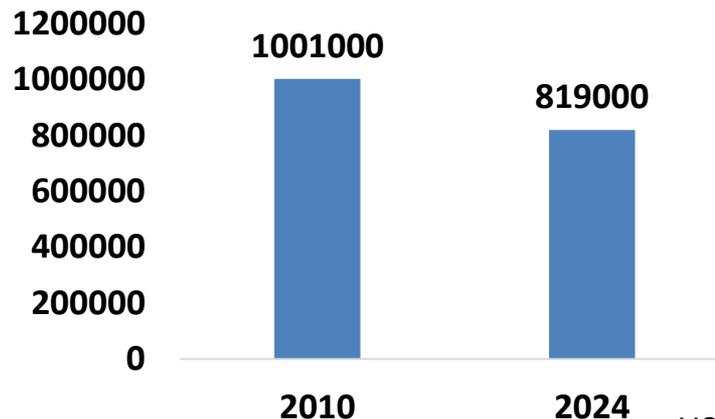
Dairy Farms in Maryland



Number of Cows in Maryland

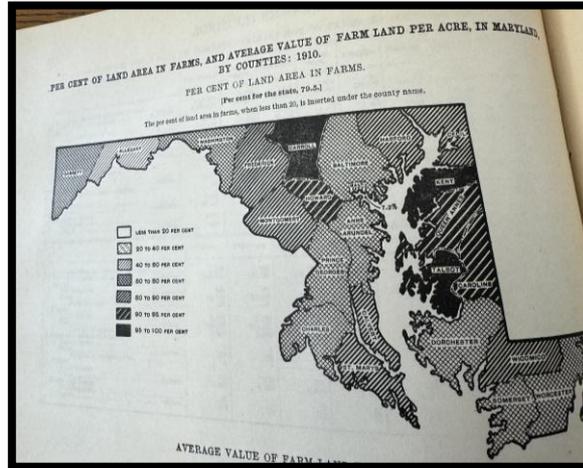


Milk Production in Maryland (Thousands of Pounds)



Decline of the Maryland Dairy Industry

High land prices due to limited area and pressure from developers



Declining interest in younger generations



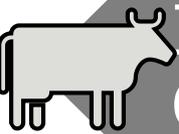
Most Maryland dairy farms are small and have trouble recovering from economic struggles



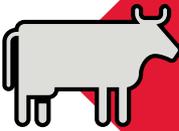
Objectives

The goal of this study was to conduct a comprehensive needs assessment to better understand the challenges Maryland dairy farmers face and how to best assist them in future outreach efforts

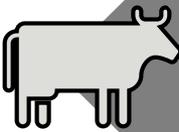




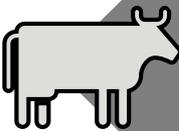
Introduction and Objective



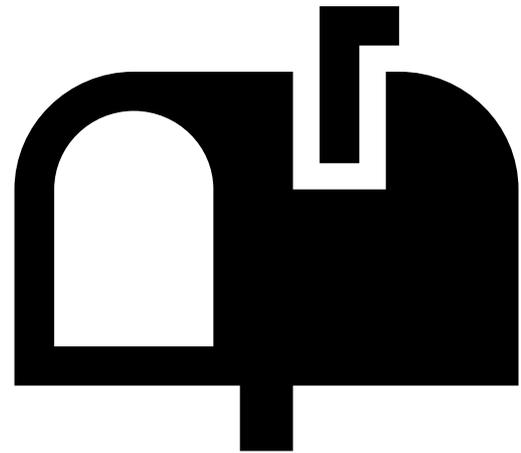
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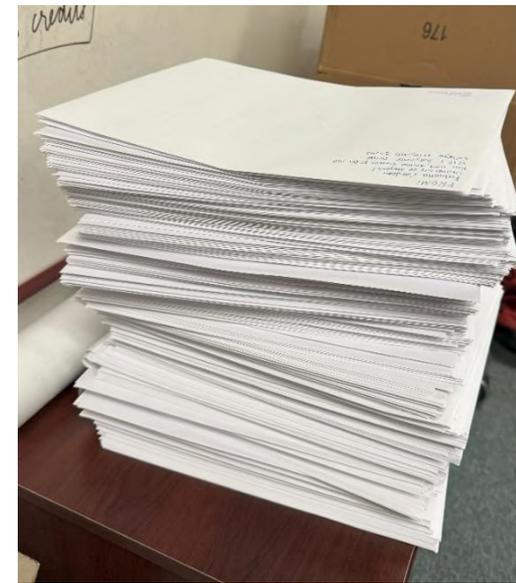
Conclusions and Future Directions



Materials and Methods

Survey mailed to every registered dairy farmer in Maryland

- n=293
- 6 pages double sided
- Included return envelope and postage
- Reminder letter sent 1 month later



Materials and Methods



Questions Inquired on:

1. General herd information

2. Feeding management practices

3. Knowledge and experience with mycotoxin and *Clostridium perfringens* contamination in feed

4. Additional opportunities

5. The interest to participate in a study by providing TMR samples for mycotoxin and *Clostridium* analysis, as well as corn silage samples for chemical composition analysis.



Materials and Methods

Answers were manually entered into the Qualtrics Database

qualtrics[®] XM



Statistical Analysis

- Statistical analysis was performed using R version 4.3.3 (2024)
 - Principal Component Analysis (PCA)
 - Hierarchical Clustering on Principal Components (HCPC)

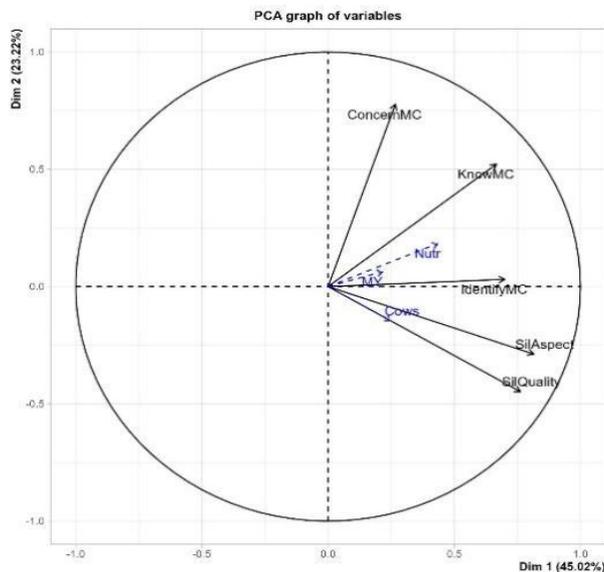


Figure 1. Principal component analysis (PCA)

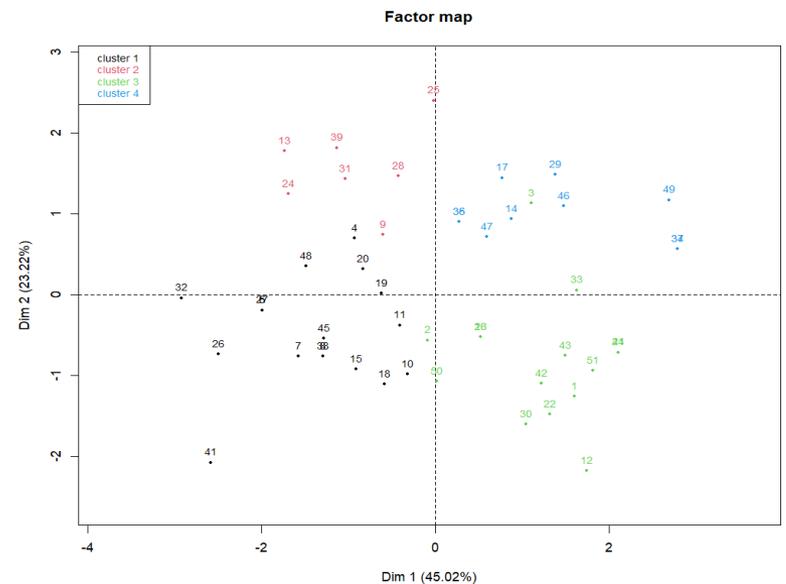
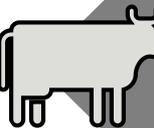


Figure 2. Hierarchical Clustering on Principal Components

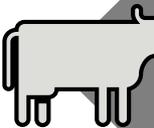


List of Variables Subjected to Principal Component Analysis

Variable	Levels of each variable and description
Farm ID	ID number
How Many Lactating Cows?	Absolute number
Daily Milk Production, galons per day	1 = 1-500; 2 = 501 - 1000; 3 = 1001 - 2500; 4 = 2501 - 5000; 5 = 5001-10000; 6 = 10001 - 50000; 7= over 50000 NA = Did not inform
Testing for Nutrition	1 = Never; 2 = Ocasionally; 3 = Annually; 4 = Regularly; NA = Did not inform
Feed Refusals	Y = Yes; N= No; NA = Did not inform
Silo Type	1 = Bunker; 2 = Bag; 3 = Tower; 4 = Bunker and bag; 5 = Bunker and tower; 6 = Bunker, bag, and tower; 7 = Bunker, bag, and pile; 8 = Bag and tower;
Inoculants	N = No; Y = Yes; NA = Did not inform
Perspective CS Quality	1 = Poor; 2 = Fair; 3 = Good; 4 = Verry Good; 5 = Excellent; NA = Did not inform
Issues with Spoilage	Y = Yes; N = No; NA = Did not inform
CS Color/Aroma	1 = Poor; 2 = Fair; 3 = Good; 4 = Verry Good; 5 = Excellent; NA = Did not inform
Challenges to maintain consistent corn silage quality ¹	1 = Weader; 2 = Related to face of silage; 3 = Harvest time; 4 = Top spoilage; 5 = Post aerobic fermentation; 6= Pests; 7 = Quality of soil; 8 = Weed pressure; 9 = Prices; NA = Did not inform
Familiarity with Mycotoxins and <i>Clostridium</i>	1 = Not familiar; 2 = Somewhat familiar; 3 = Moderatly familiar; 4 = Very familiar; NA = Did not inform
Tested for Mycotoxins and <i>Clostridium</i>	Y = Yes; N = No; NA = Did not inform
How Concerned with Mycotoxins and <i>Clostridium</i> ?	1 = Not concerned; 2 = Slightly concerned; 3 = Moderatly concerned; 4 = Very concerned; NA = Did not inform
Clean and monitor storage areas	1 = Never; 2 = Rarely; 3 = Ocasionally; 4 = Frequently; 5 = Always; NA = Did not inform
Past issues with mycotoxins and <i>clostridium</i>	Y = Yes; N = No; NA = Did not inform
Confidence to identify/address issues with M&C	1 = Not confident; 2 = Somewhat confident; 3 = Confident; 4 = Very confident; NA = Did not inform



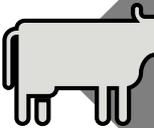
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Results

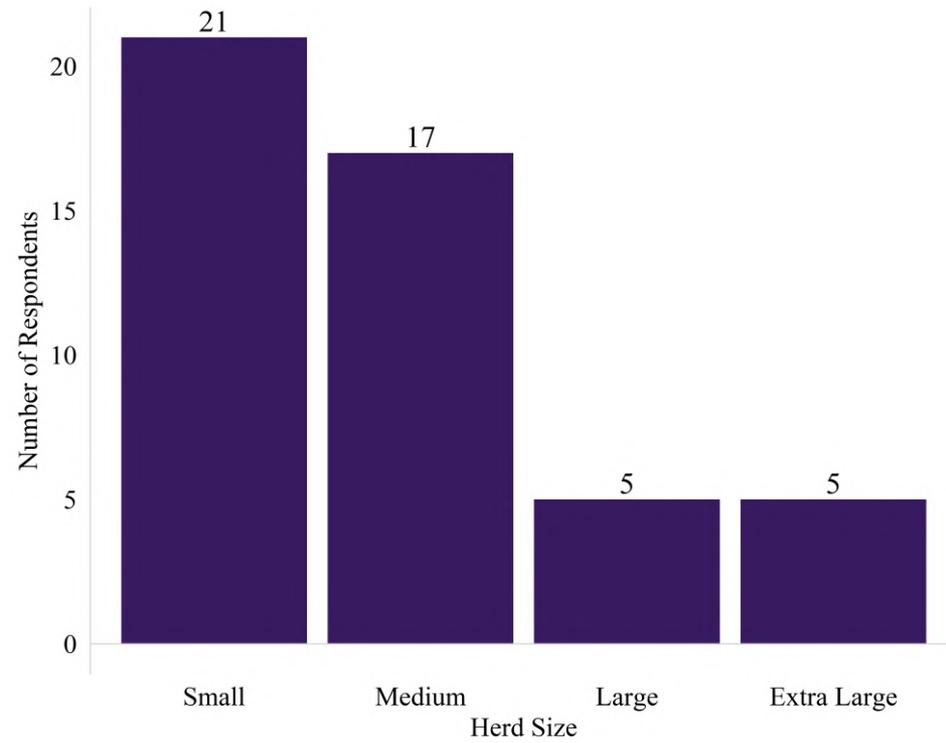


Figure 1: Herd Size

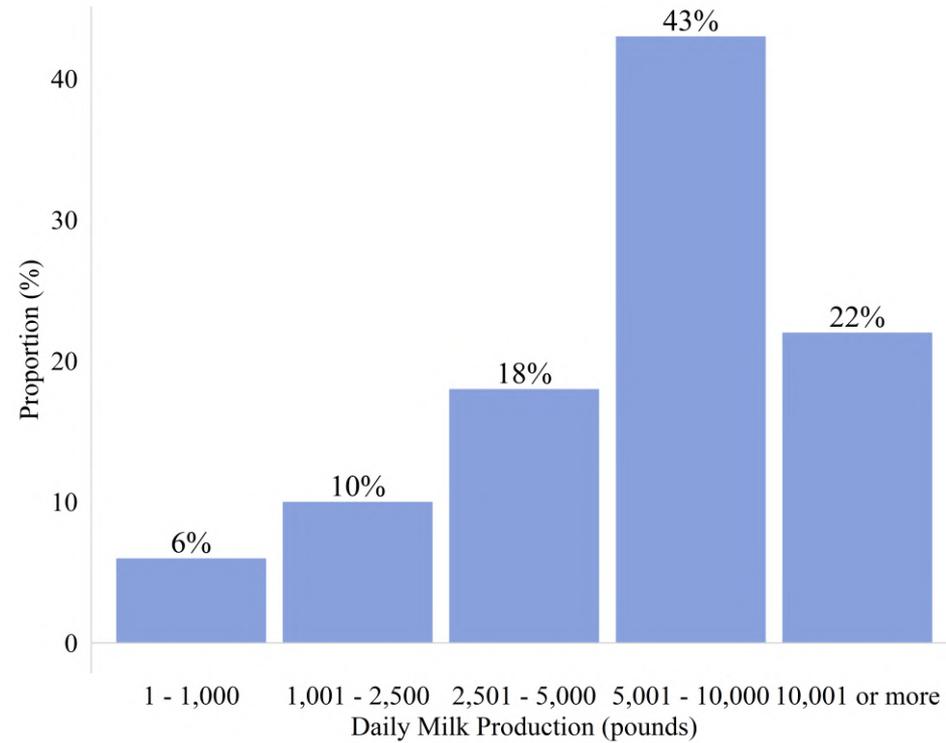


Figure 2: Milk Production



Results

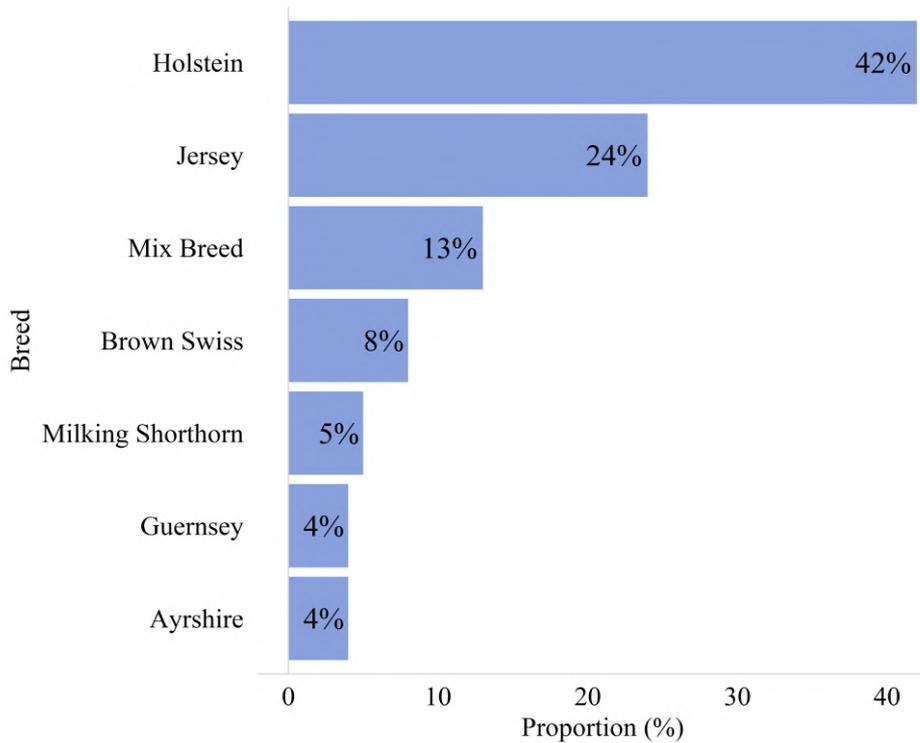


Figure 3: Breeds Used

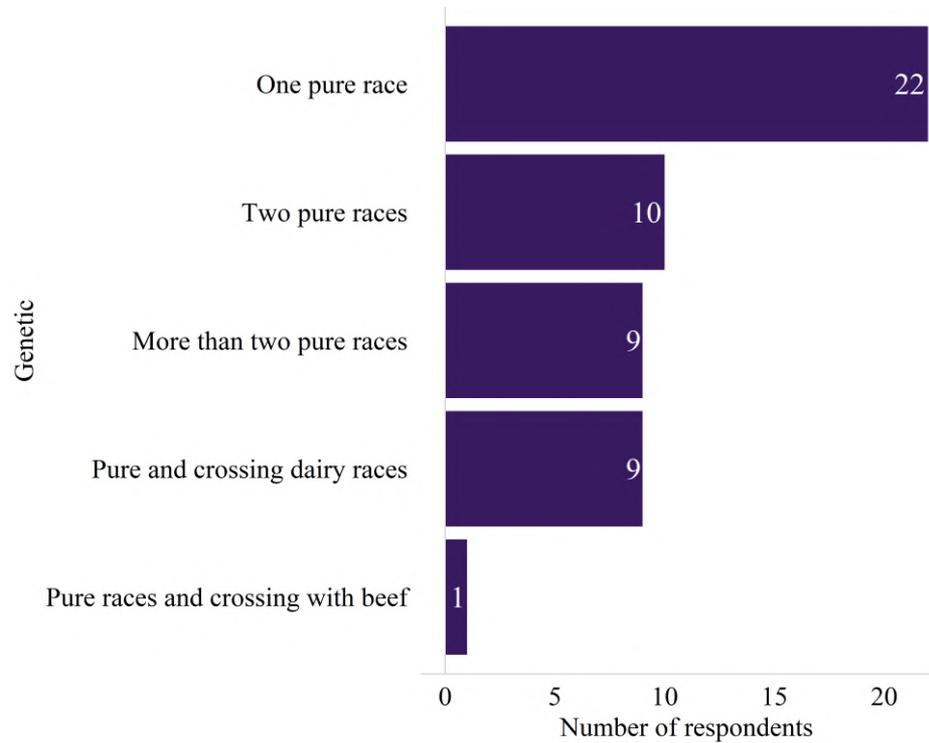


Figure 4: Number of Breeds Used



Results

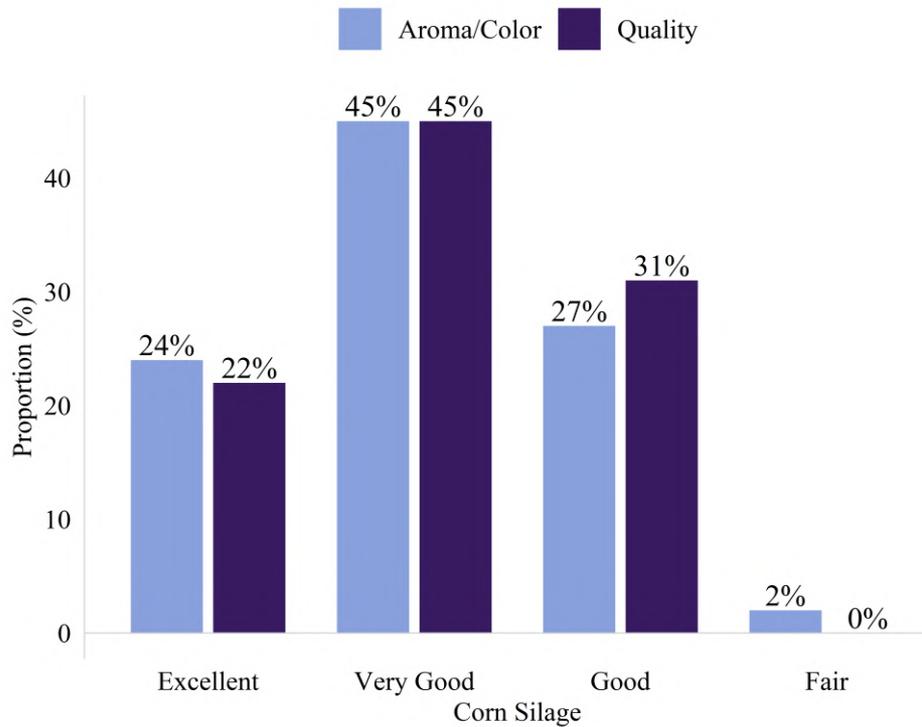


Figure 5: Corn Silage Rating

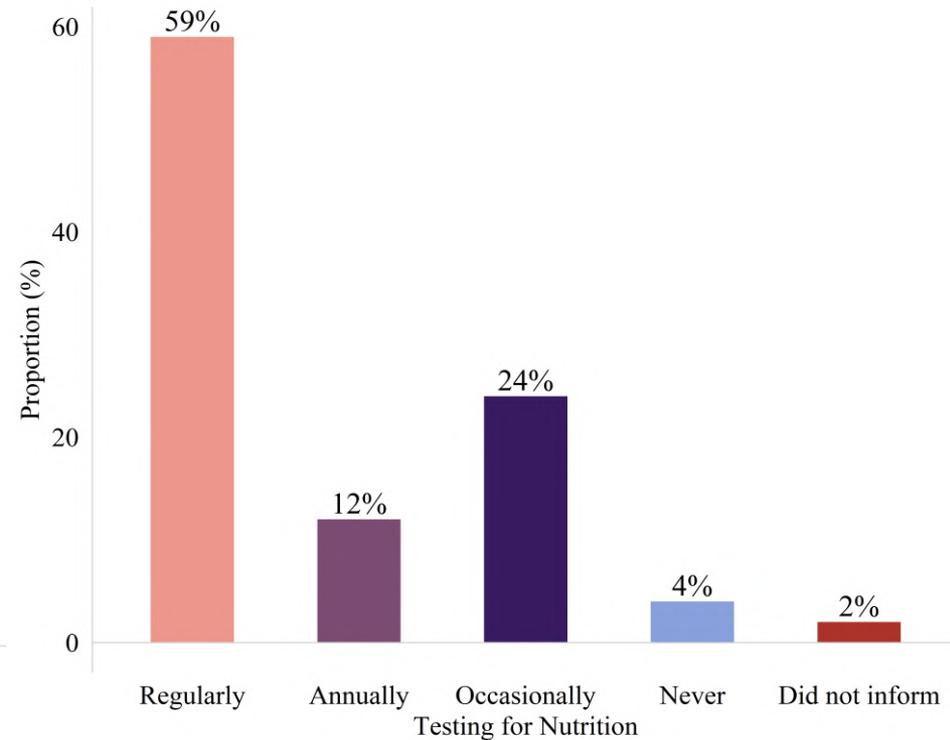


Figure 6: Frequency of Nutritional Testing



Results

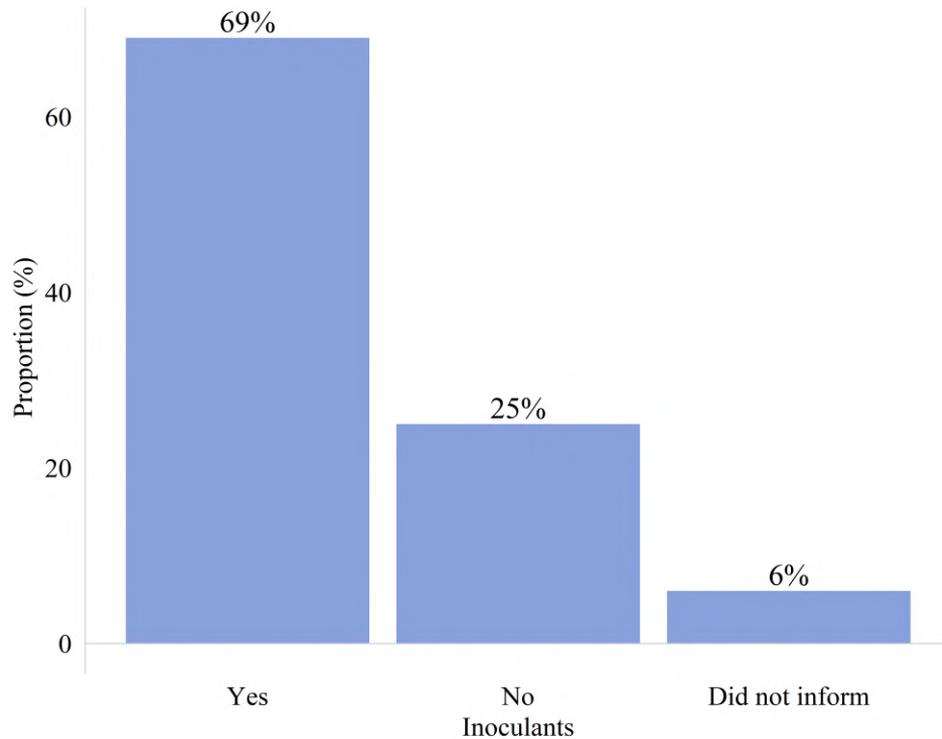


Figure 7: Use of Inoculants

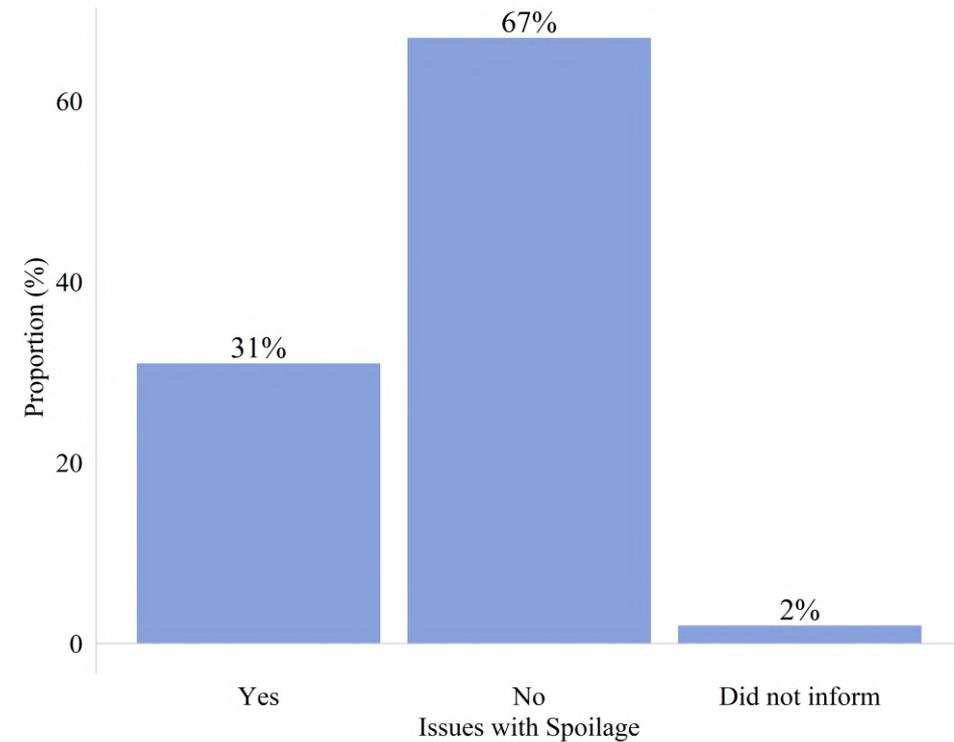


Figure 8: Issues with Feed Spoilage



Results

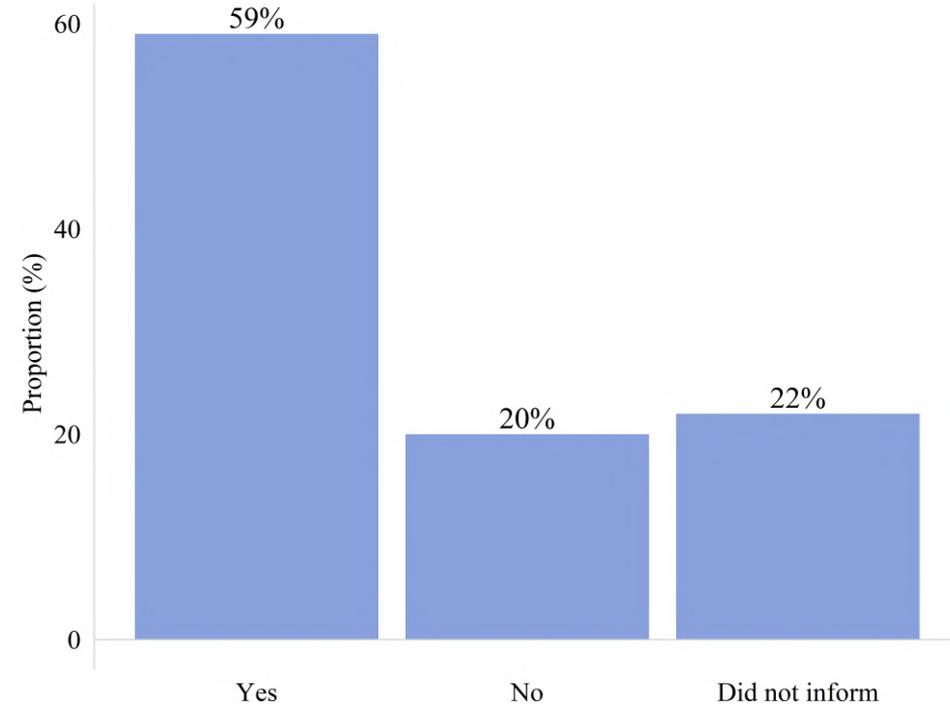


Figure 9: Past Issues with Mycotoxins and *Clostridium*

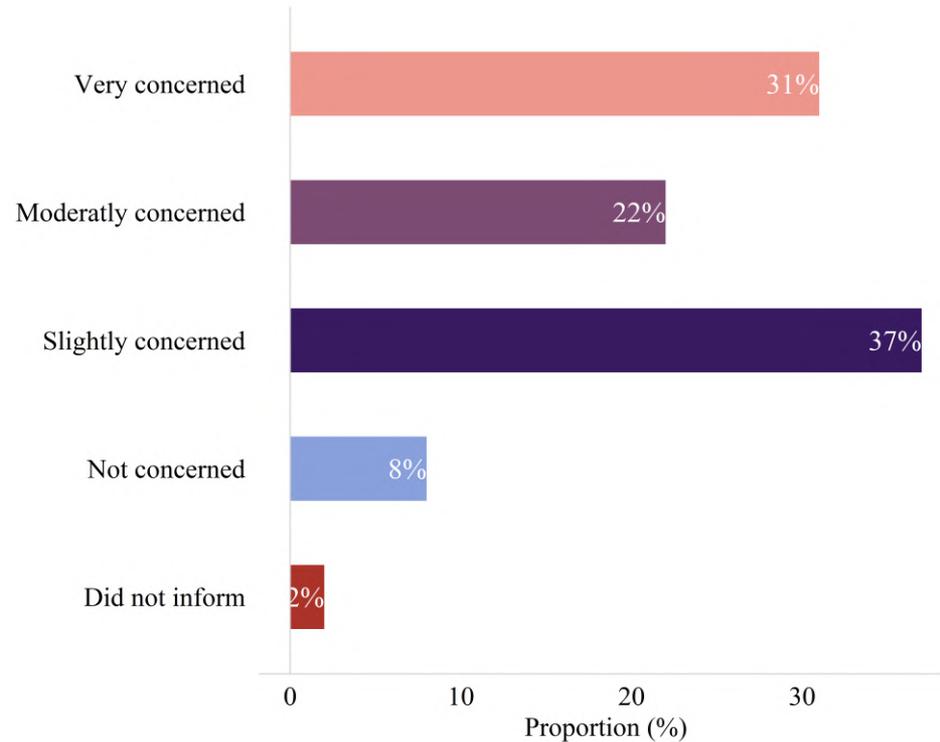


Figure 10: Concern for Mycotoxins and *Clostridium*



Results

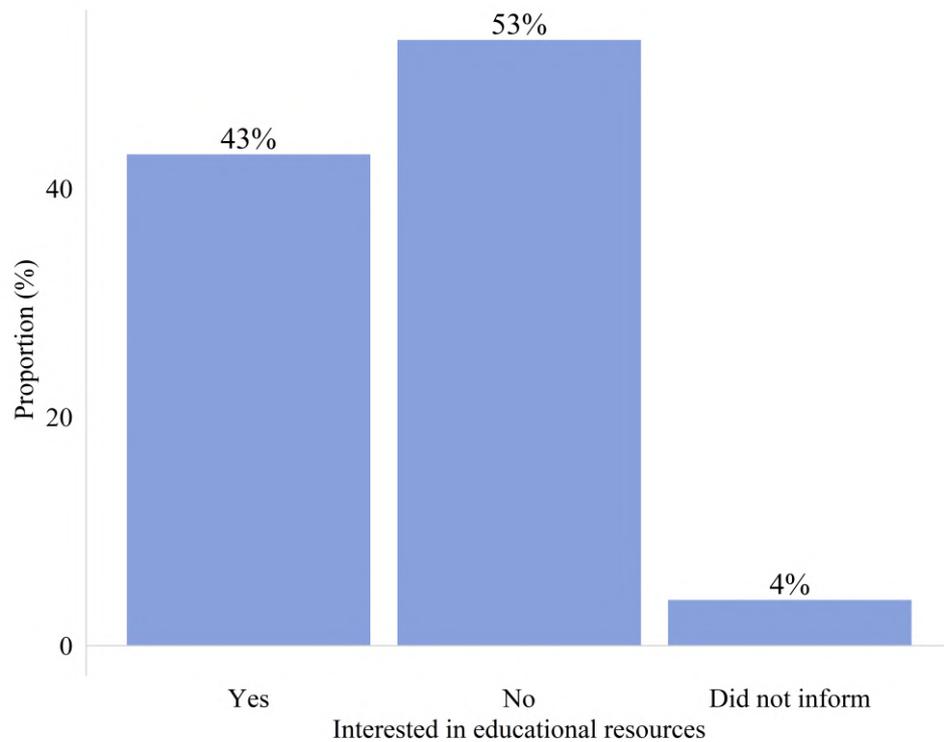


Figure 11: Interest in Educational Resources

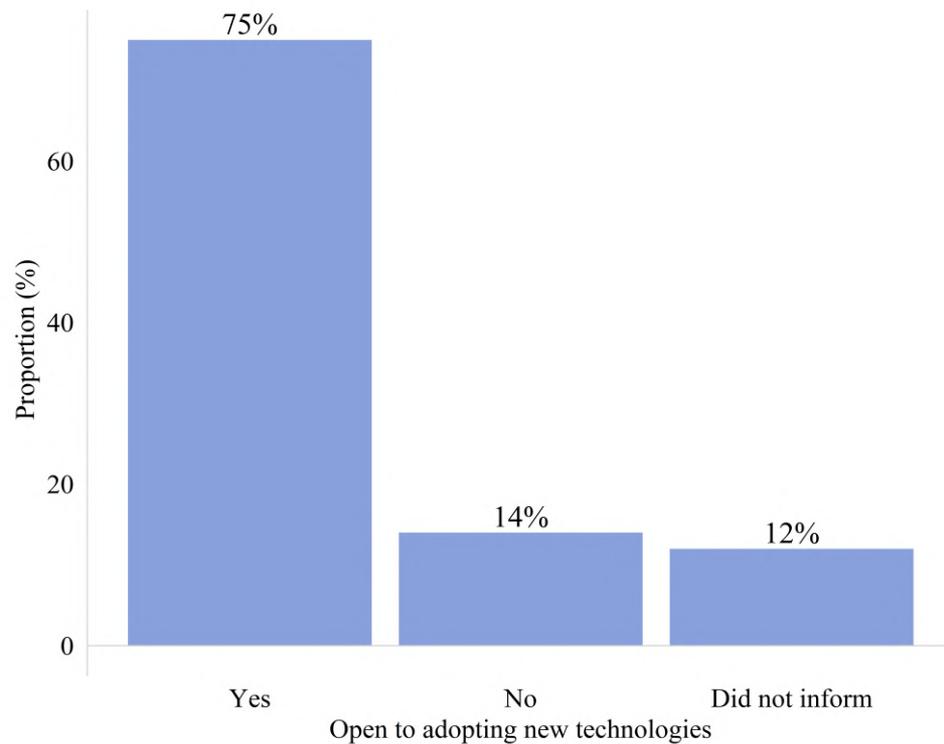
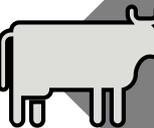
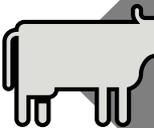


Figure 12: Openness to Adopting New Technologies

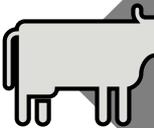




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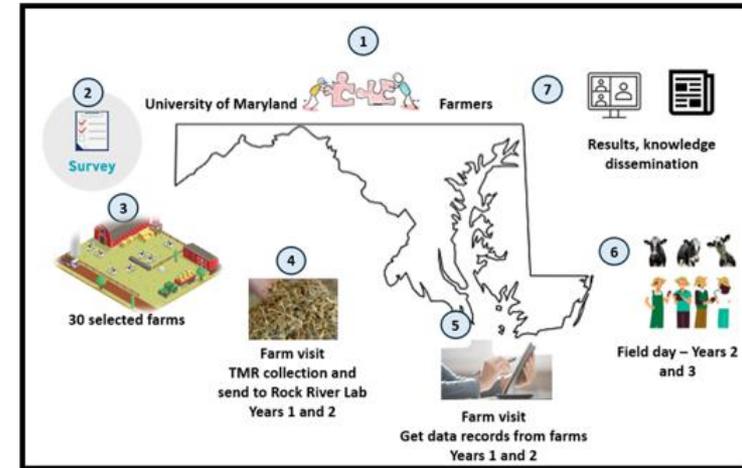


Conclusions and Future Directions



Conclusions and Future Directions

This needs assessment gave updated valuable insight into the Maryland dairy industry. The information gathered are being used to create extension and outreach programs that will serve the most benefit to dairy farmers in Maryland



Future Directions

- Mycotoxins and *Clostridium* Sampling
 - In progress (summer)
- Field Days and workshops
- Educational Materials



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- Cardoso Lab
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