

The impact of automated Milking Systems in the dairy sector in Ireland.



TUS

David Boland
K00277064

Aim of the Project

The aim of the dissertation is to investigate the impact of automation on the Irish dairy industry. This will be accomplished by executing extensive research into automated milking systems and comparing their benefits and disadvantages compared to conventional systems by completing interviews and surveys with industry professionals and concluding with case studies.

Background

The dairy industry is the main enterprise for up to 20,000 farming households and accounts for over 27% of all agricultural output. Cows have been manually milked for a period exceeding 5000 years. The first development made was the manufacturing of the milking machine while the latest advancement are the commercialisation of fully automated milking systems. These systems are growing in popularity as they increase the efficiency of milk production, increase milk yields, and due to the scarceness of farm labourers,

Objectives

- 1 Carry out a thorough literature review around Automated Milking Machines in the Irish Dairy Industry.
- 2 Conduct Interviews and surveys with Industry professionals to see the extent of use and suitability of automated milking machines in the Irish dairy Sector.
- 3 Do a cost analysis of installing an automated milking process in an Irish dairy farm and what are the main advantages of it to the Irish Farmer.
- 4 Conduct research into milk yield quality and productivity between conventional and automated systems.
- 5 Establish the associated advantages and disadvantages associated with automated milking machines.

Research Methodology

Research Methods:

- Literature review.
- Surveys/Questionnaires
- Interview with industry professional
- Primary and Secondary case studies.

Literature Review:

The literature review used published books and journals to gain an understanding into the Irish dairy sector and the advancements made in the dairy industry.

Surveys:

Two surveys were conducted to gain primary information. One survey was sent out to industry professionals in the dairy sector who sell or install AMS systems. The second survey was completed by farmers who utilise automated systems to get an understanding on their experiences.

Interview:

The interview was carried out with a managing director of a leading company in automated milking systems in Ireland. This interview gave information regarding their extent of use, costs and suitability to Ireland.

Case Studies:

2 secondary case studies were carried out using Agriland's research in the area. A further in-person case study was conducted on a farm in Tipperary who recently transitioned from AMS to conventional milking practices.

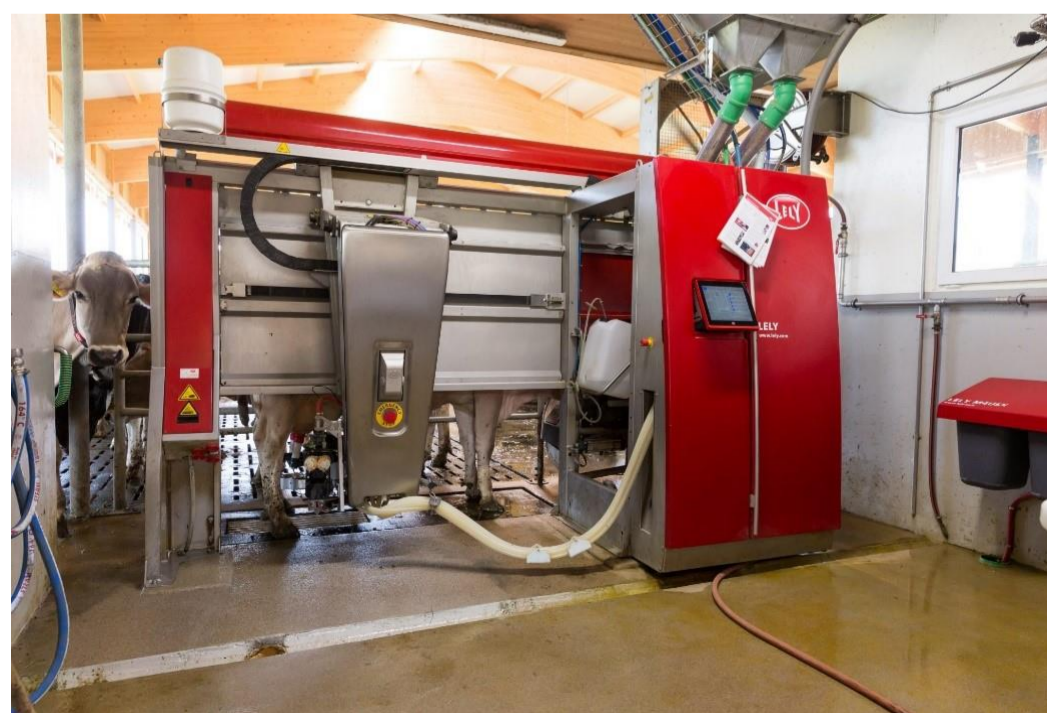


Figure 1: Lely automated milking system.

Results

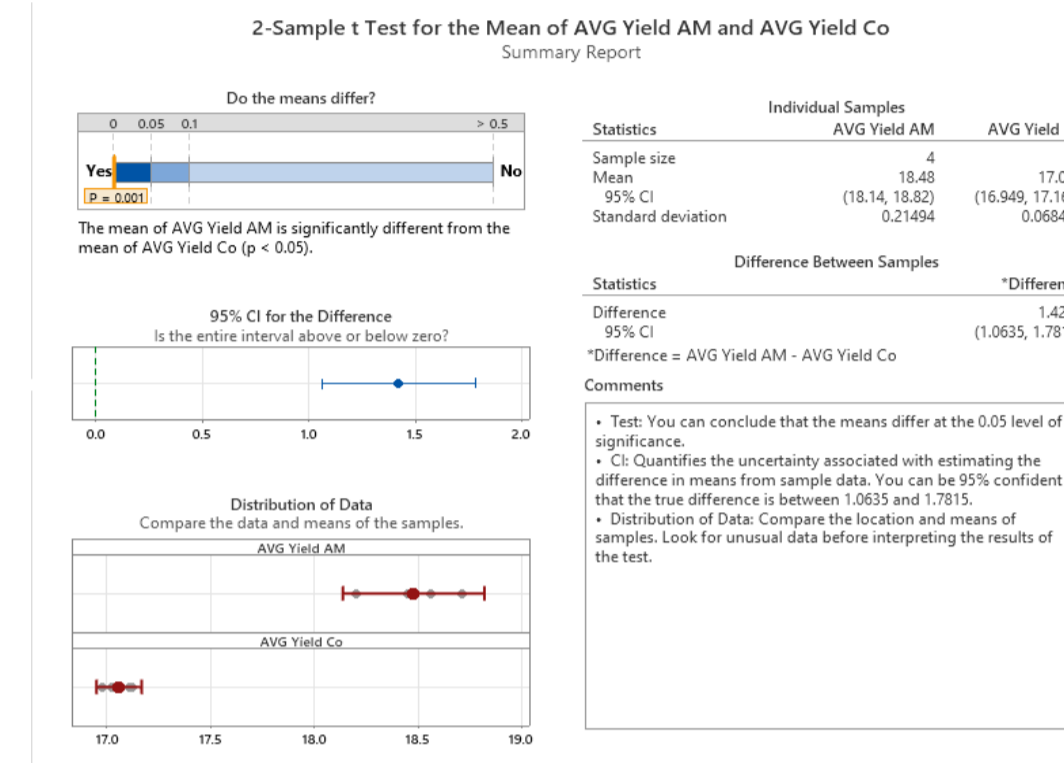


Figure 2: In-person Case study results (Improved Milk Yield)

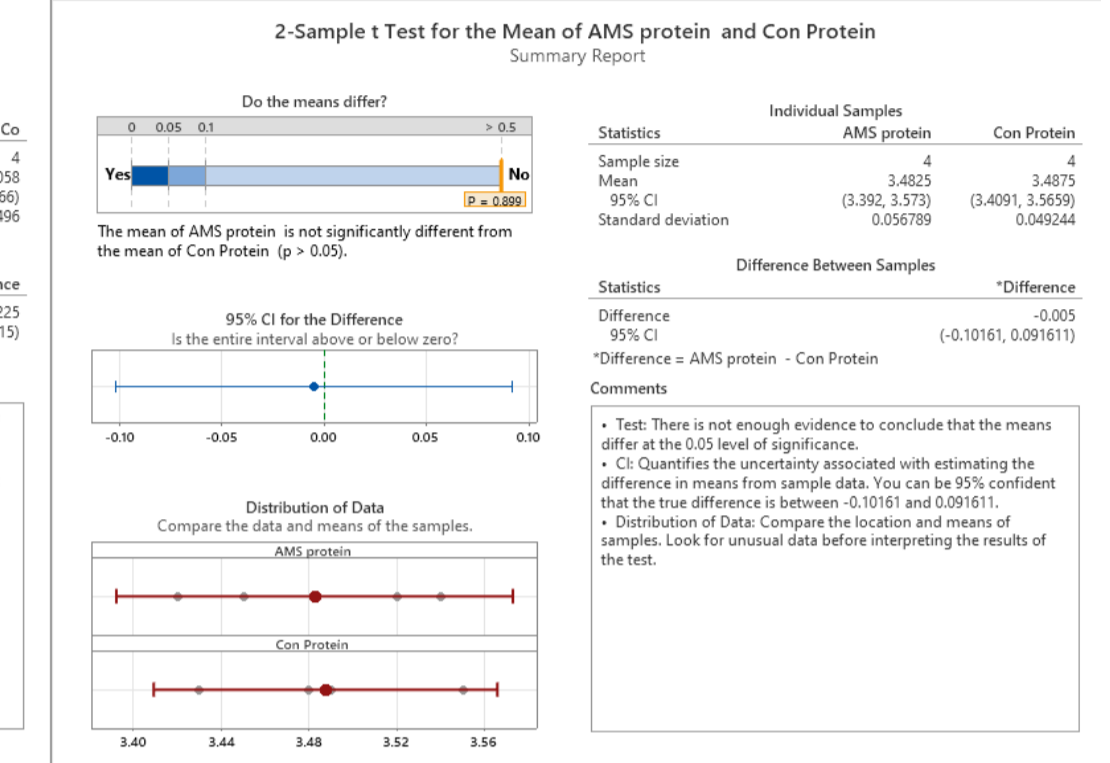


Figure 3: In-person Case study results (Similar Protein percentage)

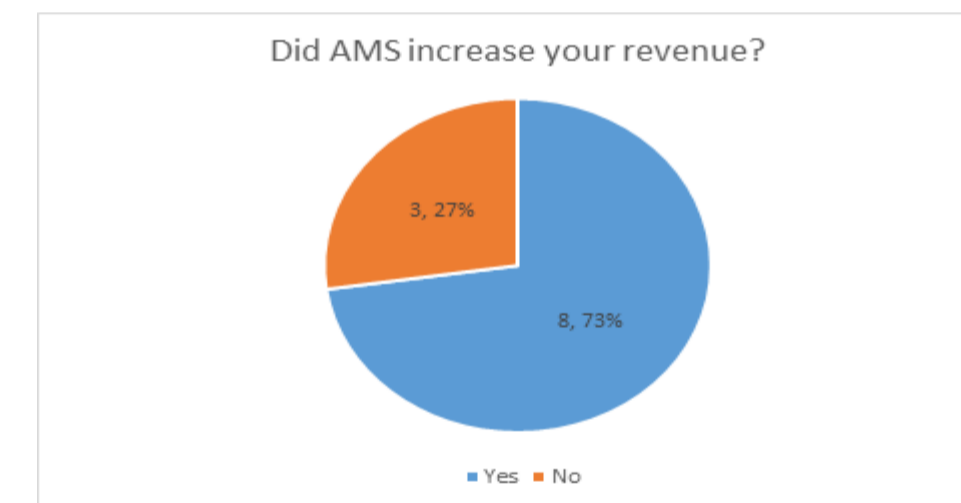


Figure 4: farmers experiences with AMS revenue..

Advantages	Response Frequency	Percentage	Bar
More time to complete other farm jobs.	4	23.53%	██████████
More time for family and personal interests.	5	29.41%	██████████
Increased milk yield.	1	5.88%	████
Improved cow and udder health.	2	11.76%	██████
Detailed information regarding every cow's milk, udder health and other information.	1	5.88%	████
Reduced farmer stress.	2	11.76%	██████
Reduced need for labour.	2	11.76%	██████

Figure 5: Advantages of AMS experienced by Farmers.

Disadvantages	Response frequency	Percentage	Bar
Initial setup and installation costs	2	12.50%	██████
Maintenance and upgrade costs.	6	37.50%	██████████
Difficulty to train cows	2	12.50%	██████
Higher electrical costs.	2	12.50%	██████
Full grant amount only accessible for first unit purchased.	1	6.25%	████
Strong WIFI is required.	1	6.25%	████
No disadvantages	1	6.25%	████
When receiving a system upgrade, all units are to be shut down and no milking can take place.	1	6.25%	████

Figure 5: Disadvantages of AMS experienced by Farmers.

Conclusion

- All objectives were achieved by conducting surveys, interviews, case studies and a literature review.
- AMS improves a herd milk yield.
- AMS are suitable for the Irish landscape.
- AMS are suitable for all herd sizes.
- Whether AMS decreases a herd milk quality requires further investigation due to the case study outputted conflicting results.
- Automated units are widely used across Ireland and their popularity is rapidly increasing.
- Revenues generated from AMS tend to be greater than conventional methods, but further work is required.