



DRONES, AUTOMATION, AND TECHNOLOGY

A BRIEF INSIGHT INTO THE FUTURE OF DAIRYING

by **Jed Vaughan**

To many South Africans, farming is more than just feeding our communities, the love for our livestock, and making a profit – it's in the blood. Farmlands are being passed down from generation to generation with fathers teaching sons the tricks of the trade, the lay of the land, and everything their fathers taught them.

A century ago, this was all we knew; 50 years ago, partially so; but the world has changed and stepped into the 21st century, a world of information at our fingertips, a world of automation and wireless monitoring, a world filled with new technologies, growing faster than we could ever have imagined.

This is the changing landscape that present-day dairy farmers find themselves in, needing to adapt and capitalise on all the potential these technologies hold.

Gone are the days of having to set 02:00 alarm clocks for heat detection or checking kilometres

of fence line for breaks; new technologies such as wireless monitoring collars and drones are solving these problems with high accuracy and greatly reducing human errors. Transition to automatic milking systems is helping improve data recording, health detection, quality of life of the farmer, and reducing the intensity of labour, making dairy farming easier and more convenient.

AUTOMATION

Automated milking systems are a step into the future of agriculture. These systems are a way to reduce labour costs and greatly improve the lifestyle of a dairy farmer. The transition to automatic milking machines is driven by an improved quality of life, a decrease in the intensity of physical labour, and a more flexible workday.

Studies¹ have shown, farmers using robotic milking systems get greater job satisfaction out of their working day, environment, and occupational safety. This means more time to manage your farm, make improvements, and enjoy some downtime at a family braai. Currently, almost all dairy farms in South Africa follow a conventional milking system. There is a growing number of automatic milking systems in Europe and North America and with the general trend of following in their footsteps, we can expect a

lot more beeping, clicking, and spraying in the near future.

These automatic systems are highly efficient and can perform many different tasks, such as automatic teat cleaning, individual quarter recording, various spray modes for post-treatment, cleaning and sterilisation between each cow, as well as animal-specific feed rationing, all of which will greatly reduce labour cost and human error. Analysis of the data collected from each individual cow can be used for better health detection, record-keeping, and allow for better herd management. Healthy and happy cows make you a happy farmer.

ARTIFICIAL INTELLIGENCE

Wireless monitoring devices are important tools in dairy cattle management practices. Heat detection is a crucial aspect of dairy herd management, therefore, accurate detection plays a vital role in the success of a dairy farmer and affects the profitability of an artificially-bred dairy herd. Monitoring collars provide real-time data for rumination and activity to allow for accurate heat detection, which, in turn, will allow for successful insemination, thus increasing conception rates.²

Monitoring collars transmit multiple times per hour ensuring that the information is up to date. Artificial intelligence programmes use the data to detect cow health and behaviour problems, allowing the farmer to remedy health problems early on, saving money by treating the animal earlier, and reducing the spread of diseases through early identification. Monitoring collars also track environmental conditions and warn farmers of heat stress and high humidity, which could have a negative effect on herd performance and health.³



DRONE TECHNOLOGY

Pasture-based dairy farmers all know that you don't farm with cattle but rather farm the pastures, and this is where drones in agriculture play a pivotal role. Pasture management involves many interconnected aspects, which are often difficult to monitor due to the expansive size of pastures, and this is where drone technology flies us closer to the future.

Drones fitted with infrared sensors can be used to detect disease or damage to pastures and crops, which allows farmers to prevent the spread of disease and treat infected areas. A recent study has predicted that 80% of the future agricultural market will comprise drone technology.⁴ Drones can also play a role in crop spraying, soil analysis, checking and monitoring fence lines, and helping with water management practices. With such versatile capabilities, it's hard not to imagine the future – a whizzing world of drones in agriculture.

STEP INTO THE FUTURE

Technology has greatly improved the speed and efficiency with which we complete tasks. With instantaneous communication, mass data analysis, and artificial intelligence saving us time and money, we can easily see the leaps and bounds we have made in such a short time, and with our growing population, agriculture will have to follow suit and embrace these new technologies with open arms. If we are to progress into the future, whether it be drone technology, detection and monitoring collars, or automatic milking systems, the future of agriculture is knocking on the door, ready to fly in and make farming easier, accurate, and more profitable. It would be unadventurous not to open it ...mpo



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