Science Societies

Precision Management for Grazinglands

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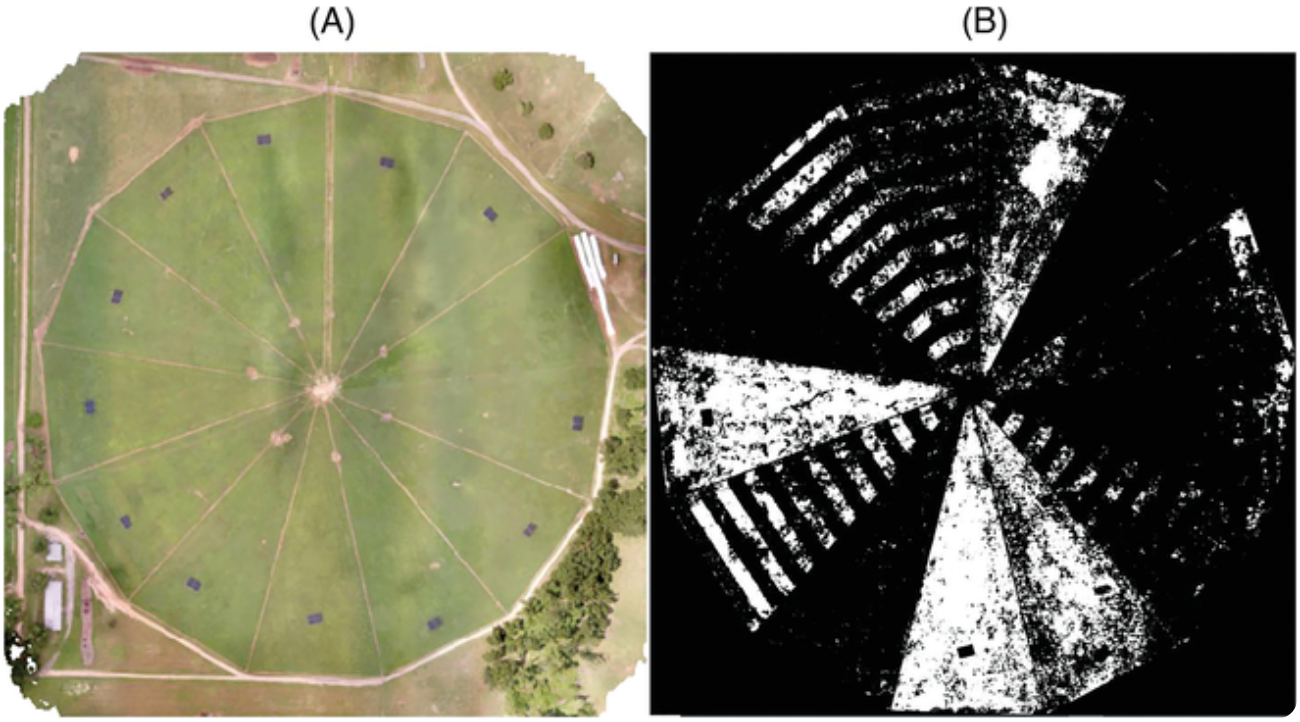

The above images illustrate precision agriculture in action. Left: A drone image of a field in north Florida. Right: A map of weeds gen- erated by an artificial intelligence algorithm that supports weed management in that same field. Using these tools to identify un- desirable plants for precision herbicide spraying saves labor and costs. Images by University of Florida–NFREC, Marianna.

Because of the growing field labor shortage worldwide, the use of technology to manage animal production systems and increase production efficiency has become essential. This is especially true in grazing systems where large-scale monitoring and management are challenging.

Researchers from the University of Florida and Universidade Federal de Viçosa in Brazil have written a comprehensive review of the main technologies available or under development to assist producers in managing grasslands. The review also addresses the main challenges researchers and extension officers will face in coming years. Increasingly, satellites, drones, and remote-sensing techniques are being integrated with machine learning and other technologies, such as wearable sensors, cloud computing, and the Internet of Things. These technologies are useful for management practices such as stocking-rate adjustment, grazing management, nutritive value estimations, fertilizer application, weed management, botanical composition evaluations, and degradation monitoring.

Precision farming can make livestock production more efficient and sustainable. However, to increase adoption of these new technologies, more collaboration is needed among farmers and professionals in data science, artificial intelligence, agronomy, and animal sciences. This cooperation can advance software and app development to boost on-farm implementation.

Adapted from Bretas, I.L., Dubeux, J.C.B., Cruz, P.J.R., Oduor, K.T., Queiroz, L.D., Valente, D.S. M., & Chizzotti, F.H.M. (2023). Precision livestock farming applied to grazingland monitoring and management—A review. Agronomy Journal.

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