Science Societies

Considering the path forward to predictive agriculture

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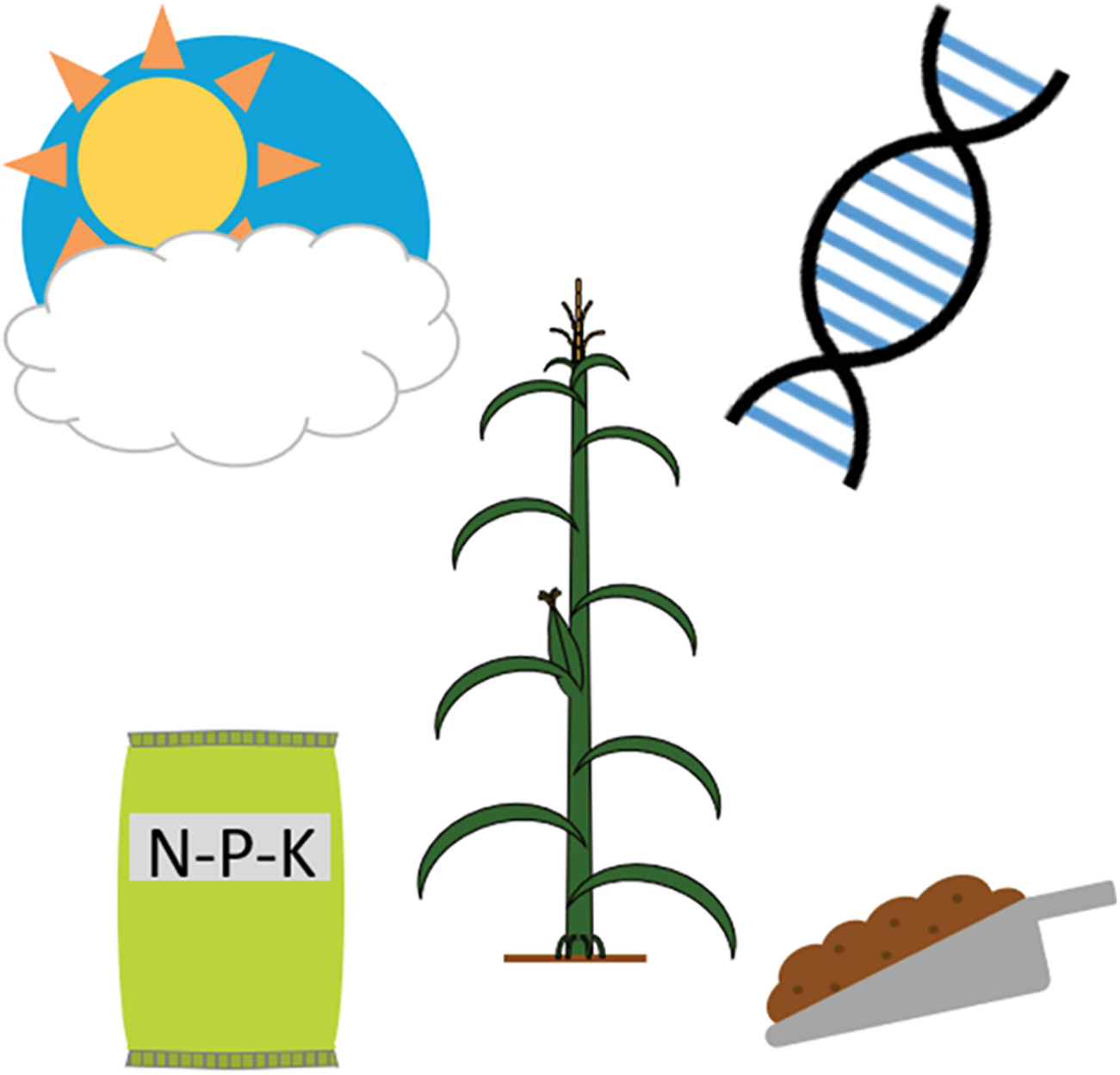

Advances in technology, methods, and datasets should allow for more accurate phenotype predictions based on genetic, environmental, and management data. Illustration courtesy of Jacob Washburn.

Predictive statistics and modeling have greatly improved agronomy and breeding for a handful of crops and a few areas of the world. But for most crops and locations, these methods are still out of reach. Additionally, the potential for improved predictive breeding and agronomy at the leading edge remains enormous.

In an article recently published in *Crop Science*, researchers at Cornell University discuss the past, present, and potential future of predictive agricultural methods. The rich history of methods that are genotype, environment, or management centric is discussed as well as the enormous potential for moving beyond these siloed approaches to more integrated systems.

Recent advances in technology, methods, and datasets have demonstrated that better integrating genetic, environmental, and management data can improve results. Potential pathways for taking advantage of these advances and distributing them to the world will require creativity, openness, and greater cross-disciplinary interactions, training, and collaboration.

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Washburn, J.D., Burch, M.B., & Franco, J.A.V. (2020). Predictive breeding for maize: Making use of molecular phenotypes, machine learning, and physiological crop models. *Crop Science*, 60, 622–638. **https://doi.org/10.1002/csc2.20052**

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