

Worldwide paradigm shift in which producers actively contribute to agronomic understanding

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Since its beginning in 1989, the Nebraska On-Farm Research Network has helped producers, in partnership with Nebraska Extension, analyze experiments suited to the specific conditions of their fields. This collaboration has boosted agronomic understanding as well as producer

profits. On-Farm Experimentation, or "OFE" is a growing phenomenon worldwide, and a new journal article co-authored by a Nebraska Extension specialist explains that global dimension and the opportunities to better coordinate conventional agronomic research with producer-generated findings and analysis.

Laura Thompson, an Extension educator with wide-ranging experience with the Nebraska On-Farm Research Network, joined contributors from Canada, Argentina, the United Kingdom, France, Morocco, Malaysia and China in writing "On-Farm Experimentation to transform global agriculture." The article appears Dec. 23 in the journal *Nature Food*.

OFE now comprises "a distinct and growing community of practice" worldwide, with over 30,000 farms participating in more than 30 countries, the article estimates. Unlike Nebraska's On-Farm Research network, OFE initiatives are usually relatively recent. An international network involved in 11 OFE initiatives across the world formed to expand understanding of the approach and of its momentum.

Such farm-derived data and analysis provide "an opportunity for agricultural experts to complement conventional agronomy research by working with the dynamic farm management that exists in the real world," the article says. Through this focus on "locally appropriate knowledge," Thompson and her co-authors write, OFE can accompany "a paradigm shift" by which producers are active contributors to deepening agronomic understanding worldwide.

Nebraska has seen the benefits from such an approach over the past three decades, Thompson says. Among the notable successes: the knowledge gained for soybean production, including seeding rates and planting times. Planting earlier helped boost yields, and use of a smaller volume of seed helped reduce costs. Another success is improved

nitrogen management using precision technologies, enabling better profits and reduced environmental impact.

About 70 Nebraska producers are currently participating in the On-Farm Research Network, totaling about 100 On-Farm Experiments, since multiple projects are underway at some farms.

Farmer-centric On-Farm Experimentation, the Nature Food article says, can play a major role in realizing the benefits from ag-focused digitalization.

Nebraska On-Farm Research shows how digital technologies enable precision data collection, opening up important opportunities for producers to fine-tune management within a field, Thompson says. "Farmers can conduct their research more conveniently," she says, "and at the same time we can generate more research data and address more site-specific situations rather than managing one field as a single unit."

Overall, OFE can strengthen global production in four ways, Thompson and her fellow contributors write. First, by providing new tools for collaborative understanding of real-world needs and practices. Second, by emphasizing flexibility, so that research practices can best address local conditions. Third, by adding value for producers. Fourth, by introducing disruption, to achieve "new ways of learning," about appropriate agricultural and innovation practice, and sharing that knowledge on a global scale.

Enabling those new ways of learning, the article says, will require building stronger connections between the agriculture community's "theoreticians and practitioners"—scientists, farmers and other agricultural stakeholders—in a cross-fertilization of ideas and approaches. By setting that new scientific foundation, the authors say, [global agriculture](#) can advance to new heights.

More information: Myrtille Lacoste, On-Farm Experimentation to transform global agriculture, *Nature Food* (2021). [DOI: 10.1038/s43016-021-00424-4](https://doi.org/10.1038/s43016-021-00424-4).
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