On-Farm Experimentation Community Newsletter No. 7 - #OFE2021 Outcomes

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NEWSLETTER

On-Farm Experimentation Community

OFE2021 banner



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The First Conference on Farmer-Centric On-farm Experimentation — Digital Tools for a Scalable Transformative Pathway was held on October 13th-15th 2021 in Montpellier, France.

What the Conference Was About

Traditional agricultural research means much to scientists but little to farmers. Statistical significance criteria much beloved by researchers are not related to the scope, practical meaning or usefulness of experimental results to farmers. Scientists and farmers deal differently with uncertainties. The spatial and temporal variations that farmers manage in crop and livestock production are typically far greater than any trial treatment effect. Farmers are then unable to scale up recommendations within their farm management system. The widespread application of Fisher's statistical methodology (dating back to the 1920s) has allowed for a simplified evaluation of papers to be published in scientific journals at the expense of the recognition of, and successful adaptation to, the real-life conditions faced by end users. This is a major enduring problem with real consequences on productivity, profitability and environmental outcomes. Farmer-centric on-farm experimentation (OFE) leads to transformational change in agricultural research and innovation in line with OECD Co-operative Research Programme theme III "TRANSFORMATIONAL TECHNOLOGIES AND INNOVATION."

Innovative agroecological practices are advocated by various governments but farmers are slow to transition because risks, costs and other requirements are high. Similarly, digital technologies hold great potential to reduce the environmental footprint of agriculture and increase farming incomes while satisfying several societal demands. Yet, the worldwide agricultural sector holds the lowest level of digital maturity. The necessary agroecological and digital transitions are very slow because, on the one hand, they are disruptive, and, on the other hand, they are mostly brought up through inherited top-down approaches that endure in spite of not being suited to the agricultural innovation context. The

rapid adoption of locally adapted sustainable practices will happen only if innovations stem from farmers' needs and experience closely intertwined with trusted agronomic, social, economic and education science. In a context where limited bottom-up innovation pathways hinder the development and adoption of new practices, farmer-centric On-Farm Experimentation (OFE) provides a privileged pathway that can contribute to the transformation of agri-food systems. It is a practical and adaptable mechanism to bridge the interests of farmers, researchers and other stakeholders that can substantially add to research and innovation in agriculture by combining the different types of knowledge and expertise required across the agricultural sector. OFE is based on a deliberate process of data-supported exploration, embedding research into real-world farm management to create ideas and insights that are valuable because directly relevant to farm managers. OFE can both promote and benefit from digital technologies to collect, exchange and process contextualized data to develop locally salient insights, supporting both agroecological and digital transitions. This synergy was at the core of the OFE2021 conference.

Participation

The OFE2021 conference "Farmer-centric On-Farm Experimentation—Digital Tools for a Scalable Transformative Pathway" was conducted in a hybrid format from October 13th to 15th in Montpellier. It was organized by INRAE- DigitAg and the ISPA OFE-C (International Society of Precision Agriculture, On-Farm Experimentation Community). The conference was structured around invited speakers (plenary and short presentations) addressing the 4 themes presented in the pre-conference webinars: Value creation, People and processes, Data analytics, and Policy linkages. The use of e-presentations (short videos), instead of posters, was an innovation proposed as a means of engaging in a hybrid conference environment. The last day was devoted to a workshop to develop policy propositions, based on the collection of expressions from the OFE2021 attendees through a collaborative platform opened during the conference. A special issue of the Agronomy for Sustainable Development journal will be published as an outcome of the conference. In preparation to this conference, four virtual workshops on the themes mentioned above were conducted in May 2021 under the auspices of the ISPA. Each of these workshops was an opportunity to gather contributors from diverse regions of the world to exchange and establish a shared background for the conference.

The total number of conference participants was 170, with 39 people present in Montpellier and 141 on-line. Most of them were researchers but the conference also attracted representatives from farmers' associations, start-ups, NGOs, and policy-makers. The conference achieved outstanding geographical representation with 36 countries (54% from Europe, 16% from North America, 8% from South America, 8% from Asia, 8% from Africa and 6% from Oceania).
The conference gathered a total of 140 scientific submissions from nearly 100 authorial teams (30 from invited individuals, 66 through e-presentations). These included 80 presentations (30 invited presentations at the plenaries, and 50 short recorded e-presentations replacing posters, a selection of 20 of which were presented at the plenaries) and 50 papers (including 40 developing the recorded e-presentation videos).

Major Highlights From the Presentations

Experience suggests that farmers need little persuasion to engage in OFE as experimenting on the farm is a process they routinely do and therefore understand. Alongside learning from peers, experimenting is, by far, the dominant learning process of farmers globally, with this universality acknowledged at the roundtable and throughout the conference. But beyond farmer-led OFE, scaling

up collaborative farmer-centric OFE requires defining precisely how the process creates value for varied stakeholders, how this value is shared, and how scientific disciplines can contribute. This is necessary as impact pathways for OFE contrast markedly with those of conventional research.

The conference highlighted that change is as much about us and our institutions as it is about technology. Change occurs when people change, transformation occurs when changes scale up through networks and organizations. The underlying change throughout, most cited during the OFE2021 conference, is in knowledge and shared culture. There is a need to better identify interactions between digital technologies and the varied organizational environments and dynamics that nurture (or impede) transformational change—including within scientific institutions and the innovation ecosystems they are part of.

Farmer-centric experimentation has great potential to improve the design, adoption and integration of farm management practices. The round-table and workshop showed how all stakeholders, including farmers, commercial product and service providers, scientists and policy makers, have an interest in seizing this opportunity to improve precision, efficiency and impact in relation to their broader food systems. The invited and submitted presentations gave examples showing that OFE was adaptable to a large diversity of issues: OFE exists in smallholder and broadacre farming, at local and greater scales, in industrialized and developing countries, with various degrees of farmer-centricity and digital maturity levels. When available, well-targeted analytics can be deployed to exploit the valuable data collected on the farm. However, no critical mass of OFE documentation exists to catalyze activities and enable institutional culture with a long tradition now requiring evolution change.

The webinars and conference made it very clear that OFE approaches and applications are highly diverse, which is an asset and a challenge at the same time. To a large extent, this diversity reflects the range of institutional contexts worldwide. This diversity is not transitory and is expected to persist over time. To keep all individual initiatives engaged in the much larger concept that OFE is, the conference and the workshop showed that it is important to clarify what the intended nature of change through OFE is (and is not). For this, there is a need to communicate well the 6 principles of OFE: 1) farmer-centric; 2) real systems-based; 3) evidence-driven; 4) expert-enabled; 5) co-learning-targeted; 6) scalable. A clear example that this need extends to institutional change was a recurrent observation that among the submitted (non-invited) presentations there was still a strong bias toward science-led rather than farmer-centric work, despite presenters being very well engaged in the conference and believing that their work was 'farmer-centric.' Another transdisciplinary requirement that OFE must address is to jointly move away from plot-based agronomy to develop landscape-scale agronomy, and from outdated linear knowledge transfer models to innovation ecosystem thinking. Both dimensions are necessary to support the scaling of insights. Old and new actors acknowledged that this is a real change process in itself.

Website for Further Details

All presentations will be available on the website (https://ofe2021.com/videos-papers) as soon as the post-production phase is completed. A one-year embargo will be maintained for registrants after which the content will be open to all.

Disclaimer

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