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CALL FOR PAPERS
Micro-organism-based bio-inputs: technological activation conditions for a scientific promise?

Ludovic Temple, CIRAD, France
Paula Fernandes, CIRAD, France

The use of micro-organisms as a resource for agriculture has been an integral part of farming practices (composting, lacto-fermentation) in rural societies for centuries. The characterisation of these micro-organisms (fungi, bacteria) in terms of their ability to restore soil fertility and reduce pesticide use has been the focus of civil society organisations, businesses, professional farming organisations and agricultural research, mainly in southern countries, for the last thirty years. This renewed interest in local bio-inputs is a response to the many crises that have shaken the agricultural sector (health and environmental pollution, the rising cost of synthetic fertilisers, supply disruptions, etc.), with the aim of both greening farming practices and empowering producers in relation to industrial agricultural supplies.

For agronomic research, they hold out the promise of a major revolution that will make it possible to free ourselves from the negative externalities of chemical inputs while also meeting the economic challenges posed by the growing costs of agriculture and food, which are linked to those of energy. The bioproducts market has experienced spectacular growth over the last ten years (da Silva Medina et al., 2024).

These new inputs can be divided into two categories. The first are biological control products in the broad sense, including biocontrol products and biopesticides. Their main purpose is to combat pests and diseases or to enhance the protection of plants and animals. The second category concerns biofertilisers, including biostimulants. Their specific aim is to improve the overall health of plants and animals, making them potentially more resilient to external stresses (drought, pests, etc.). These new inputs can be self-produced by farmers and small businesses from local resources, or they can be industrially produced, potentially structuring several technological trajectories that are taking shape on a global scale.

We will be particularly interested in work that addresses questions related to the following areas:
- The organisation of systems/mechanisms within the research structures of agricultural companies and professional organisations.

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- The economic viability of organisations using these technologies in terms of efficiency and profitability, given the diversity of situations.
- The management and documentation of health risks specific to bio-inputs in relation to the precautionary principle.
- The evolution of bio-input technologies and their acceptance by users and consumers of their products.
- Barriers and levers to adoption (which may be biological, technological, organisational, regulatory, etc.).

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- The integration of bio-inputs into the agro-ecological transition process and their role

References

da Silva Medina, G., Rotondo, R., & Rodríguez, G. R. (2024). Innovations in agricultural bio-inputs: commercial products developed in Argentina and Brazil. Sustainability, 16(7), 2763.

Goulet et al., "The emergence of microbiological inputs and the challenging laboratorisation of agriculture: lessons from Brazil and Mexico," Agric. Hum. Values, Aug. 2024, doi: 10.1007/s10460-024-10614-y.

Kumar, T., Devi, R. A., y Kumar, A. (2024) Comparative studies on the effect of various biofertilizers on the growth, yield, and quality of carrot (Daucus carota L.). Ecology, Environment and Conservation, 30, S169-S173. Http://doi.org/10.53550/EEC.2024.v30i01s.032 [Links]

Temple L., Fernandes P, Garine Wichatitsky MD, et al. 2024. Innovations de bioproduits basés sur micro-organismes pour réduire les pesticides : potentialités et risques. CIRAD, Journée transdisciplinaire d'échanges, Montpellier, France, 16 Février 2024, 193 p. https://agritrop.cirad.fr/610189/

Raimi, A. Roopnarain, and R. Adeleke, "Biofertilizer production in Africa: Current status, factors impeding adoption and strategies for success," Sci. Afr., vol. 11, p. e00694, Mar. 2021, doi: 10.1016/j.sciaf.2021.e00694.

Timetable:
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