

Press release–Friday, December 11, 2020

Transitions for global food security: results of the GloFoodS metaprogramme

We face a formidable challenge: ensuring that all the planet's inhabitants, who will number around 10 billion by 2050, have equal access to healthy, sustainably produced food. In other words, we must ensure global food security. Our ability to respond to this challenge will be affected by factors such as the availability of farmland, the effects of malnutrition, the impact of poverty on access to food, market fluctuations in food prices, and global changes. To explore these issues, from 2014 to 2020, INRAE and CIRAD jointly led the interdisciplinary GloFoodS metaprogramme, whose objective was to explore different facets of food security worldwide and their relationship with global changes. This unique programme combined the forces of INRAE researchers, CIRAD researchers, and a host of international collaborators, together representing a broad range of disciplines and approaches. GloFoodS gave rise to concrete solutions for policymakers and stakeholders on the ground.

Between 2014 and 2020, INRAE and CIRAD worked together to organise and inspire an interdisciplinary community of scientists with the objective of exploring past and present concerns related to the way in which food security and nutrition security interact with sustainable development challenges and global changes. The GloFoodS metaprogramme espoused a variety of perspectives on food security, bringing together a broad range of researchers. Collaborators worked at a variety of scales, from the global level all the way down to the household level. They also examined different facets of the issue. For example, agricultural and animal scientists considered the role of agricultural production, while biologists, economists and social scientists, nutrition specialists and epidemiologists focused on access to and the use of foods. Finally, the metaprogramme's participants carried out their work in different parts of the world, including both developed countries and the Global South.

A unique research programme that combined the complementary skill sets of INRAE and CIRAD

GloFoodS carried out research in diverse areas, addressing questions related to the agricultural sciences, livestock systems, global modelling, changing land use, economic and sociological determinants of diet patterns in rural areas, agrifood technologies, nutrition, and the governance of food security. Its priority was to carry out novel and multifaceted analyses of transitions towards food security worldwide given global changes. More specifically, GloFoodS made the following contributions:

- It enhanced understanding of the factors behind nutritional transitions, including their impacts on human health and the environment
- It analysed trends and variability in crop and livestock yields to develop appropriate actions
- It evaluated the potential of dedicating available land to agriculture (and forestry) with a view to generating food, energy, or bioindustrial products
- It identified the processes and structural factors that help limit loss and waste across production lines and during food sales

- It shed light on the links between the access of rural and urban households to food, issues related to poverty levels within populations, and changes in social inequality in developed and developing countries
- It analysed trends in the governance of food security worldwide

Transferring results to policymakers and stakeholders on the ground

Over its six-year lifespan, GloFoodS created strong ties between research, innovation, training, and development. In particular, the metaprogramme contributed to the education of undergraduate and graduate students in the agricultural sciences. It also developed training programmes for policymakers and stakeholders on the ground in different domains, including agroecology, food production, and the circular economy.

These stakeholders and decision makers were also invited to participate in GloFoodS's research projects via participatory science initiatives. The metaprogramme provided concrete solutions to key players in the field—farmers, policymakers, private companies, and NGOs—to help guide transitions in food systems. Several examples are described in the project summary documents (links provided below). Both in France and abroad, GloFoodS's findings are promoting understanding of food insecurity, helping to prevent food crises, and driving the development of policies for managing market risk. The metaprogramme also consolidated databases containing useful information for INRAE and CIRAD researchers. These databases are focused on subjects ranging from the exploitation of local plants in African countries to the large-scale global equilibria that exist between agricultural supply and dietary needs. Finally, GloFoodS created value from its Agrimonde-Terra foresight study and the resulting Globagri modelling tool both within the scientific community and beyond.

GloFoodS in numbers:

- 45 national and international research projects
- Participation of more than 25 countries across 5 continents
- Production of 80+ scientific publications in peer-reviewed journals
- Contributions from 200+ researchers representing around 30 different disciplines
- 35 doctoral students trained
- A three-day research training school on food security indicators in March 2018
- Around 20 training programmes for policymakers and stakeholders on the ground

What is a metaprogramme?

The breadth and complexity of national and international challenges related to food, agriculture, the environment, and the various interactions of all three factors have led INRAE to establish metaprogrammes—interdisciplinary research programmes that run over the intermediate to long term (more than 5 years). This approach seeks to coordinate diverse research efforts to achieve large-scale objectives and thus respond to the major scientific and societal challenges of the 21st century. It puts to work multidisciplinary, systemic, and integrative perspectives that are rooted in partnerships and that branch across the world.

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