

Towards an orchestration of global agricultural research

A CIRAD proposal

July 2011

Agricultural research needs to rise to increasingly global and complex challenges. How can it do so, given the emergence of a multi-polar, many-faceted agricultural research system and growing differences between countries?

CIRAD suggests that coordination of global agricultural research for development (AR4D) should be founded on strategic intelligence designed and shared by all stakeholders. For this, it is essential to include the least advanced countries and to strengthen their research capacity.

In the face of the global and urgent challenges – alleviating poverty, ensuring food security, adapting to climate change, improving health, guaranteeing food safety, protecting the environment and satisfying energy requirements –, politicians have reconsidered the importance of agriculture and made it one of their top priorities. They expect agricultural research to come up with solutions. How can this be achieved?

Restructuring of agricultural research worldwide

Agricultural research has changed significantly in recent years: globalization of issues has made the traditional remit of agricultural research for development (AR4D) obsolete, and the stakeholders and programmes involved are also rapidly changing shape.

Convergences and distinctions

For a long time, a distinction was made between AR4D, which is geared towards the southern countries (also referred to as developing countries), and international agricultural research (IAR). The corresponding institutions were different. These included, for AR4D: the Consultative Group on International Agricultural Research (CGIAR), national agricultural research systems (NARS) in developing countries, and regional and sub-regional organizations; for IAR: advanced research institutes (ARI) in the OECD countries; and between the two, precursors of the current shifts: a small number of organizations in industrialized countries dedicated to agricultural development in the South. The distinction between AR4D and IAR was clear-cut, even though it cut across other boundaries (tropical-temperate, North-South, rich countries-poor countries, fundamental-applied research, etc).

In recent years, AR4D and IAR have converged somewhat, which is an advantage given the extent of the issues faced. Several factors account for that convergence: globalization of issues relating to the management of biological organisms and development questions; the increasingly universal nature of some scientific and technical knowledge; institutional changes within research organizations (restructuring of specialist research facilities in Europe, increasing importance of research organizations in developing countries, CGIAR reform, etc); not forgetting the difficulty of fitting countries into the categories used in the past (developing, industrialized, etc).

Furthermore, the balances between countries are changing. Emerging countries, led by China and Brazil, are investing massively in agricultural research. They are building up scientific capacity equivalent to that of advanced research organizations, although agricultural science outputs are still primarily generated by the OECD countries. Some intermediate countries are man-

aging to uphold national agricultural research systems with significant scientific standing. However, the gaps are growing between those countries and the least advanced countries (LACs), whose scientific capacity is gradually being whittled away.

Diversification and dissociation

The sources capable of generating scientific knowledge to tackle the challenges facing agricultural research are increasingly diverse. Some do not identify with either AR4D or IAR, or even agricultural research in its broadest sense. Universities are playing a growing role, particularly in southern countries, where there is huge demand for education. Although tackling these challenges is not their main objective, the knowledge they generate can, and indeed should, make a contribution. The range of donors is also widening, with the growing influence of private foundations and the establishment of national funding and auditing bodies.

At the same time, research programming, funding, implementation and auditing operations are increasingly dissociated. Separate national and international bodies have been set up for each of these functions, and coordination mechanisms between operators and donors are being tested. Increasingly standardized competitive research funding procedures are being introduced wholesale, on the pretext of ensuring excellence. But they often increase the disparities between operators and countries and adversely affect the essential diversity of approaches.

The interfaces between science and policy are growing. These connections meld assorted knowledge into overall expertise, and inform policymakers and firms. Their role in setting international priorities is growing. The IPCC (Intergovernmental Panel on Climate Change) is a large-scale collective expertise which is a benchmark model. Other models exist however and serve to divide the research landscape into cutting-edge thematic fields. One such field is biodiversity, represented by the IPBES (Intergovernmental Platform on Biodiversity and Ecosystem Services).

“Coopetition” and exclusion

The current changes are sketching out an open, many-faceted multi-polar system. Vast relational networks are spun and unravel in line with political concerns and their financial consequences. They link a broad range of partners within ad hoc structures, yet without giving rise to new epistemic communities. They reshuffle scientific questions and they strengthen the genericity of the results.

Joint programming and implementation are also increasingly common. The details vary depending upon who takes the initiative – a donor, research organization, group of research organizations or programming agency. They also vary depending on whether the pro-

gramme is public or involves private partners. In some fields, private research is predominant, and the increasingly fuzzy boundaries between private and public research raise the issue of the status and ownership of scientific outputs generated in partnership, and of their use for development.

Research teams bridge institutional divides, and are driven by both competition and cooperation. This “coopetition” has resulted in a race for excellence, but also in the exclusion of the least efficient teams. It is also an obstacle to long-term partnerships.

Thus, two non-exclusive world visions are emerging: on the one hand, scientific communities driven by excellence, whose outputs would be universally extrapolable; on the other, communities associating a wide range of players and practices, leaving room for local knowledge generation.

Organizing global orchestration

As public resources are limited and the problems to be solved increasingly global and complex, it is vital that agricultural research players, including those institutions at the interface between science and policy, orchestrate their operations. The utility and impact of research depend on this.

The foundations for such orchestration have been laid in recent years: the collective expertise of the IAASTD (International Assessment of Agricultural Knowledge, Science and Technology for Development); the founding of GFAR (Global Forum on Agricultural Research), its regional forums and the Global Conference on Agricultural Research for Development (GCARD) to facilitate exchanges between research and its users. More recently, the changing of the FAO Committee on Food Security into a World Committee has brought together a great range of stakeholders who base their discussions on scientific expertise. At the 2009 L’Aquila Summit, the G20 stressed the need for global coordination of agricultural research.

Believing that coordination is necessary does not mean an ingenuous wish for global programming of agricultural research worldwide, or an end to competition between scientific teams – a key driver of scientific excellence. The aim is rather to design and implement cooperation mechanisms to coordinate and regulate the resources invested in fragmented knowledge generation systems within a common agreed perspective. Above all, it is vital to reduce existing and increasingly marked asymmetries by strengthening capacity in LACs, to enable them to participate fully in expressing and tackling research questions. It is institutional structures, rules and facilitation tools we are talking about here, not uniformity, which would reduce the diversity, creativity and critical thinking that are vital for any form of research.

Keys for boosting impact

The past fifty years of agricultural research for development have shown two main points on which global research coordination should centre:

- The first is the clear failure of a linear view of innovation – a simple technology transfer from research to producers. This failure suggests that research needs to change its stance. It needs to take greater account of development objectives and, to this end, must be open to innovative approaches, such as participatory initiatives. The controversies surrounding impact measurement and the notion of causality between knowledge and innovation, along with the ambition of the usefulness of research outputs, suggest that the links between science, technology and social change should be better explored.
- The second is the need to base future programming on multi-disciplinarity. AR4D traditionally covered two fields of study: development studies (human geography, rural economics and sociology, political science, etc) and tropical agronomy (plant science, biology, cropping systems, ecology, production systems, etc). These two fields are now converging. That convergence needs to be taken still further to go beyond a strictly technical approach. This is required to address more effectively complex research issues such as technical innovation or development dynamics.

Research, a driving force for development

While advocating the quest for excellence and global usefulness of outputs, CIRAD feels that priority should also be given to building scientific production capacity in the least advanced countries. Experience suggests that local scientific output, in response to specific contextualized needs, has greater development impact. There are two main reasons: research issues are identified in line with local realities; and researchers are more able to join innovation networks. Moreover, by generating a scientific culture, local scientific output is a decisive factor in development. Partnerships therefore need to set out to bolster fragile scientific dynamics and contribute to the scientific sovereignty of LACs.

The debate about scientific capacity building as a driver of development (the hypothesis of development through research) overlaps with another: the utility and impact of scientific outputs (research for development). While scientific excellence can be measured against publication indicators, the expectation made of research, in particular by donors, concern the ability of institutions, platforms and projects to generate effective changes in every aspect of society and the environment. These demands are a factor for tension between concepts of the role of science on the one hand and the stance taken by research with regard to innovation and development on the other. They also argue in favour of rethinking targeted research evaluation systems and drawing lessons in terms of programming.

Research on innovation ecosystems is thus essential. It needs to cover mechanisms and pathways that enable learning, the mutual enrichment of scientific and local knowledge and know-how and the emergence of innovations, including institutional and social.

An open, inclusive global system

The challenge for global agricultural research orchestration in the current context is to come up with an open and inclusive system with flexible coordination mechanisms. There are three main priorities:

- **Boost strategic intelligence and share it.** This requires involving all types of research players, so as to identify research issues and priorities on a world scale. To this end, available knowledge will have to be inventoried, compared, summarized, and integrated into a targeted approach (knowledge engineering); appraisals and foresight studies will have to be conducted; and interfaces between science and policy will have to be stepped up. Similarly, consultation on research visions, strategies and priorities will have to be organized ahead of programming, so as to take account of the range of societal and cultural situations, perceptions and priorities, avoid duplications, achieve critical masses when necessary, and foster the circulation and utilization of knowledge.
- **Develop institutional engineering** so as to better design and structure global research programmes. Beside local and regional programmes, large-scale programmes are needed to generate the knowledge required to tackle global challenges. Such programmes have to be driven by knowledge requirements, and organize roles taking into account the existing asymmetries regarding capacity. In addition to opportunistic groupings in response to invitations to tender, it is also important to define mechanisms and rules (including financial ones) for programming and implementing global programmes.
- **Facilitate access to research outputs,** by clarifying their status: intellectual property rules and modes of access. We must confirm the legal status of the notion of a “public good” as applied to scientific knowledge or improved biological materials.

CIRAD's contribution

CIRAD is keen to contribute to this burgeoning global orchestration. Its position at the interface between North and South, with its extensive experience and a clear mandate for development in southern countries, particularly in Africa, make CIRAD “one of the hubs of a range of vast knowledge generation networks”, as its Science Council put it. It is well placed to help reduce the divides between national, bilateral and multilateral systems on the one hand, and AR4D and IAR on the other. Both through its staff members on assignment, and as an institution, CIRAD has been involved in most of the initiatives that have served to found the existing multilateral coordination mechanisms.

With its partners in the South, CIRAD is collecting and capitalizing field data from every continent and analysing them, while trying to derive generic knowledge. For some time now, CIRAD has been working to open up the agricultural sciences to the social sciences. Its 2008–2012 strategic vision stressed that agricultural, food and environmental challenges called for a huge collective effort in terms of research and education. The changes seen since bear out that vision and the convictions behind it.

By reaffirming the need for high-quality research geared towards innovation for development, within a framework of scientific partnerships with southern countries, CIRAD is confirming its original mandate, founded on its stock of experience, which it is keen to make available to the current global debate.

CIRAD can help build a new form of global coordination for AR4D in three ways:

- by continuing to generate scientific knowledge and technologies, while attuning its research topics ever more closely to global debates, participating in the effort to understand and assess the impact of research, and focusing on its comparative advantages within a framework of strategic partnerships with other global players;
- by strengthening its partnerships with LACs, through jointly built and managed platforms, so as to build local scientific knowledge generation capacity, and also by promoting those partnerships within global programmes;
- by playing a direct part in a new form of research orchestration, which calls for targeting the places, initiatives and institutions in which to invest in future within such a perspective, for taking care to ensure the full, equal participation of research organizations in LACs, and for acting as an advocate for its partners.

A favourable institutional context

The time is right. The CGIAR reform, while proving difficult, should accelerate the current changes and boost efficacy. The choice of Montpellier for the consortium's headquarters may help to reduce the historical gulf between the French-speaking and English-speaking communities, and between bilateral relations and the multilateral system. The drafting and implementation of the CGIAR research programmes (CRPs), the consortium's new programming tool, can be seen as prototypes for joint programming operations, as far as design, coordination and investment procedures allow.

The G20 Conference in Montpellier on 12 and 13 September 2011 will provide an opportunity to draft a plan of action aimed at ensuring that the global system responds better to the realities and needs of national and regional research systems. This is a prerequisite for contributing effectively to the Millennium Development Goals. □