Agronomy

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Session 1: The Challenges of Agronomic Research in a Global Context

Chair:
- Jean-Pierre Tillon, Scientific Director, In-Vivo (France)

Speakers:
- Bernard Chevassus-au-Louis, National Agricultural Inspector (France)
"Rethinking the Relationship between Science and Society: an Additional Constraint or an Asset for Taking up the Challenges of agriculture and feeding the world?"
- Artur Mol, Chair and Professor in Environmental Policy, Wageningen University (Pays-Bas)
"Agricultural Research: Moving beyond Agriculture"

Discussant:
- Michel Griffon, Deputy Director, Agence nationale de la recherche (France)

Session 2: The Challenges and Responsibilities of Research Policy in Agronomy

Chair:
Bernard Hubert, Director, GIP Initiative française pour la recherche agronomique internationale (Inra-Cirad) (France)

Speakers:
- Larry Bush, Professor, Lancaster University and Michigan State University (USA)
"What Kind of Agriculture do We Want? What might Science Deliver?"
- Hans-Jörg Lutzeyer, Scientific Officer, European Commission, DG Research (EU)
"Mechanisms for European Co-ordination of Agricultural Research"

Discussant:
Marie de Lattre-Gasquet, Head of the Ethical Forum, Centre de coopération international en recherche agronomique pour le développement (France)

The Agronomy workshop presentations and debates can be summed up in four points:

1. Particular emphasis was placed on the specific context in which current debate on research in agronomy is taking place. Agriculture is one again facing a crisis on three fronts: a food crisis, an energy crisis and an environmental crisis. With the return of the spectre of scarcity, we are faced with a vision of a finite world with limited resources. In this context, there is a broad consensus on the fundamental role of research – new knowledge is required to confront current challenges and the contradictory demands being made of agricultural production. But what sorts of agriculture do we want? Differences of opinion concerning production methods (artificial methods vs. agro-ecology, the role of small farmers, etc.), consumption (the role of meat consumption and of local consumption, etc.) and the use of space and living things. Symptomatically, sustainable development in agriculture is promoted by players with opposing aims for it. These disagreements over aims fuel the debate on agronomic research.

2. Is the world of agronomic research flat? No, because it is made up of different disciplines, it is concentrated in a handful of large industrial and emerging nations, knowledge is often protected by patents and also because areas of agriculture are intrinsically extremely diverse. It is possible to put forward the theory of a break between research trends in 20th century agronomy and the picture which is currently emerging. During the 20th century, the aim was to increase production by creating a flat, artificial, standardized world, in a sense to model the world (nature, the environment and animals) on the laboratory. The "green revolution" based on disseminating several high-yielding varieties, is the best example of this. But the same model of the artificialization of production also impacted on the development of indoor rearing of livestock. At present, the challenge lies in reversing this trend and making the most of crop and ecosystem diversity. Research can (and must?) contribute to this crop and ecosystem diversity and we must therefore view research as a seedbed for new projects.

Research in agronomy therefore faces two issues, which are both epistemological and socio-political:

How can scientific knowledge (produced in laboratories according to perfectly controlled protocols) and empirical knowledge (related to experience and management of complex objects) be expressed? How can generic knowledge produced by "omics" (genomics, proteomics, transcriptomics, etc.) and local knowledge be expressed? How can the different scales of knowledge production ranging from the gene to the ecosystem, or from the tiniest plot to the climate be expressed?

This new context reframes in new terms the question of the role of farmers in

knowledge production and in the process of innovation. However it also leads us to emphasize the importance of interdisciplinary and cross-disciplinary knowledge production and integrated knowledge.

3. The relationship between science, technology and the market:

Agronomic research is a paradigm of technoscientific research. Technological creation often moves faster than the production of the scientific knowledge necessary to understand the phenomena involved. Hence the issue of the unintentional effects of technical changes and of the uncertainty to which they give rise. Hence also the need for integrated approaches which aim to enhance the resilience of systems of production by anticipating the risks in the innovation process.

Agronomic research has for a long time been situated in mode 2 of knowledge production. Historically, agronomic research has taken on the identity of a science of action, with knowledge production being strongly context-driven. Institutions set up in the late 19th century or in the course of the 20th century bear the hallmarks of this trait (Land Grant Universities in the United States, Inra in France, etc). Since the late 1970s, a new phenomenon has arisen as the research agenda has gradually been defined by private stakeholders; we can observe broad areas of research being monopolized by a few companies operating on a global scale and the widespread use of property rights.

What is the role of dialogue between science and society in a world built on vested interests and relationships based on power? The dialogue between science and society cannot be viewed in an isolated fashion, but must be incorporated into broader thinking on innovation governance and risk.

4. Finally, participants in the Agronomy workshop considered the issue of "dialogue". The first tier of questions dealt with different ways of using this notion:

- what is the focus of dialogue: should we initiate dialogue about local levels of technological applications, or should we start at a higher level with choices in knowledge production (including the most fundamental choices)?
- what are the aims of the dialogue: does it aim to restore confidence and to reach agreements on the major challenges and goals of agronomic research or to co-produce knowledge and innovation?

The aim here is not to promote one objective or the other, but to emphasize the need to clarify the political, cognitive and praxeological aspects of the dialogue between agronomic research and society.

The concept of dialogue formed the basis of a second tier of more critical discussion. Firstly, the risk of orchestrating dialogue was raised, for example undertaking large-scale public debate to delay action. On a more fundamental level, dialogue is based on the assumption of a willingness to

reach an understanding and to seek consensus. Does the actual challenge not therefore lie in reassessing the prevailing consensus and coming up with a new plan for agriculture and a new paradigm for agricultural research?

Two points of view were raised:

- it is necessary first of all to bear in mind the commitment and efforts off the stakeholders involved and of the new opportunities which they open up. Confrontational debate can provide a clearer appreciation of differing points of view and the vision of the future held by the stakeholders and to make clear what interests are at stake. They can help us to be more sensitive to visions of the future which are excluded. A willingness to engage in dialogue must not act as a means of hiding or defusing conflict;

- it is also necessary to frame dialogue firmly within a long-term optic in order to avoid building a future based on the past and to equip oneself with the means to explore futures collectively.

Finally, the limitations of dialogue viewed as communicative action in the sense posited by Habermas were mentioned. It is necessary to create the hybrid spaces required for forms of *collective experimentation* incorporating human stakeholders and objects and cooperative forms of research, bringing together the producers and users of innovation. In this respect, politics must be viewed as collective experimentation born of the recognition that radical uncertainty is a feature of scientific and technical choices. We must therefore create frameworks for action in which alternative options are explored and in which we try to retain a multiplicity of potential worlds.