

## INNOVATION CONCEPT IN AGRICULTURE

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*We live in an era of unprecedented technological advancement. So why does technical change in agriculture continue to be slow and patchy? One possible explanation is that the importance of farmers' capacity to access and use information for innovation has been overshadowed by the conventional view that change is driven primarily by new technology and farmer-led technical improvements.*

*Similarly, insufficient attention may have been given to the fact that the capacity for innovation in agriculture is influenced not only by farmers' skills and resources, but also by the wider network of links and relationships in which farmers are embedded, which help ideas to diffuse and find new uses.*

**Key words:** innovation in agriculture , agricultural innovation indicators

Agricultural science, technology, and innovation are vital to promoting rural development and poverty reduction. As agricultural innovation becomes increasingly viewed as a complex process that defies simple solutions, it has become more and more difficult to identify the types of investment and policy interventions needed to make developing-country agriculture more responsive, dynamic, and competitive.

Not all innovation is monetised and the knowledge is not necessarily the ‘sufficient condition’ to innovation: scaling-up and scaling out are also important.

Innovation in the agriculture sector is critical to achieving the necessary growth in production in an environmentally sustainable way. But change does not come easily—especially policy change.

The paper explore how knowledge, policy and practice interact during the policy-making process, with a focus on innovation systems and the agriculture sector.

The innovation can be considered like first significant commercial use of new ideas, new technologies and new ways of doing things.

Literature about innovation presents the assertion “Research converts money into knowledge and innovation converts knowledge into money” (A. Barnett).

The shift from research to innovation – from a perspective about research to a perspective of innovation – is a necessary one to move control over resources towards users of those resources. Champions of innovation are deviants – those who produced evidence that is not what the mainstream was looking for.

Most farmers still use seed varieties that are twenty years old. It is necessary much better links between researchers and users – not just discoveries, but innovations that are actually used.

## MATERIAL AND METHOD

Knowledge Management and Innovation development is essential to growth and progress in the agriculture sector; asserting that processes should be viewed from the perspective of poor rural people – in terms of power and policy dimensions (including knowledge hierarchy), and institutional/organisational goals.

We used two relevant strategies : The Knowledge Management strategy, and the Innovation strategy. The former has four pillars:

- Strengthening knowledge sharing and learning processes
- Developing a more supportive knowledge sharing and learning infrastructure
- Fostering partnerships for broader knowledge sharing and learning
- Promoting a supportive culture of knowledge sharing and learning.

The key here is good communication: among organisations and farmers; between farmers and government; across all levels of the structure.

The Innovation strategy, importantly, identifies cultural / behavioural changes needed for implementation, and also the incentives and training needed to bring these changes about. This is all with a view to ensuring cost-effectiveness, integrating resources and efforts into a time-bound results framework.

The comprehensive innovation strategies could be summarized as follows:

- 1) The innovation strategy on agricultural industries
- 2) The innovation strategy on the circulation of agricultural products
- 3) The innovation strategy on rural region development

The basic principles of rural development strategy could be summarized as follows: first, through agricultural and ecological tourism projects; second, the real income of farmers should be increased by enabling them to expand their farming businesses in link with agricultural processing and marketing as well as eco-tourism. At the same time, the rural development strategy should strengthen the rural residents' capability and contribute to the balanced development of the regions.

- 4) The innovation strategy on agricultural human resources and support system

The new paradigm of knowledge-based agriculture requires farmers who can create knowledge and utilize it to increase the value-added of agricultural products. Therefore, it is necessary to build a support system that can foster and improve human resources armed with new knowledge in the agricultural sector.

The Innovation strategy, importantly, identifies cultural / behavioural changes needed for implementation, and also the incentives and training needed to bring these changes about. This is all with a view to ensuring cost-effectiveness, integrating resources and efforts into a time-bound results framework.

While research and its impact or use is fundamental in innovation and the capacity of farmers themselves and groups to constantly innovate is vital to lasting impact on rural poverty.

The idea to promote and capitalise on innovative processes, technological innovations and promising practices has to be developed in all the regions. Once identified, innovations that may be applicable elsewhere should be analysed and disseminated, using communication tools/mechanisms that have been set up especially for that purpose, in collaboration with programmes, regional partners, and diverse actors.

## RESULTS AND DISCUSSIONS

There is three categories of innovation, each important to progress in agricultural development.

The first is *technological innovation*, usually a result of research and development work outside this region, and adapted to fit the context.

The second, *institutional or organisational innovation*, is a more internal and autonomous, and is 'accepted' and implemented by a particular group.

Third is *policy innovation*: at a higher regional or national level, this involves the identification and adoption of new legal or policy procedures, to be applied with specific groups, areas or communities.

The key message from this paper was of the importance of communication.

Concerning communication between farmers and farmers' organisations, we're constat that the fact of people not speaking to one another is a symptom of lacking innovation, not just a cause. The fostering of communication, across levels, without bias (and with appropriate incentive in organisations to reduce bias), and through newly claimed policy space, through new or adapted fora and media, was agreed to be fundamental to successful innovation in the agriculture sector.

Different actors integrate into innovation networks to achieve economies of scale and scope, reallocate labor and human capital more efficiently, reduce transactions costs, exploit complementarities, and realize synergies in the innovation process. These networks can vary from informal interactions between extension agents and farmers to promote a new plant variety to very complex contracts between public researchers and private firms to conduct research in advanced biotechnology. Thus, the innovation process resembles a complex web of related but diverse individuals and organizations, all of whom contribute something to the application of new or existing information and knowledge.

*General agricultural policies* influence the agricultural innovation system in a more indirect way than agricultural innovation policies. They include policies that create economic incentives and regimes that are fundamental to growth and development, including policies on market efficiency and infrastructure, international trade, physical infrastructure, banking and financial services, property rights, and so on. Potential indicators on general agricultural policy include measures of agricultural sector protection or taxation, the ratio of agricultural investment to agricultural subsidies, and general indicators of the investment climate, including membership in the World Trade Organization and related treaties, conventions, and regimes.

The influence of general policies on science and technology for innovation are very important because they often drive the formulation and implementation of both agricultural and agricultural innovation policies, as do general economic policies such as investment, trade, money and banking, and infrastructure development. Related to this is the quality of governance, the structure of the political system, the openness of the economy, and the nature of linkages to

international or regional organizations, conventions, and treaties. While many of these factors may not be described as directly influencing a country's agricultural innovation system, they are nonetheless indicators that are important to fully understanding a given country's agricultural innovation system.

## CONCLUSIONS

We have identified some priorities of national importance. These priorities are:

1. *Enhance human health and wellness through food, nutrition and innovative products.*

Research is required on the composition and functional properties of food at various stages along the value chain to help in developing new food products, nutraceuticals and other innovative health related products that have the potential to enhance human health and wellness.

2. *Enhance the quality of food and the safety of the food system.*

Research on food safety is required to ensure that the food is free of allergens, toxins, pathogenic bacteria, viruses and fungal parasites, and chemical residues.

3. *Enhance security and protection of the food supply.*

Enhancing scientific capacity and knowledge to detect, monitor and control various threats is essential to safeguard and protect the food production and distribution systems.

4. *Enhance economic benefits for all stakeholders.*

By expanding the horizons of agricultural research beyond improving productivity to include exploration of new production opportunities, new products, and prospects for total product utilization, the agriculture can be positioned as a key driver of the rural economies.

5. *Enhance environmental performance of the agricultural system.*

Understanding and managing the interaction between commercial agriculture and natural eco-systems is as are environmentally responsible agriculture and processing methods.

6. *Enhance understanding of the bioresources and protecting and conserving their genetic diversity*

Enhancing scientific capacity and knowledge in classification, assessment, conservation and preservation of biological resources is vital to conserve their genetic diversity and to respond to changes that impact on agriculture (farming practices, climate change, etc.).

7. *Develop new opportunities for agriculture from bioresources.*

Increased scientific capacity and knowledge is required to support the agriculture and agri-food sector in using biomass to develop new products, new uses, and new markets.

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