

Advancing Agricultural Innovation through Public-Private Partnerships



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Advancing Agricultural Innovation through

The world's farmers are challenged with growing abundant, safe and nutritious food for an increasing global population in the face of changing climate and pest pressures. To enable them to continue to produce food sustainably, they need to have broad access to appropriate innovations, as well as the knowledge and skills to make these new tools valuable on the farm.

Public-private partnerships are a key mechanism to develop and deliver a reliable stream of technology in the face of changing demands. Collaborative partnerships can effectively bridge the gap between public and private sectors' distinctive competencies in order to meet farmers' needs.

For national governments, partnerships offer a way to translate shared research outputs into useful, relevant tools for their own farmers. They can offer access to a greater variety of technology choices; they can spread and share the financial burden of research; and they can create a flexible, expert resource for capacity-building.

For the private sector, public-private partnerships have potential to increase the leverage of a deep knowledge-base. They offer a mechanism to share the costs of infrastructure and diffusion, and also an opportunity to increase the effectiveness of technologies over time. Finally, they can make individual innovations better adapted to local conditions, and in so doing enhance the quality and quantity of sectoral knowledge.

Effective partnerships can bridge public and private sector competencies and interests. When they do so, they can multiply both social and economic value. They can create faster and more resilient innovation pipelines, enable efficient technology diffusion, support continuous improvement and promote the effective and responsible application of technology.

Partnerships Share Farming Knowledge

Public and private sector institutions both possess the knowledge needed to improve global agriculture. Collaborative projects are sharing practical agricultural information and cultivation of best practice among public and private sector organisations and farmers. For example:

- Partnerships contribute to capacity building by increasing the level of education on crop and natural resource management for farmers. Private companies have been involved in the South African "Developing Agriculture Project," which trains farmers how to increase and safeguard crop yields through adapted agricultural management practices.
- CropLife International and its members have worked in many regions in partnerships with governments and NGOs to provide training on the best agricultural practices and responsible product usage. Several partnerships between NGOs have focused on integrated pest management (IPM) training and responsible product use in Latin America, Southeast Asia, and Africa. Other projects have included educating academia, public and private researchers, and government agencies on how to comply with guidelines for regulated field trials.
- Partnerships often act to directly combine expertise across borders, resulting in economies of scale and faster adaptation. The HarvestPlus Challenge Program was co-convened by the International Centre for Tropical Agriculture (CIAT) and the International Food Policy Research Institute (IFPRI) and works with more than 200 agricultural and nutrition scientists around the world, including private sector developers. The centre is currently biofortifying seven key staple crops that will have the greatest impact in alleviating micronutrient malnutrition in Asia and Africa – beans, cassava, maize, pearl millet, rice, sweet potato, and wheat.



Partnerships to build resource access and reduce risk

Shared projects between the public and private sector and government agencies can build fundamental resources so farmers can manage their production process more reliably, at less cost and lower risk. For example:

- The AATF is a not-for-profit organisation designed to facilitate and promote public-private partnerships around proprietary agricultural technologies for use by resource-poor smallholder farmers in Sub-Saharan Africa. The Foundation offers a one-stop-shop that provides expertise and know-how that facilitate the identification, access, development, delivery, and utilisation of proprietary agricultural technologies. The AATF also manages the Water Efficient Maize for Africa (WEMA) project – a partnership between African public sector institutions and several private sector companies and foundations to develop drought-tolerant African maize using conventional breeding, marker-assisted breeding, and biotechnology.
- Rural access to microfinance services is essential to farmers. In India, private companies have worked to assist some farmers to gain financial independence through the introduction of low cost credit for farmers to purchase biotech maize seed and inputs. The development of a transparent, reliable credit and distribution system has provided farmers with access to low-cost, high-yielding corn hybrids, farm inputs, and crop agronomic knowledge.

Partnerships that Prioritise Relevant Research Imperatives

Many public-private partnerships take the form of collaborative research projects, either leveraging private sector investment in public research initiatives or conducting research into local varieties and landraces.

By helping to develop local varieties of important crops, partnerships ensure farmers in these countries benefit from the technological developments which have benefited crops elsewhere. For example:

- In some cases, private sector developers donate their technology and research to local public institutions to further develop local crop varieties. In India, Bangladesh, and the Philippines, biotech brinjal (eggplant) technology was donated directly to local researchers to help develop new crop varieties that are resistant to local pests, helping speed up farmers' access to improved varieties.
- Many partnerships result directly in flexible financing arrangements. The African Agricultural Technology Fund (AATF) has worked with some of its private sector partners to negotiate licensing agreements for proprietary technologies that allow royalty-free access and sharing of these technologies in order to improve farmer access. The projects cover a broad range of crops, focusing on some of the main staple foods such as maize and rice.
- Partnerships can also bring orphan crops within the scope of research, benefiting disadvantaged communities. Researchers in the private sector teamed with the University of Bern to maintain and improve yields of tef, the most important cereal crop in Ethiopia. The collaborative project includes sharing crop improvement and laboratory techniques. Tef is grown mostly in Ethiopia, and without public-private collaboration, giving sufficient research focus for tef would have been more difficult to achieve.



- Sometimes partnerships directly target a social need. A multi-national team of private and public sector scientists is currently developing biotech bananas in Uganda with increased vitamin A, vitamin E, and iron content. Banana is a major food crop in Uganda, so successful research could dramatically improve the diets of millions of people.
- Partnerships can adapt to the particular infrastructure needs of a region. The BioCassava Plus project is focused on improving the nutritional quality of cassava, the primary source of calories for over 250 million people in Sub-Saharan Africa. Collaboration between public and private sector researchers is focused on enhancing levels of zinc, iron, protein and vitamins, as well as improving post-harvest durability – vital given the poor quality of local storage facilities.
- The Africa Biofortified Sorghum project is a public-private consortium that is developing a more nutritious and easily digestible sorghum that contains increased levels of amino acids, vitamins, iron, and zinc. The project, which relies on capacity building and research knowledge from private sector companies, could improve the health of 300 million people by increasing sorghum's nutritional quality. Sorghum is the fifth most important cereal crop, and the main dietary staple for more than 500 million people across the developing world.
- Brazil's public agricultural research corporation Embrapa, which is linked to the Ministry of Agriculture, has worked with private sector companies that have supplied genetic information used in the development of an herbicide-tolerant biotech soybean that meets local growers' specific needs.
- There are numerous rice improvement programmes involving public and private sector researchers – from improving the nutritional content of rice, to conferring resistance to diseases and pests.

The private sector has been a major contributor to agricultural research and development, funded through returns based on innovative products that brought value to the public and for which intellectual property rights provided a reasonable market opportunity.

For improvements of local varieties to continue to meet growing challenges, there is an acute need for increased funding – both public and private – in agricultural research, and to leverage that funding through deeper and broader collaborations between the public and private sectors and research communities. Equally important to enabling collaborative projects and to supporting the introduction of technology is the need for scientific capacity, regulatory frameworks, social and research infrastructures, and effective legal frameworks and institutions.

The public and private sectors play different roles and have different abilities to bring to bear in the continuous cycle of improvement and innovation that is needed to ensure food security.

In the context of competing priorities and significant demands on governments to meet different goals, public-private partnerships create a means to build on the complementary capacities of each sector.

Food security requires ongoing and continuous improvements to the tools and techniques available to farmers. This involves not only the development of new technologies but their adaptation and diffusion to local needs and conditions and their effective use by skilled and well-informed farmers. Neither the private nor the public sector can achieve these aims alone.



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