

## INNOVATION IN AGRICULTURE: AN IMPORTANT TOOL FOR TACKLING POVERTY

### EDITORIAL

By 2050, there will be over nine billion people on the planet, two million more than today – and the population is growing fastest in poor countries. By then, food production will have to increase by 70% to meet the global demand. Meanwhile, arable land, grazing areas and water resources are deteriorating and becoming scarcer. As a consequence an enormous increase in productivity is required, while safeguarding the environment and biodiversity for future generations. This is a precarious situation and a mammoth undertaking.

Key to meeting this challenge is intelligent agricultural research geared towards the needs of smallholder farmers in developing countries. This means linking the grass-roots knowledge of farmers with clever advisory systems which are not purely technology-oriented.

At first glance, one does not expect to find Switzerland at the forefront of cutting edge innovation to increase global food security. But look a little closer and Switzerland turns out to be a prominent driver of research and advisory systems that are relevant to food security in developing countries. Few people know that SDC invests a good 12% – over CHF 30 million – of its agricultural budget into agricultural research, supports well-known Swiss research partners and promotes globally recognised knowledge platforms for innovative agricultural advice, e.g. the Global Forum for Rural Advisory Services GFRAS, which is based in Switzerland. What forms of research and innovation are particularly effective? To what extent do research findings benefit smallholder farming families and people fighting poverty? Read on to find out!

Christoph Graf,  
ad interim head of Global Cooperation



This variety of iron-rich millet known as Dhanshakti was introduced in the state of Maharashtra in India by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), a member of CGIAR.

### RURAL ADVISORY SERVICES ARE AN ASSET FOR DEVELOPMENT

If the goal to eradicate extreme poverty is to be achieved, a major investment in agricultural innovation will be required. This view is widely shared nowadays, especially since three quarters of the world's poor people live in rural areas. Forecasts indicate that 70% more food must be produced and made accessible by 2050 to meet the growing demand.

The tools of this innovation are being put in place. One thing is certain: innovation can only be achieved through interaction and cooperation, with a view to developing an agricultural system that must involve both results-oriented research and the dissemination of these results in an increasingly complex world.

Not long ago, the chain that led from the laboratory to the farmer's field was considered linear and simple if not always efficient. At that time agricultural research institutes worked independently, each confined within its own mandate, according to primarily scientific and academic criteria. Research is now going through a revolution with the aim of placing the end-user at the centre of its activities (see article on page 3).

### From extension to rural advisory services

Innovation can occur at all stages of agricultural activity as a result of the interaction between different actors, for instance at the research stage or between farmers themselves, or among the wide network of players in-between that have come to be known as rural advisory services. The latter cover areas linked to cultivation and livestock-raising as well as information about the markets, access to financing, or partnerships with the private sector, to mention just a few. It is in the shared interests of all of these to work on

productivity, build up knowledge and increase the earnings of small farmers.

These changing intermediaries are also going through a process of adapting to the world as it is today. Developed during the period from the 1960s to the 1980s, this public service was then generally referred to as “extension” and often focused on providing exclusively technical advice. For example, research was done to improve a type of potato, an irrigation system or breed of cow. This is no longer the case. The context has become much more complex with regard to food security, the environment and market access. Knowledge is no longer considered to be located in a single place but crystallises through the contribution of an entire network. Furthermore, access and adaptation to new findings and technologies require new capacities. Finally, access for women to the means of production, land and markets has become a central issue for many donors, including the Swiss Agency for Development and Cooperation (SDC).

In the 1990s, support for farmers was neglected both by many governments in developing countries and by donors. “We invested heavily in agriculture in the 70s and 80s, then the focus of attention went elsewhere”, explained Garry Smith of the United Nations Food and Agriculture Organisation (FAO). According to Florence Lasbennes, member of the UN task force on food security, “the market was supposed to regulate everything. The countries concerned and the donors were more interested in urban issues and industrialisation”.

Switzerland, however, has never neglected rural development. This may explain its current role at the international level in supporting agricultural research and rural advisory services. The SDC has made it a specific theme of its Global Programme Food Security. Its target public is made up of 450 million smallholder farmers in developing countries who own at most one hectare of land.

#### **Stakeholders from very different horizons**

The concept of rural advisory services today covers many actors and activities which interact with each other and find new ways of working. It involves partners, from development and cooperation, civil society, individual consultants, companies etc. At the regional level, today there are now dynamic networks such as the Afri-



**The Badam Bagh National Seed Laboratory in Kabul, Afghanistan.**

can Forum for Agricultural Advisory Services, and at the local level state agencies (often with very limited financial means and expertise), farmers’ organisations, NGOs, merchants... to mention just a few. “The challenge is to link up actors that have structurally very different horizons,” as Pierre-André Cordey, SDC programme officer, explains.

The Global Forum for Rural Advisory Services (GFRAS), established in 2010, is the mainstay and principal platform active in the promotion and organisation of advisory services at the global level. Its history recounts the re-emergence of the theme and the importance that Switzerland attaches to it. The forum was created from an informal group known as the Neuchâtel Initiative in 1995 as a reaction to the accepted linear approach - the only approach existing at the time - which dominated the agricultural extension services in developing countries. Initially composed of European experts active at the international level, the group opened up in 2008 to become the GFRAS in 2010 with the support of the SDC, the Bill and Melinda Gates Foundation, and the European Union. The Global Forum is based at Agridea in Switzerland, a long-time partner of the Neuchâtel Initiative. Today, the approaches and the message of GFRAS resonate even within multilateral organisations such as the World Bank, the FAO or the global partnership for international agricultural research (CGIAR).

#### **Information in twenty-two languages**

Rural advisory services cannot justify their existence without what is known as “going the last mile”, which means working directly with the small producers. These actors – national extension platforms, NGOs, cooperation agencies, private operators and others – must also adapt to a world in flux that is made up of networks with regard to knowledge (seed, cultivation methods, financial services) and less tangible resources such as organisation, management or market access. The mobile phone, for example, has become a tool of choice (veterinary networks, information about markets, micro-finance), but the rural advisory services do not have to be sophisticated to be efficient. When the organisation Access Agriculture (which is supported by Switzerland) published online the tutorial videos produced by its partners, it noted that their impact on the change in practices was bigger than traditional training methods. The user can learn first-hand from other producers or local advisers about rice production chain, from the family farm to market access, or why it is good to alternate rows of cowpea (a type of bean) with sorghum or millet... and this in twenty two languages. Their videos can also be used to teach new teams of video-makers. Furthermore, experience shows that a film shot in Bangladesh can be perfectly well adapted for use in Nigeria, if the problem it is addressing is similar.



### THREE QUESTIONS TO...



**Dr Hans Rudolf Herren**, one of the world's leading scientists in biological pest control. He has lived and conducted research in Africa

for over 25 years. He is the president of Biovision, a foundation for ecological development, and of the Millennium Institute in Washington DC. He is laureate of the Alternative Nobel Prize 2013 and the World Food Prize 1995.

**Do local governments and donors pay as much attention as they should to the needs of smallholder farmers, including women, in developing countries?**

They do more than in the past, but not enough. There is still too much talk and not enough action. Governments should invest more in research and rural advisory services, specifically addressing small-

holders and women farmers. Donors should work more closely with governments and pool resources rather than work on their "own" projects. There is a need to create more synergies across agriculture and food systems.

**"Research for development" is going through an important reform process, mainly within CGIAR. Can you comment on this process?**

Until CGIAR officially accepts the conclusions of the IAASTD<sup>1</sup> (International Assessment of Agricultural Knowledge, Science and Technology for Development), there is little hope that it will take a new course of action, despite the CGIAR research programmes. And until CGIAR has a system-wide agro-ecology or organic agriculture programme, it cannot be taken seriously as a partner for the transformation of agriculture and food systems as demanded by the Rio+20 conference. The approach taken to date is too narrow and lacks solid analysis of key issues (they could use the

IAASTD report as a starting point), and it is not systemic or long-term enough.

**Rural advisory services include a range of many different actors such as states, NGOs, the private sector, experts... Their interests are sometimes convergent, sometimes divergent. How to make them work together?**

The services should be pulled together; as it is, they become a burden and are confusing for farmers. There are too many (often contradictory) messages. They need to be coordinated by government, linked to the national agricultural research system and geared at helping farmers solve their problems with sustainable, affordable and realistic solutions, while feeding difficult issues back into research. But that research needs to be looking for sustainable solutions!

<sup>1</sup> Study linking agriculture to development including various aspects such as environmental sustainability and the characteristics of different contexts

### THE REORIENTATION OF AGRICULTURAL RESEARCH

When rice farmers in the province of An Giang, in Vietnam, do their accounts, they quickly see that by reducing the quantities of nitrogen, pesticides and water, and by using certified seed, but less of it, and protecting their harvests from rot and pests, they considerably increase their revenues. These measures are part of a programme implemented by the International Rice Research Institute (IRRI) within the framework of the Irrigated Rice Research Consortium in Southeast Asia. The aim is to improve productivity while preserving natural resources and the environment as much as possible.

An impact study on this programme in four of the countries concerned (Vietnam, Bangladesh, Indonesia, the Philippines) published in June 2013 showed that an investment of USD 12 million into rice research produced a six-fold return. By 2016 the return on investment is expected to be 25 times. This is the first time that the impact of these new cultivation methods has been measured to this extent.

This news has found a more-than-attentive ear in Switzerland (principal donor of

funds to this IRRI programme) because the study in question was supported by the Global Programme Food Security of the Swiss Agency for Development and Cooperation (SDC). For Carmen Thoenissen, programme officer, "this result confirms that the emphasis placed on food security by the SDC and the research done by IRRI on increasing productivity through better management of natural resources in rice fields are efficient".

This and other examples, which orient technological innovation closely to users' needs, show the global partnership for international agricultural research (CGIAR) to which IRRI belongs the path to take for a food-secure world. CGIAR comprises an international network of research institutes which is currently in the process of restructuring to ensure that the results of their research contribute tangibly to improving food security and that the research institutes collaborate closely with rural advisory services and farmers' associations, as the donors request. Switzerland, which is a founding member of the network, contributes almost CHF 25 million each year.

Founded in 1971, CGIAR is today the principal international instrument of agricultural research with 15 specialised institutes that employ more than 8,500

scientists, researchers and technicians around the world. It works with national and regional institutes and NGOs, and in partnership with a wide network of national and multilateral donors.

In the past the research centres had become used to working independently in accordance with their own criteria, at times far from the needs of the final beneficiaries of their research, the farmers. Hence the current far-reaching reform that aims at ensuring that the centres conduct their agricultural research for development a systemic rather than compartmentalised way. The overall aim: a measurable increase in CGIAR's contributions to agricultural research for development.

"The SDC is involved in reforming CGIAR to make it more responsive to the needs of smallholder farmers in developing countries," explains Pierre-André Cordey, programme officer with the SDC's Global Programme Food Security. "Agricultural research for development must contribute to improving food security and produce results that translate – through concrete use, such as commercialisation and implementation – to the measurable improvement of the agricultural system in terms of quality, productivity, durability and stability".

## KEY POINTS

- 1 According to UN estimates, agricultural production and access to food will need to increase by 70% by 2050 if we are to eradicate extreme poverty. This is going to need a huge amount of innovation in research and rural advisory services for smallholder farmers.
- 2 There are fifteen international centres – members of the CGIAR Consortium – dedicated to agricultural research worldwide. Reform is needed within CGIAR to better gear innovations in technology and science toward their intended beneficiaries: farmers in developing countries.
- 3 The support provided to farmers in developing countries was originally purely centred on technical advice. To keep pace with an increasingly complex world, this form of extension service, which has gradually been abandoned since the 1990s, has been replaced by more inclusive advisory services. Rural advisory services involve many partners at the global, regional and local levels to get them to collaborate more effectively, and work with agricultural research in a more systemic – instead of linear – approach.
- 4 Rural advisory services bring together actors from a range of sectors, including national public services, individual experts, the private sector, civil society and international cooperation. They also include rural communities, giving them the opportunity to share their experiences and to express their needs.
- 5 Innovation is born from the interaction of multiple stakeholders at all stages of agricultural activity, from research to practical applications. This interaction leads to the inclusion of questions of market access, gender equality and financing, and makes use of new information technologies.



**Training and discussion meeting on fishing organised by Aquatic Agricultural Systems in Bangladesh.**

## INNOVATIVE PROJECTS

(under [www.deza.admin.ch](http://www.deza.admin.ch), Projects)

### Mobile phones for smallholder farmers

Smallholder farmers suffer from a lack of access to agricultural expertise and financial services. Providing advisory services via a mobile phone benefits a large number of farmers, even in remote areas.

### More rice with less water

One technique of rice production which reduces water consumption by up to 30% has been developed by the Irrigated Rice Research Consortium (IRRC) within the framework of an international partnership between actors in China, the Philippines and Bangladesh. Financed by the SDC since 1997, the consortium facilitates cross-learning between countries and the dissemination of new methods of rice production in Asia.

### Clinics and plant “doctors”

With the support of the SDC, Plantwise aims to create by 2016 a network of 1,000 plant clinics in 40 countries. They are to be located in villages and will provide practical advice to smallholder farmers. Plant clinics, linked to a global online database, will enable farmers and rural communities to better anticipate and fight diseases and pests that affect their crops.

## IMPRINT

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This publication is also available in German and French