

Syngenta Foundation for Sustainable Agriculture



Review 2009-2010



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Partnerships point the way forward

Letter from the Chairman and Executive Director

In 2009 and 2010, the Syngenta Foundation has considerably increased its activities' range and reach. This Review concentrates on the newer areas, but also charts our further progress with established projects and thrusts. Common to them all is the theme of partnership.

The Syngenta Foundation for Sustainable Agriculture focuses on small-scale farmers and the services, agricultural technology and links to markets with which they can improve their production and livelihoods. The Foundation's overarching goals are food security for all, sustainability, and agricultural transformation that helps close the gap between rural and urban incomes.

Achieving these goals requires 'enablers' of many kinds, usually only made possible by partnerships. The aim is to use complementary assets to maximum advantage; the challenge lies in alignment. Partners must agree objectives, roles, responsibilities and incentives. They also need jointly to protect and benefit from intellectual property, and work towards a unified vision of enhanced farm productivity. Considerable efforts are required here across both the private / public and for-profit / not-for-profit areas of agricultural R&D, as well as in the development of markets in which farmers act as buyers and sellers.

Public investment in productivity-enhancing agricultural R&D has been declining for some time in most of the world outside China. Private investments and capability, on the other hand, continue to grow. These trends open up the need and opportunities for partnerships in R&D that pool public and private assets to the benefit of farmers. The public sector provides strength in crop improvement; private organizations contribute expertise in plant sciences, genomics, bioinformatics and the marketing and delivery of products and services.

The Syngenta Foundation aims to deliver value to 'pre-commercial' farmers in developing countries and emerging markets. To do so, it builds and brokers novel partnerships between public and private organizations, for example in crop improvement and the development of smallholder-relevant traits. Other Foundation partnerships open farmers' access to markets for inputs and outputs.

Markets are essential conduits for bringing value to producers and consumers, but often do not materialize spontaneously. Catalytic action by non-profit organizations such as the Foundation can bring markets into existence. One example is our index insurance product in Kenya, described in this Review. Piloted last year in cooperation with commercial partners, it has already been bought by some 11,000 farmers in 2010. The insurance's creation and rapid uptake have only been possible thanks to the Foundation's catalytic lead.

Partnerships remain critical to R&D and the development of markets for the benefit of farmers. The Syngenta Foundation has repeatedly shown its commitment and ability to engage in new partnerships and develop them successfully. We shall continue to do so as we move towards our tenth anniversary in 2011.



Martin Taylor



Marco Ferroni

Martin Taylor
Chairman of the Foundation Board

A handwritten signature in blue ink that reads "Martin Taylor".

Marco Ferroni
Executive Director

A handwritten signature in blue ink that reads "Marco Ferroni".

Improving smallholders' livelihoods

The Syngenta Foundation for Sustainable Agriculture

Our mission is to make a difference for smallholders in developing and 'emerging market' countries. By helping the farmers become more professional growers, we want to achieve added value for rural communities and improve food security in sustainable ways. Services, technical innovation and market access play crucial roles.

Smallholders produce part of their own food needs, and a surplus that helps feed their countries and supply international markets. With the right kinds of agricultural technologies and supporting services such as extension, credit and microinsurance, smallholders could increase their production significantly and sustainably. In the process they would improve their own food security and that of their communities and countries. 'Inclusive' agricultural growth would be promoted, the fundamental basis for equitable economic development.

The Syngenta Foundation focuses on productivity and the inclusion of farmers in remunerative value chains. The focus is on 'pre-commercial' farmers, often in semi-arid areas, who display potential for agricultural growth. The Foundation runs projects in Africa, Asia and Latin America, and contributes to the agricultural policy debate worldwide. It works with a wide range of partners operationally and in thought leadership. The Foundation engages, for example, the public sector, international organizations, think tanks, the private sector, other foundations, social entrepreneurs and NGOs.

The Foundation invests in sustainable improvements in farm yields, and helps small farmers earn income from their produce. The productivity of primary production factors such as labor, land and water is a major concern, as is total factor productivity. Investments in plant science and product delivery systems (such as strengthened national seed industries) underpin the productivity goal. So do credit systems, index insurance and market links for grains, pulses and high-value products and crops.

Projects on the ground that focus on agricultural extension are complemented by a portfolio of partnerships in advanced crop science. The Foundation additionally works to create 'enabling conditions' in the form of improved regulatory frameworks, stewardship capacity, financial and risk transfer tools, biodiversity conservation, and land improvement funded by carbon finance. It also conducts policy studies and outreach in a growing range of domains.

The Syngenta Foundation for Sustainable Agriculture is a non-profit organization established by Syngenta under Swiss law. The Foundation can access the company's expertise, but is legally independent and has its own Board.



Little farms, huge importance

Smallholders form one-third of the world's population

Large-scale 'industrialized' agriculture plays a central role in feeding the world. But global food security also depends heavily on smallholders, and will continue to do so for many years to come.

There are approximately 450 million small farm units (up to two hectares) in non-OECD countries. Assuming an average household of five, about one-third of the world's population depends on small-scale farming for at least part of its livelihood. Smallholders produce a large share of the food consumed in developing and emerging market countries. Their ability to earn incomes from farming and in turn pay for inputs, consumer goods and, for example, education, also affects general development prospects and the nature of economic transformation.



Farm size in selected developing countries (Source: World Census of Agriculture, FAO)

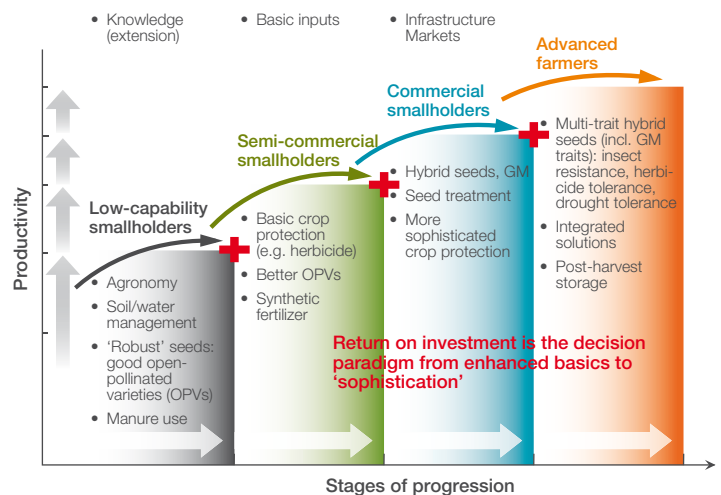
In general, Asian countries have a very high percentage of small farms (e.g. 98% in China). In Africa, farm size varies considerably between countries (see upper graph). Latin America typically has a lower percentage of farms under two hectares (e.g. 20% in Brazil). In rapidly growing areas such as China, Indonesia, Thailand and Malaysia, there may be significant farm consolidation by 2020. However, farm size in much of South Asia and parts of Africa is forecast to decline for at least a generation to come. Raising productivity and incomes therefore remains crucial for rural livelihoods.

In the long run, farm size may rise as people migrate to cities, the markets for land rentals and sales develop, and consolidation takes hold. Over the past few decades, however, farm size has declined in many countries. In India, for example, average land holdings fell from 2.3 ha to 1.06 ha between 1970 and 2002. This implies that the number of smallholders is increasing. 86% of Indian land holdings are now less than 2 ha; smallholders there farm an average of around 0.4 ha. Many factors have contributed to this trend. They include rural population growth, inheritance practices and land-leasing systems. Another major factor is the lack of off-farm employment for smallholders, who typically have limited professional skills.

The size of family plots is, however, not the key restriction on overall farm capability. In fact, there is usually an inverse relationship between farm size and land productivity in labor-abundant developing countries: small farms often produce more, per hectare and year, than large ones. An estimated 40% of small farms (180 million) run commercial operations.

The remaining 270 million 'pre-commercial' farms in developing and emerging countries, however, only achieve low yields and profitability. Key barriers to raising productivity include limited knowledge, tools and opportunities. The Foundation and its project partners seek to tackle these limitations, for example by improving access to extension services and linking farmers to input and output markets. Smallholders can progress towards more productive levels of farming, by using more sophisticated agricultural inputs in line with their farm capability (see lower graph). The Syngenta Foundation is convinced that suitable public-private partnerships can make this 'additive progression' become reality for huge numbers of farmers.

Bringing technology to the farmer



Teamwork to achieve many goals



The Foundation builds Public-Private Partnerships worldwide

Public-private partnerships (PPPs) are essential for advancing agriculture to meet global challenges in food security. They help widen access to technology and link farmers to markets. By combining strengths, the partners can all make better progress than on their own. The Foundation is involved in a wide range of such partnerships.

PPPs can take many forms, and have a wide range of goals. In 2009, the Syngenta Foundation hosted a workshop in Zürich, Switzerland, to examine PPPs in agricultural R&D. The workshop brought together members of the CGIAR* Private Sector Committee, the Centers' Deputy Directors General in charge of research, and representatives of the private sector, academia, NGOs and donors. The participants discussed principles of how to craft R&D collaborations. Key topics included product stewardship and liability, as well as intellectual property.

The Foundation continues to develop new PPPs, with the aim of providing solutions along the entire agricultural value chain. For example, we have recently initiated partnerships to improve disease resistance in wheat and enhance nutritional content in corn (see page 8). In these partnerships, Syngenta scientists in France and the USA work directly with colleagues at CIMMYT** in Mexico. They will make their data available to researchers in the public and private sectors.

Cooperation in practice

Partnerships also form the basis of the Foundation's extension projects in many parts of the world. Our program in India provides several good examples (see page 12). There, thousands of smallholders have already benefited from improved access to knowledge and technology, delivered through diversified extension strategies. The PPPs providing advisory services involve the government, universities, NGOs and commercial partners. The spread of knowledge is achieved through farmer workshops, village-level interactions and technology demonstrations in farmers' own fields. Major scale-up of these projects is now underway.

PPPs cover a wide range of topics. As well as R&D or extension services, the Foundation's partnerships also include an index insurance initiative in Kenya (see page 10). This aims to develop agricultural micro-insurance that will help smallholders mitigate weather risks, thereby enabling them to invest in fertilizer and other productivity-enhancing inputs. This PPP is moving from the pilot stage in 2009 to scale-up in 2010. A further crucial focus of PPPs is improved smallholder access to markets for their produce. A recent addition to our partnership portfolio aims to establish an integrated supply chain for high-quality vegetables in the Peruvian Andes (see page 11). The partners here include an NGO and Arcos Dorados, who run McDonald's operations in Latin America.

Successful agricultural PPPs should all lead to 'win-win situations' that benefit farmers. Many key lessons are emerging from the Syngenta Foundation's work in this area. Among them are the importance of due diligence to bring together the right partners, create complementary incentives, agree on the terms and conditions, and lay down clear responsibilities. The Foundation will continue to build on its experience in this area in 2010 and beyond.

*Consultative Group on International Agricultural Research

**Centro Internacional de Mejoramiento de Maíz y Trigo (International Maize and Wheat Improvement Center).

“Scale-up is vital – and we are proving it’s possible”

Knowledge, Tools and Opportunities

The Syngenta Foundation concentrates its work in three areas: Knowledge, Tools and Opportunities. What progress has the Foundation made so far, and how does Executive Director Marco Ferroni see future developments?

Worldwide, there are many organizations working to improve smallholders’ livelihoods and the supply of agricultural commodities and food. What is the Syngenta Foundation’s particular contribution in the field of ‘Knowledge’?

Marco Ferroni: We help provide scalable, privately-led solutions firmly grounded in agronomic expertise, business skills and links to R&D. Knowledge is one of the key limiting factors in farming. This motivates the Foundation to invest in agricultural extension.

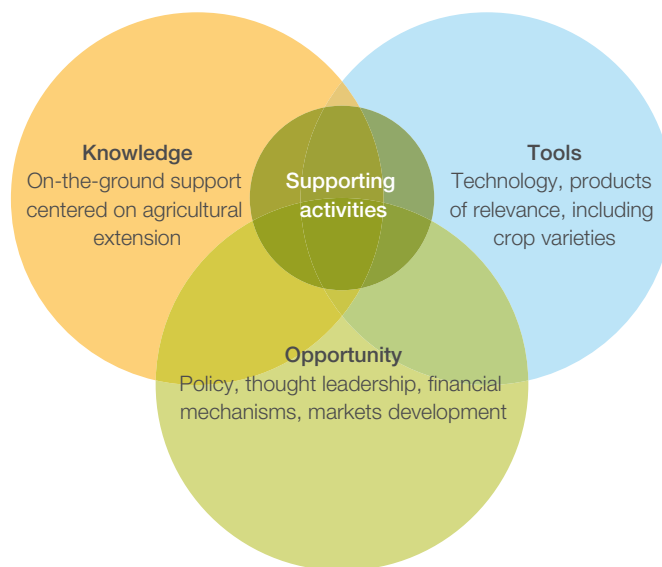
‘Scalable’ small projects sound fine in theory. How feasible is scale-up in practice?

It is essential that we scale projects up to reach more farmers. I see three levels: proof of concept, scaling-up by working with more partners, such as like-minded NGOs and other stakeholders, in order to expand reach, and scaling-up by influencing public policy.

Our program in India (see page 12) provides an example of what is possible. We are preparing the ground there for broad delivery of extension services through NGOs, distributors and input dealers. After four years’ work we had reached some 7000 farmers by the end of 2008. By late 2009 this number had surged to 30,000. We intend to double this by the end of 2010. Growth comes through extending partnerships. In addition, in February 2009 we were a contributor to the National Seminar on Agriculture Extension in New Delhi, which attracted policy-makers and practitioners alike. Beyond India, we are starting extension programs in two other Asian countries, and are working to build up the program in Africa further.

What is your main focus in the ‘Tools’ area?

Our goal is to broker technology partnerships and generate the solutions that smallholders need most. The Ug99 agreement with CIMMYT (see page 8) is one example. Molecular breeding offers significant opportunities for partnerships between the public and private sectors. Few organizations are better placed than the Syngenta Foundation to bring the two together. Our biggest challenge is to address deficiencies in the route to market for research outputs. Accelerating their availability to farmers is one of our main thrusts for 2010 and 2011.



Where do you see the most ‘Opportunities’ for smallholders?

Our goal is to improve the ‘enabling conditions’ and the institutional environment under which farmers operate. Over the last 18 months we have made considerable progress in a number of projects in this field. In Africa, for example, these include establishing agricultural index insurance and building up biosafety management capacity (see page 9). Index insurance is an example of a service that enables farmers to operate more freely, by being able to shed some of their aversion to risk and buy the modern inputs that they so badly need. The plan for 2010 and beyond is to consolidate this and other projects, and extend their benefits to ever larger numbers of resource-poor small farmers.

More robust crops and healthier food



Technology partnerships in agricultural R&D

Wheat rust resistance research

Wheat is the world's third most important food crop. Ug99 stem rust causes devastating damage to harvests. In August 2009, the Syngenta Foundation announced a two-year public-private partnership to develop wheat resistant to this fungal disease. Partnering with the Foundation are the International Maize and Wheat Improvement Center (CIMMYT) and the company Syngenta.

The project combines the strengths of CIMMYT's extensive field research with Syngenta expertise in plant profiling. The partners aim to develop a genetic map of wheat stem rust resistance, leading to the development of new wheat varieties. The results will contribute directly to the Borlaug Global Rust Initiative's worldwide efforts to combat stem rust.

The Syngenta Foundation brokered this important collaboration, acting as a catalyst of much-needed public-private partnerships for agricultural development. The Foundation is also providing project funding.

Caused by the fungus *Puccinia graminis*, Ug99 stem rust first emerged in Uganda in 1999. It is currently spreading across Africa, Asia and the Middle East, and threatens to affect other areas as well. Wheat is crucial for global food security, but investments in wheat technology lag far behind those for other cereals. Yields need to rise by about 1.6 percent every year to meet estimated global demand in 2020. Developing wheat resistant to Ug99 will play a crucial role in meeting that requirement.

Micronutrients in staple diets

Millions of people in developing countries suffer from micronutrient malnutrition. This leads to health problems and loss of life. The primary cause is poor-quality diet low in minerals and vitamins. Most of the malnourished cannot afford micronutrient-rich foods like meat, and cannot themselves grow the necessary produce such as vegetables.

The Syngenta Foundation supports the HarvestPlus Challenge Program to improve global nutrition. The partners aim to make available staple food crops rich in important nutrients. A CGIAR initiative, HarvestPlus is an interdisciplinary global alliance of research institutions and implementing agencies.

HarvestPlus focuses on improving the nutritional value of staple foods that poor people already eat. This 'biofortification' uses conventional breeding to develop crops richer in appropriate minerals and vitamins. The aim is to deliver micronutrients cost-effectively and sustainably to malnourished populations, especially in rural areas.

The program began in 2004 and runs until 2019. Work includes developing plant breeding tools, crossing and testing crop lines for nutritional effects, disseminating new varieties, and measuring their effectiveness in improving malnutrition. In 2009, after five years' research, the program entered the development phase. This focuses on iron, zinc and provitamin A in six crops across eight Asian and African countries.

As the new phase began, the Syngenta Foundation joined the program's international supporters. These include the Bill and Melinda Gates Foundation, USAID, the World Bank and the UK's Department for International Development.

Helping Africa manage a crucial technology

Stewardship requires expertise

Biotechnology offers unique potential for crop improvement. Delivering its benefits, however, requires a sustained commitment to stewardship. The new SABIMA project addresses this challenge in Africa. The Syngenta Foundation provides extensive knowledge, and access to its network of experts.

Agricultural biotechnology has made major advances since the mid-1990s. Farmers now harvest genetically modified crops on more than 130 million hectares, almost one-tenth of the world's agricultural area.

Genetic modification (GM) of crops can potentially solve some major problems faced by resource-poor farmers. These include yield loss, water deficiency and nutritional inadequacy. These problems are difficult to tackle through conventional breeding. However, delivering benefits using GM requires a sustained commitment to stewardship, right through from the laboratory via farms to households. Stewardship addresses environmental and safety questions, and ensures regulatory compliance and transparency. It is also vital for the confidence of consumers, governments and other stakeholders.

Sub-Saharan Africa currently has more than 20 GM traits in research, and the scope of biotechnology programs continues to increase. More countries are now implementing the corresponding regulatory and legal frameworks. The region's public sector, however, has only limited experience with stewardship best practice.

Focus on six countries

The SABIMA project is dedicated to strengthening Sub-Saharan Africa's capacity for **Safe Biotechnology Management**. Led by the Forum for Agricultural Research in Africa (FARA), the project began in 2009. It is the continent's first capacity-building program specifically for agricultural biotechnology stewardship. SABIMA concentrates on developing and implementing best practice in Ghana, Nigeria, Burkina Faso, Kenya, Uganda and Malawi. All six countries are either running GM research projects, already commercializing GM products, or expect to do so in 2010.

Worldwide, much of the experience with safe management and commercialization of GM traits sits in the private sector. The Syngenta Foundation is helping SABIMA to develop stewardship management as a core competency to improve African food security. The Foundation provides knowledge and experience, as well as access to its network of expert advisors in the private and public sectors. They assist with awareness-building, training and implementation of best practice in African public R&D organizations.

Over the past year, SABIMA has created and disseminated its stewardship policy, and established a network of stewardship focal points. The program has also run its first training modules, on which it will build further this year. Additional goals for 2010 include publication of a comprehensive biotechnology status report for each country and the completion of national audits.



How cell phones help beat drought

The Agriculture Index Insurance Initiative

A Syngenta Foundation program in Kenya uses mobile phones and weather stations to offer farmers affordable insurance. The initiative's coordinator Rose Goslinga explains.

Why is the Syngenta Foundation involved in insurance?

Rose Goslinga: One of the many brakes on agriculture in developing countries is smallholders' unwillingness to invest in better seed and fertilizer. In Kenya, only half the farmers buy improved seed or other inputs. Many use poor-quality seed from previous harvests. This is understandable, because drought or flooding can easily destroy their crops and wipe out the benefits of purchased inputs such as seed. The result, however, is that yields remain far below their potential. To overcome this problem, the Syngenta Foundation launched the Agriculture Index Insurance Initiative in 2008. Its aim is to explore and develop the potential of microinsurance for smallholders.

How does the initiative work?

We believe that insurance should be simple, affordable and relevant to small farmers. We have branded the scheme Kilimo Salama, 'safe farming' in Kiswahili. Smallholders can insure selected farm inputs at their local retailer and pay half the premium. The stockist registers the farmers using a camera-phone to scan a bar code on each input sold. A text message confirming the policy instantly goes to the farmer's cell phone. To make the insurance affordable, Kilimo Salama's agribusiness partners pay the other half of the premium. In the 2009 pilot phase those were Syngenta East Africa Limited and the fertilizer company MEA. We expect to add more agribusiness partners and insured products as we move forward.

To monitor the insurance, the Syngenta Foundation has set up automated weather stations. If a station reports that local rainfall has been insufficient, farmers in the affected area receive a payout. This operates via a money transfer service run by Kilimo Salama's telecommunications partner Safaricom.

What has been the main challenge?

Kenyan farmers often mistrust insurance. This is illustrated by the quotes from farmers in our first pilot in central Kenya (see box). Despite their initial scepticism, however, they have become real ambassadors for Kilimo Salama, encouraging their neighbors and relatives to participate.

How has the initiative developed so far, and what are your plans for the future?

In the pilot phase we insured 200 corn farmers. 2009 brought Kenya's worst drought in decades. Smallholders immediately

experienced the benefits of insurance as they received compensation. This was a new experience, and greatly helped reduce mistrust.

In 2010, we have expanded the project across five regions. We keep transaction costs to a minimum by avoiding harvest surveys and paperwork. That makes insurance against drought, the biggest threat to farming, truly affordable. So far, 11,000 small corn farmers have chosen to insure their inputs against drought and excess rain. The plan is now to expand into Eastern Kenya in 2011, and to reach all the key farming areas by 2012. Our longer-term aim is to offer insurance to much larger numbers of farmers.



"Insurance people are normally fake": farmers, doubts and trust

Comments from farmers in the first pilot phase of Kilimo Salama, 2009; drought that year in Kenya led to an insurance payout.

"Through training, I understood the benefit of covering my crop against drought. At the same time I thought that you were brokers and liars. Yet I got a refund of my investment. I believe you now and will tell others about you." *Charles Murithi*

"I tried it out. When the crop failed I did not know whether the insurance would really pay. Now I decided that I will try it again." *Veronica Njeri Karwigi*

"This insurance is benefiting us farmers. I had faith we would be paid, although we had never been promised something like this. I was happy after the payout; the project should have come earlier." *Justus Muriithi*

"I took the insurance because of the benefit of compensation after crop failure. We are used to being lied to and I know that insurance people are normally fake. Now my friend told me that my insurance is better than his car insurance." *Charity N. Kinyua*

Vegetables and value at 10,000 feet

Linking smallholders to local markets

The Qori Chakra project aims to integrate Peruvian smallholders into the value chain supplying local restaurants and hotels. It focuses on high-quality vegetables for McDonald's in the high Andean city of Cusco.

This is a pilot project in the critical area of linking farmers to markets in a sophisticated and demanding value chain.

Qori Chakra is designed to improve livelihoods in the two villages of Qorimarca and Sequeracay. The inhabitants currently live in conditions of extreme poverty. However, both communities have potential for development. They have good land available for agricultural use, and access to clean water. Strong local leadership and commitment to entrepreneurial activities will further help the communities to tap into Cusco's buying-power. In addition to its own population of 300,000 as a source of demand, Cusco is a popular tourist destination en route to famous Inca sites such as Machu Picchu.

'Chakra' is the local word for farm. Begun in 2010, Qori Chakra will provide two years of capacity-building and training. These should enable the smallholders to satisfy the rigorous quality protocols for McDonald's suppliers. In the past, local production has not met these standards, and restaurant vegetables have arrived by air from Lima.

Qori Chakra represents an innovative partnership between private and public organizations to help smallholders access high-value markets. The project is financed by the Syngenta Foundation and by Arcos Dorados, who run McDonald's operations in Latin America. Local implementation is the responsibility of Intercooperation, a non-profit organization engaged in development and international cooperation. Intercooperation has extensive experience in Peru and across Latin America.



Extending the productivity of thousands

India: new knowledge and inputs transform livelihoods

In its first four years, Syngenta Foundation India (SFI) investigated a range of models designed to improve the farming practices and livelihoods of resource-poor smallholders. SFI confirmed that the most important cause of low farm productivity and therefore of rural poverty is lack of knowledge of improved agronomic techniques.

In response, SFI has developed a unique 'cluster-based' approach to agricultural extension. In each project area, an extension worker serves a cluster of villages, with guidance from a team of experts. The extension worker holds frequent farmer meetings and the team runs seasonally adapted training programs. Demonstrations of new techniques and products take place directly in the farmers' fields, combined with visits to particularly progressive farms. In some areas, SFI also organizes annual fairs to introduce large numbers of farmers to the latest inputs, processes and equipment.

The SFI aims to reach at least 200,000 farmers by 2014. By the end of last season, the program had extended to over 30,000 farmers in six projects across central, eastern and western India. This work has helped farmers to raise the productivity of staple crops. It has also enabled them to earn additional cash incomes, notably with vegetables.

Broad approach to yield improvements

In the current project areas, rice is the major food crop. The productivity improvement program began with selection of high-yield varieties and certified quality seed. It continued with training in modern agronomic practices. As a special technique to enhance productivity in suitable areas, the program promoted pragmatic versions of SRI, the System of Rice Intensification. Work has also focused on raising productivity in other major local crops such as soybean, cotton, pigeon pea and potato. Here, too, activities include provision of recommended seeds and demonstration of new techniques and products.

The most significant achievements, however, have come in the cultivation of high-value vegetables. By following the Foundation's recommendations, farmers now earn incomes that are transforming their livelihoods. Recognizing the necessity of good irrigation for vegetable production, SFI has partnered with farmer groups in activities such as rainwater harvesting and the creation of new community wells. To improve farmers' access to the value chain, SFI also supports three marketing cooperatives.

Partnerships with numerous different organizations are a hallmark of SFI projects. One new example is the Anandwan Institute of Agricultural Technology, launched in cooperation with the local organization Maharogi Sewa Samiti. The institute consists of an agricultural technology school for youth vocational training and a multipurpose school for shorter courses.



Linking farmers to markets in Asia

First Foundation activities in Bangladesh

The Syngenta Foundation started activities in Bangladesh in 2009 with a local NGO partner and two projects. Our aim is for smallholders to harvest three crops in 2010, two of rice and one of a cash crop like vegetables, mustard, wheat or corn. Rice will ensure food security and the cash crop will meet day-to-day income needs.

To achieve three crops in a year, the Foundation worked with farmers to cultivate a fast-growing irrigated rice variety from mid-February to mid-May. Summer vegetables include okra, snake-gourd, bitter-gourd, long-bean and chillies. Recent shortages of these in Bangladesh have enabled the project farmers to earn good prices.

A further 2010 goal is to bring all suitable fallow land under cultivation. Per capita land-holding in our project areas is among the lowest in the country, so we encourage farmers to recover waste land. This is typically next to their homes, and can easily be used for crops such as ginger or turmeric.

Lack of capital often prevents Bangladeshi farmers from investing in quality seeds, fertilizers, irrigation and crop protection products. The Foundation has therefore introduced a system of input credits, which farmers repay after harvest. The credits are for lower-risk crops only, and are at present interest-free.

New projects begin in Indonesia and Vietnam

In the course of 2010, the Syngenta Foundation is extending its geographical reach through new projects in South-East Asia. These are devoted to sustainable agriculture in Indonesia and Vietnam.

Two projects in Indonesia focus on the horticultural value chain. The aim is to improve the quality of high-value crops and link smallholders to premium and export markets. These projects are now running in West Java with vegetables and North Sumatera on citrus fruits. The Foundation is partnering here with AMARTA, the USAID project in Indonesian agriculture.

A further project is directed at poverty alleviation in East Nusa Tenggara Province. It aims to increase corn farmers' agronomic know-how and improve their access to, and management of, local water. This will enable them to earn income by producing more corn than their own households need. The Foundation's partner in this project is a local NGO, the Leimena Institute.

Foundation representatives recently toured project sites with local staff and the partners. Executive Director Marco Ferroni followed the visits with a seminar on public-private partnerships at the Centre for Agricultural Policy Studies in the Indonesian capital Jakarta.

Raising income from vegetables

In Vietnam, three new projects focus on poverty reduction and food security in the Provinces of Hoa Binh, Bac Kan and Ha Noi. Activities will concentrate on vegetables, with additional work in rice, bananas and corn, depending on the site.

Enabling smallholders to earn substantially more income from vegetables will involve the creation or improvement of 'screen houses', coupled with agronomic advice. These fine mesh constructions provide shade for the crops and protect them from a number of insect pests. Training will also be available to help farmers adopt new technology. In addition, smallholders will receive advice on the best application of crop protection products. Avoiding unnecessary residues will enable them to satisfy supermarket quality demands and thus tap into new sources of income. Two of the projects are in hilly areas, and will therefore additionally emphasize farming practices that help avoid erosion.

Local partners include the Vietnam Farmer Union, the country's Plant Protection Research Institute and NORMAFSI, the Northern Mountain Agriculture & Forestry Science Institute.



Further projects: consolidation, scale-up and new perspectives

Precad project, Mali

The Precad project in Mali enters its final year in 2010. The goals are to consolidate progress and prepare hand-over to local extension services and farmer associations. An action plan for the following two years is in preparation.

Precad's aim since inception in 2005 has remained the improvement of farm households' food security and the generation of income through sale of produce. Looking ahead, a key factor will be further strengthening of smallholders' and associations' capacity to manage farms and cooperatives professionally. This includes greater awareness of the need for crop quality and quantity, so that buyers view them as reliable business partners both for local and export markets.

The dairy cooperative intends to scale up milk production from about 300 to 500 liters per day. Direct sales to shops and hotels in the Ségou region are an additional goal.

Further important features of the upcoming project phase are strengthening or creation of micro-credit and farm input facilities, small shops, sesame production, a certified seed producer cooperative and marketing of farm products. Income diversification via planting of *Acacia senegal* (Arabic gum) and *Jatropha curcas* as a biofuel for village-based engines will additionally be important.

To achieve scale-up, education and information are also crucial. Precad works here with government extension services, NGOs and farmer-to-farmer training, as well as radio and TV.

Rice initiative, Mali

The Mali rice initiative is a joint project between the government, rice farmers and their organizations, and the Syngenta Foundation. The initiative enters its second year in 2010.

Three important challenges are to bring new agronomic technologies to the field, improve production and dissemination of seed, and achieve better prices through good marketing. Semi-commercial smallholder rice producers are looking above all for risk mitigation. The project facilitates access to credit for improved seed, fertilizer, other inputs and equipment. The credit operates through a guaranteed fund with local banks. New and existing cooperatives help improve farmers' position in input and output markets. To increase agronomic knowledge, the program also trains leading members of the cooperatives to train other farmers.

PDHC*/ ELO project, Brazil

This project builds a link ('elo' in Portuguese) between smallholder *assentados* and markets.

ELO invests in processing facilities, production, marketing, branding, business training, education and the organization of producers. 2009 would originally have been the project's last year. However, the Foundation recognizes that the promising results so far need more time to become sustainable. Over the next two years, ELO will focus on the most successful value chains such as cashew, honey and dairy products. No more new *assentados* will be involved, but existing participants will receive intensified training to manage the small commercial operations on their own. These operations cover a wide range of value-chain activities, including processing, packaging, certification, branding and marketing.

Jatropha biofuel, Honduras

Our project in Honduras evaluates *Jatropha curcas* as a contributor to energy security and an additional source of rural income.

The development of biofuels, particularly jatropha, from land that does not compete with food production can provide a source of energy security and diversify rural incomes. Jatropha grows well on marginal land. The Foundation is partnering on its biofuels project in Honduras with Zamorano Agricultural University and other regional organizations. The project includes investigation of agronomy, crop management, the value chain, and jatropha's yield potential as a biofuel. Now in its second year, the project gives students from across Central America and the Caribbean hands-on experience in the rapidly developing field of renewable energy. The topic is currently the subject of 11 Bachelor theses. A 2010 workshop will share intermediate project results and generate advice for interested farmers.

*Projeto Dom Helder Camara

Does payment encourage conservation?

The PACS program targets small farm biodiversity

Conservation of natural resources is vital for the long-term security of food supplies and rural incomes. Preventing erosion and saving water are two key examples of conservation. Another is the preservation of biodiversity. The PACS* program seeks to incentivize smallholders to achieve this by maintaining a wide range of crop varieties.

One way to conserve biodiversity is 'ex-situ' in gene banks. In parallel, suitable programs can support 'in-situ' conservation by small farmers and indigenous rural communities. Encouraging them to continue growing their familiar varieties respects tradition, applies inherited know-how and is relatively inexpensive. It is also a potential avenue for income generation.

Greater crop diversity provides more options to cope with climate change, pests and diseases. However, the world continues to lose crop diversity, and at an accelerating pace. Farmer incentives may provide a solution.

Bioversity International, part of the CGIAR**, undertakes research into agricultural biodiversity to create more productive, resilient and sustainable harvests. The Syngenta Foundation supports Bioversity in developing innovative economic methods to maintain agricultural biodiversity and improve indigenous farmers' livelihoods. The organizations' main joint objective is to assess the potential for paying farmers to conserve crop biodiversity. This assessment, begun in 2009, should result in the design of appropriate incentive schemes to help alleviate rural poverty.

The two-year project has identified study sites in Peru and India, and developed valuation, analytical and survey tools. In India, a survey of 450 farm households has focused on four species of minor millet. The survey includes assessment of willingness to accept payment for planting a given area of land with a specific variety. In Peru, the crop focus is quinoa. The project has already identified a possible PACS approach here, and implementation is now underway. In both countries, the Foundation's partnership with Bioversity International is also strengthening national capacity to undertake economic analysis of genetic resource conservation.

*Payment for Agrobiodiversity Conservation Services

**Consultative Group on International Agricultural Research



Project overview

Growing Systems: agronomy and linking farmers to markets

Category	Project Name	Partners	Activities
In-country Extension Projects	India	Consortium of public and private sector organizations	<p>Growing Systems is a systems approach to increase, improve and diversify agricultural productivity and income opportunities for smallholders through facilitating awareness of agronomic techniques and access to markets. This is being accomplished through organizing local farmer crop and livestock cooperatives, demonstrating improved techniques and irrigation methods, and training implementation of these solutions on farmers' land.</p> <p>To improve the accessibility of agricultural inputs, small privately-run agricultural input shops are started, adapted and improved seeds are introduced, and alternative cash crops are made available. Projects along the value chain connect farmers to new and existing markets, facilitate microfinance opportunities, and train farmers in value-adding techniques for vegetables and other cash crops.</p>
	Kenya	Technoserve Kenya, Farm Concern, Syngenta East Africa Ltd.	
	Indonesia	Leimena Institute, AMARTA (USAID)	
	Peru	Arcos Dorados, Intercooperation	
	Vietnam	Vietnam Farmer Union, Vietnam Plant Protection Research Institute, Northern Mountain Agriculture & Forest Science Institute	
	Mali	Consortium of public and private sector organizations	
	Brazil	Projeto Dom Helder Camara, Ministry of Rural Development	
	Bangladesh	Rural Socio-economic Development Council, Syngenta Bangladesh	
Honduras	Zamorano University, Instituto Fazenda Tamanduá Brazil		

Research and Development: delivering improved seed to farmers

Category	Project Name	Partners	Activities
Scientific Capacity-Building	Biosciences for eastern and central Africa (BecA)	International Livestock Research Institute, Canadian International Development Agency, CGIAR Centers, New Partnership for Africa's Development	<p>Building scientific capacity supports scientists in African countries in accessing, developing, and applying bioscience research and expertise to produce new crops and technologies for smallholder farmers. BecA is an innovative platform for advanced bioscience R&D where international and African scientists train in new techniques and conduct research relevant to global food security. The center utilizes marker-assisted breeding and other genomic techniques for cassava, sorghum and other crops. It serves as a training and communications hub for scientific meetings and agricultural outreach.</p> <p>The Interactive Helpdesk provides extensive online technical resources to increase awareness and usership of modern plant breeding technologies to aid in molecular marker-assisted breeding and genetic diversity assessment. Scientists can access protocols, learning modules, crop research, and search for funding opportunities.</p>
	Interactive Molecular Biology Helpdesk	Cornell University Institute for Genomic Diversity, The Generation Challenge Program, African Molecular Marker Application Network	
Plant Breeding	Harvest Plus II - Biofortification	CGIAR Centers	<p>Plant breeding focuses on improving staple and 'orphan' crops that are critically important to smallholders around the world. Projects use both advanced bioscience techniques and conventional plant breeding to yield more environmentally fit, productive, nutritious, adapted, drought-tolerant and pest-resistant varieties of sorghum, millet, tef, corn and other crops.</p> <p>Successful plant breeding is a lengthy and skill-intensive process. It can take more than a decade from the beginning of breeding until the improved seed reaches the farmer's field. Molecular breeding can shorten that timescale. Current applications include evaluating the productivity of sorghum strains under diverse conditions, building Ethiopian and Nigerian scientists' capacity by training on how to use molecular markers in breeding programs, creating a genetic map of resistance genes to combat Ug99 wheat rust, and developing semi-dwarf tef plants that are more resistant to lodging.</p>
	Insect Resistant Maize for Africa	CIMMYT, Kenya Agricultural Research Institute	
	Improving Tef with Molecular Markers	University of Bern, Ethiopian Institute of Agricultural Research, BecA	
	Improving Sorghum with Molecular Markers	Consortium	
	Ug99 Wheat Rust Resistance	CIMMYT, Syngenta Seeds	
Regulatory Capacity-Building	Safe Biotechnology Management Capacity Building	Forum for Agricultural Research in Africa, National Agricultural Research Institutes	<p>Regulatory capacity-building works to strengthen Africa's capacity for sound agricultural biotechnology management by developing and improving policies, staff leadership and stewardship.</p> <p>To achieve this, biosafety management and stewardship trainings are conducted, a communication network of experts for advocacy and promotion of safe practices is being created, and staff capacity and procedures are developed to provide internal leadership within countries to enable independent determination of national stewardship policies.</p>

Business Development: economic incentives and new market development

Category	Project Name	Partners	Activities
Microfinance	GroFin	Investor Consortium	<p>The goal of microfinance is to enable smallholders and agricultural enterprises to access necessary capital and manage risk. Africa is currently underserved and underdeveloped in both investment capital and insurance risk management tools.</p> <p>To address investment capital, loans are being made to small and medium-size enterprises along with Business Development Support Services to improve their operations.</p> <p>Innovative agricultural weather index-based microinsurance products for smallholders provide the opportunity for the farmers to protect themselves against the risk of drought, at affordable costs. The project works to facilitate multi-stakeholder arrangements, provide technical assistance for index contract development with local stakeholders, conduct financial literacy training, and support the development of mobile phone-based registration and administration platforms.</p>
	Index-based Microinsurance	UAP Insurance Ltd., Syngenta East Africa Ltd., Kenya Meteorological Department, CETRAD, SwissRe, MicroEnsure, Safaricom, MEA	
Markets Development: Crops	Seed Trade Association of Kenya	Consortium	<p>For farmers to benefit from improved crops, seed needs to be available locally and farmers need to be able to sell their harvest at markets. Developing and supporting African seed companies and small private agro-input stores facilitate these critical links in the value chain. Projects seek to build the capacity of seed company staff in processing, storage and regulatory matters while improving public-private collaboration in market development and seed distribution.</p> <p>The purpose of the West Africa grain markets research project with MSU and local and regional partners is to develop the data and analysis needed to inform trade-related policy making at the subregional level for improved food security.</p>
	Seeds of Development Program	Cornell University Emerging Markets Program, Market Matters Inc., The Rockefeller Foundation, USAID, UK Department for International Development	
	Regional Food Security in West Africa	Michigan State University, Consortium	
Markets Development: Services	BioCarbon Fund	Public and private partnerships	<p>Innovative new markets are emerging that can enable smallholders to benefit from conserving agrobiodiversity and adopting sustainable production practices for international carbon markets. The projects are currently focusing on piloting new methodologies and developing incentive mechanisms. Results and ideas will be introduced to industry, policy makers, development partners, and academic audiences to determine ways forward that benefit farmers, the environment, and the goals of sustainability.</p>
	Biodiversity Conservation (PACS)	Bioversity International, University of Cambridge, MS Swaminathan Research Foundation, Centro de Investigación de Recursos Naturales y Medio Ambiente	



Discussing our views with many audiences

Policy publications and international debate

Alongside partnerships in the areas of Knowledge, Tools and Opportunities, the Syngenta Foundation also engages in policy analysis. Our aim is to improve understanding of the world food situation, sustainability and smallholder agriculture. Key topics include agricultural extension, risk management in agriculture, public-private partnerships in R&D and market 'kick-starts', seed industry development and biotechnology stewardship.

Two recent papers reflect the Foundation's current thinking on key issues. "Smallholder Agriculture, Sustainability and the Syngenta Foundation" explains our view of sustainability, and our contributions to it, now and in the future. "Can Private Sector R&D Reach Small Farms?" addresses the constraints and opportunities of increased private sector engagement to reach the rural poor. The paper concludes that private sector R&D can, indeed, reach 'pre-commercial' smallholders. This depends, however, on partnerships between the public, private for-profit and not-for-profit sectors all along the value chain. This chain extends from 'R' (research) to 'D' (product development and introduction), and is supported by functioning markets for farmers' produce.

The Foundation also continues its involvement in conferences on food security, science and technology, agricultural extension and other topics. Widespread renewed awareness of farming's crucial role in reducing rural poverty has recently led to resurgent interest in agricultural extension. In most developing countries, the need for extension is much greater than the services currently available.

In this context, India's Ministry of Agriculture and the Foundation organized a National Seminar on Agriculture Extension in February 2009. Its goal was to build stakeholder consensus on necessary action. The seminar discussed new extension models, including public-private partnerships and information and communication technologies, as well as the necessary policy reforms. Participants reached a common understanding of the complexity of financing and delivering agricultural extension.

Soon afterwards, the Foundation hosted a discussion with Swiss church representatives on science, technology and the right to food. Executive Director Marco Ferroni examined the principles of food security, global trends in demand and supply, stress on natural resources, and the steps required to turn a 'right' into 'food'. Debate followed on a wide range of topics including biotechnology, organic farming and biofuels.

Private and public have to work together

In October 2009, Marco Ferroni gave a keynote address at the Crawford Fund's annual conference in Australia, entitled "World food security: can private sector R&D feed the poor?" The presentation assessed how far the fruits of that R&D are reaching smallholders, particularly in Africa and South Asia. Ferroni also discussed donors', NGOs' and foundations' roles in fostering market growth and bringing technology to small farms in cooperation with the private sector. Both the public and private sectors are needed to empower growers and raise farm productivity in sustainable ways. "The public sector", Ferroni noted, "must provide 'public goods' such as basic infrastructure, supportive policies, open markets and agricultural research. The private sector's role is to add value, for example by investing in product development and providing knowledge to farmers along with products".

Further recent involvement in public debate includes speeches at the 2009 McGill University Conference on Global Food Security in Canada, and the 2010 'Forum de Bamako' in Mali. In Bamako, Marco Ferroni gave a presentation on agriculture and food security in West Africa, prepared in cooperation with Michigan State University, USA. He highlighted that West Africa should strive for regional food security, rather than national food sovereignty. In addition, the region "needs to invest in agriculture while simultaneously strengthening the private sector". Ferroni also pointed to the crucial role of farmers' market access in raising agricultural productivity. Fourthly, he stressed, governments must put in place "targeted safety nets", not trade restrictions and price controls.

A wide range of Foundation papers and presentations is available on www.syngentafoundation.org.

People

The Syngenta Foundation Board, 2010

Martin Taylor, Chairman

Martin Taylor is non-executive Chairman of Syngenta AG. Advisor to Goldman Sachs International and Vice Chairman, RTL Group SA. Formerly Chief Executive, Courtaulds Textiles and Barclays.

Marco Ferroni, Executive Director

Former executive at the Inter-American Development Bank and senior advisor to the World Bank.

Andrew Bennett

Former Executive Director of the Syngenta Foundation. President of the Tropical Agricultural Association of the UK and Chairman of the Board, Centre of International Forestry Research (CIFOR). Previously Director, Rural Livelihoods and Environment, UK Department for International Development.

Christian Bonte-Friedheim

Former Director-General of the International Service for National Agricultural Research (ISNAR), and former Deputy Director-General of the Food and Agriculture Organisation (FAO).

Margaret Catley-Carlson*

Former President of the Canadian International Development Agency and the Population Council, and from 1989 to 1992 Canada's Deputy Minister of Health and Welfare.

Pierre Landolt

Member of the Board of Directors of Syngenta AG and Novartis, President of the Sandoz Family Foundation and an agricultural entrepreneur in Brazil.

Eugene Terry

Former Chair of the World Agroforestry Centre. Worked with the World Bank from 1997 to 2002 and was Director-General of the West Africa Rice Development Association (WARDA).

Dirk Seidel*

Secretary to the Foundation Board. He also works for the Syngenta group as a legal advisor, since 2010 as Legal Counsel Seeds & Biotechnology.

* Margaret Catley-Carlson joined the Syngenta Foundation Board on January 1, 2010. She succeeds Professor Klaus Leisinger, who retired from the Board in 2009. Dirk Seidel succeeded Jens Kellerhoff as Board Secretary in April 2009.

Syngenta Foundation staff, 2010

Vivienne Anthony, Consultant, Regulatory Affairs & Technology Donations

Andres Binder, Consultant, Biotechnology

Paul Castle, Communications Manager*

Laura Ciliberto, Administrative Assistant*

Cristianne Close, Head of Business Partnerships*

Partha DasGupta, Principal Advisor Agronomy

Marisa De Faveri, Office Manager

Marco Ferroni, Executive Director

Rose Goslinga, Agricultural Insurance Initiative Coordinator

Mireia Idiaquez, Business Partnerships Coordinator

Oumar Niangado, Delegate for West Africa

Felix Nicolier, Head of Project Management

Mike Robinson, Chief Science Advisor

B.T. Seshadri, Executive Director of Syngenta Foundation India*

Yuan Zhou, Policy Analyst

* Laura Ciliberto and B.T. Seshadri joined the staff in 2009, Mireia Idiaquez and Paul Castle in 2010. Cristianne Close moved from the Foundation to Syngenta in 2010.



Contacts and further information

For extensive further information on the Foundation's activities, please visit our website:
www.syngentafoundation.org

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