



## Summary Report

### Session 1

### How can we improve the use of web-based information platforms for agriculture in the countries of the South?

*Session facilitated by Jean-Paul Hébrard, editor-in-chief of the monthly magazine "Agriculture & New Technologies" and founder of the Tech For Food Forum.*

*Participants:*

- *Sophie Treinen, FAO*
- *Joël Sor, CIRAD*
- *Thierry Helmer, CIRAD*
- *Krishna Reddy, Indian Institute of Information Technology (IIIT-Hyderabad)*

#### **e-agriculture.org, a global web platform for the development of information technology for sustainable agriculture (Sophie Treinen).**

The 2<sup>nd</sup> phase of the World Summit on the Information Society, focused on improving the use of new information and communication technology to the benefit of countries in the South, was held in Tunis in 2005. Several major trends were identified that used new information and communication technology for e-agriculture. The FAO, the UN's Food and Agriculture Organisation, was mandated to oversee these activities and, with a network of partners and members, introduced a community of expertise for the exchange of experiences, good practices and knowledge on a single platform: e-agriculture.org. This tool was used alongside exchange, the organisation of meetings and activities, and the implementation of concrete projects to not only document but also exchange information about these different experiences. Today, the e-agriculture community includes 4,300 members in 155 different countries. Members include political decision-makers, suppliers in rural areas, NGOs, development practitioners, farmers, researchers and even information and communication specialists. The site is accessible to the public at large, who can view summaries of discussions, resources (policy documents, training manuals, case studies...) as well as numerous projects that use new information and communication technology, indexed on the platform thanks to the "Delicious" page. Forums are organised on specific subjects (such as, for example, mobile phone use in agriculture), for which participants may register free of charge.

But this platform can only function with the help of moderators who provide the energy and drive for this initiative, organising discussion Forums and uploading content. The majority of resources on e-agriculture.org are in English, today it is crucial to develop the Francophone side in order to show that many initiatives are under development.

#### **SIST, a platform for promoting African expertise and research for sustainable development (Joël Sor + Thierry Helmer).**

SIST (The Scientific and Technical Information System) is a project of the FSP (Fonds de Solidarité Prioritaire), part of the European and French Ministry of Foreign Affairs. Initially intended for 13 African countries, since 2004 it has been developed in 9 states including two Anglophone states: Ghana and Nigeria. It was created out of the necessity to improve and share knowledge and experience between scientific communities and promote the results of research. The goal was to build regional and national networks on specific themes so as to insert African research into international circuits. A true showcase for scientific activity, SIST is a catalyst, a tool for exchange and communication on everything concerning the subject of research, without requiring re-entry or formatting.

Developed over 4 years, the implementation of this platform required the creation of an operational device for researchers, teachers and decision makers to rapidly mobilise the dynamics of each country, allowing them technical autonomy.

With a system of internet-based publications, this collaborative platform creates on-line information systems. Today, search engines (Google, Yahoo...) are limited unless organisations are able to publish their information (databases). SIST offers a united meta search engine that grants access to recent publications with, additionally, a unique format (ex: RSS with a title, link, author and description.)

The developers of SIST have left total autonomy to each country in the choice of publication theme: some countries have made large investments, enabling good project functioning. Skills have been passed on for autonomous platform management. This device is totally free, especially thanks to commercial publishers and partners.

While these projects were under development, national involvement (government or universities) allowed for differentiation and favoured quicker adaptation to certain restraints, such as, for example, the reliability of computing infrastructure, crop problems, fear of flying or even reluctance of switching to computer science.

### **E-sagu, an agricultural advisory system based on the use of Information and Communication Technology (Pr Krishna Reddy)**

E-sagu is the Indian translation for e-agriculture. It is working to build a personalised advisory system. Begun in 2004, the e-sagu project today brings together 8000 farms over 300 villages. E-sagu is an initiative launched by the government in collaboration with IT professors and partners such as Nokia. E-sagu is not a search engine comparable to Google, because every morning personalised information is sent out to develop competences and productivity among farmers. The system was conceived so that information could be accessible without requiring the farmer to ask questions. Depending on the type of crop, the farmer receives the information needed. This necessity and desire to provide advice for each farmer requires adequate bandwidth. When this is not sufficient, information is sent by post. Each week, a mediator sends a report summarising the farmer's actions after receiving this advice.

Results have shown that farmers save an average of 2000 rupees (30 Euros) per hectare. Savings are most significantly incurred in the use of products and are complemented by an increase in output and productivity.

For several years, India has experienced a crisis of numerous suicides within its farming communities, due to poor harvest and poor land management. Addressing this crisis, e-sagu focuses on return on investment by battling bad practices, responding to international standards and enabling the sale and exportation Indian agricultural products. Knowledge exists at the university level, where professors know how to progress and avoid errors. Thanks to e-sagu, this knowledge is then transferred and becomes accessible where it is needed. This platform is therefore a knowledge distribution system. And, as not every agricultural scientist can visit farming operations, moderator intermediaries can send photographs to scientists through this system.

As they read and speak the local languages (1 moderator for every 50 farms), moderators visit about twenty farms every morning and take a dozen photos. They look over the advice that has been sent and see whether it has been followed correctly and whether it has worked. They then return to a local centre and send out data. Experts receive this information and send back recommendations to the mediators via SMS. The farmers receive these recommendations in the local language. Often, when structures are not sufficient in terms of bandwidth, information is sent on a CD by post.

The fact that scientists can stay in their laboratories and do not need to visit the land allows them to better prepare their advice and respond rapidly. Agricultural scientists can deliver up to 50 pieces of advice per day with an average of 3 minutes per consultation.

## Session 2

### How can technological development integrate the needs of the agricultural world?

*Session facilitated by Jean-Paul Hébrard.*

*Participants:*

- *Jawahar Kanjilal, NOKIA*
- *André Loechel, Territories of Tomorrow Living Labs*

#### **Nokia Life Tools, mobile phone service adapted to the needs of farmers in emerging countries. (Jawahar Kanjilal)**

Nokia services for emerging countries are intended for populations in rural areas and small villages. The goal is to develop mobile penetration to deliver more than SMS and voice calls. To reach this objective, a lot of research on the rural environment was performed.

When asked the question "what do you expect from a mobile phone", responses were, firstly, SMS and phone calls, but also access to video, email, the internet and entertainment. People want to be connected as well as assisted in everyday life, personally and professionally.

Therefore demand is concerned with transport, traffic or even better information flow. Three major fields of information in agriculture were highlighted:

- Basic information (market, prices, weather) personalised according to the user's location and crops, with information that changes according to the rhythm of the crop.
- Information on opportunities to develop user income.
- A space dedicated to agriculture-related businesses for communication with the latest technology.

The goal of Nokia Life Tools is to allow the user to stay informed of market realities (both technical and financial) so that s/he can react accordingly and become more professional and more competitive, with regular service and access available at all times.

Life Tools phones have an education and agriculture menu, available in the selected local language. The information depends on the crops and cycles previously defined by the user. The information is therefore not generic but linked to a crop and its cycle.

Function is simple and guaranteed, because it is integrated into the phone with intuitive icons. Therefore service does not require GPRS coverage. Whenever the user can begin making calls, s/he can receive his/her information transmitted on a SMS based flow.

Nokia Life Tools seeks to inform users as well as unite government and agricultural societies. The service will be installed in Indian pilot regions over the next few months, then on the national level.

#### **Living Labs (Ms. Durieux, Senator of the Hautes Pyrenées and André Loechel)**

There are 119 Living Labs in Europe, Asia, Africa and soon South America. The concept is to place innovative businesses, researchers and universities, and above all users side by side. These 3 groups of actors enable development in rural areas and connect them to countries of the South. These rural areas have common problems with the countries of the South. We can look to the example of Dakar with the installation of an IT training centre in a rural area.

The use of technology allows one to overcome the barriers of rurality through the mastery of technical and financial tools, as well as political determination. The creation of the House of Knowledge in Saint-Laurent de Neste 10 years ago enabled the installation of VTHR (High Resolution Video Transmission) that ensures, for example, re-broadcast of international conferences and shows. EADS (formerly Matra) has, for example, installed a European information technology centre in a rural

environment for the research and development of tourism software. The small village of Saint Laurent de Nestes has progressed with the digitisation of its heritage in partnership with the Ministry of Culture.

The Territories of Tomorrow Foundation makes technical competences available for the development of technological infrastructure in countries of the South.

## Workshop

### Tech For Food joins in the action.

*Session facilitated by Jean-Paul Hébrard.*

*Participants:*

- Jean-Marc Petat, BASF
- Perlive Rahaga Rabenitany -APROMO/L'ACTION
- Philippe Prevost - SupAgro Montpellier
- Philippe Choquet – University of Lasalle Beauvais

### **Educ Phyto in Africa: educational software for agricultural practices. (Jean-Marc Petat and Bernard Bachelier)**

Educ Phyto is an educational software program for good practices in sustainable agriculture that was developed in France and is to be adapted for use in emerging countries. Today, bad phytosanitary product practices in the countries of the South are caused by bad stocking conditions, defective equipment and neglect of individual protections. These parameters are complex due to the climate, and poverty is a restraint to purchasing equipment that would enable improvement of agricultural production.

Today, the use of phytosanitary products represents one of the tools for meeting the challenge of doubling global agricultural production. In Africa, training is often limited due to illiteracy. Educphyto is an educational tool that uses games and visuals to avoid essential errors.

The software program is divided into 2 parts:

- A search for risks and errors
- Corrections of errors that were not identified and explanations with video showing good practices

3000 French farmers have already been trained with Educphyto (about 15 minutes of training)

There are 3 constraints to using software in countries of the South:

- understanding phytosanitary and agricultural practices
- identifying 20-30 priority measures for each country
- local actors

The transfer of this software program to countries in the South is done in partnership with the FARM foundation. Pertinent and customised computer material will be a first step towards creating a method for progress in terms of production and ecology. After a period of sensitisation, the implementation of indicators will enable measurement of progress.

Tech for Food has facilitated the meeting between FARM and BASF, uniting their competences and savoir-faire as well as a common desire to work on behalf of farmers in the South. Famine riots in African countries have shown that these countries cannot feed their populations. It is therefore necessary to increase production and create access to farmland, seed, and phytosanitary products. On this concern, FARM has led pilot activities with its African partners and has been able to increase food production from 50 to 100%.

Tech for Food in action reminds us that access to information, training and exchange of experiences is decisive in the dynamic of sustainable production. The actions of FARM and BASF will allow people to borrow money to buy the products they need with a guarantee deposit. The creation of a financial access system (savings and loan) in 2008 allowed groups supported by FARM to achieve harvests and income used to pay back these loans. The mechanism was therefore set in motion. Harvests were better this year, but dependence on large cities for importation has not yet been resolved. Food production, access to technical progress and information must therefore permit agricultural autonomy in countries of the South.

### **Digital screens for better knowledge transfer in Madagascar (Perlive Rahaga Rabenitany)**

85% of the population is agricultural in Madagascar. According to the FAO, 60% of the harvest is lost due to poor post-harvest conditions that do not respect international regulations, a condition indispensable for market access. In order to alleviate its problems, Madagascar works to decrease these losses and improve the traceability of its products. The goal is to reinforce training through new methods of knowledge transfer. The NGO APROMO L'ACTION has been working for the past 15 years to mobilise the rural world and facilitate the acquisition of good farming practices in order to access markets. However, communication must constantly be improved. Indeed, an information network has been implemented (locally centralised) but it has hardly been effective. Furthermore, isolated actions do not necessarily provide answers to questions asked at any given moment.

The method of communicating via digital screens facilitates the implementation of good practices along the production chain, for this framework ensures repetition and translation of the scientific message for farmers. Indeed, images place the emphasis on good practices. The installation of mobile phone networks in Madagascar must also enable diffusion of good information. Furthermore, growth centres are developing in Madagascar and need quality food products for businesses investing in the country (expatriates, employees, clients...). Today, some of these products are imported, particularly from South Africa. The goal is therefore to communicate good agricultural information so that quality products can be created. These digital screens will be installed in marketplaces and high-traffic areas (stations, post offices, town halls...). This project is currently seeking partners and financing. A feasibility study is planned.

## **Session 3**

### **Tech for Food, Focus on India: Agricultural development and new technology: lessons from the Indian experience**

*Session facilitated by Jean-Paul Hébrard.*

*Participants:*

- His Excellency Ranjan Mathai, Indian Ambassador to France.
- Pr. P.C Kesavan, MS Swaminathan Research Foundation.
- Eric Glover, Courier International

#### **Opening speech (His Excellency Mr. Ranjan Mathai)**

There are many Indian technology experts, particularly in the field of space sciences. The use of satellites and the work of the ISRO has enabled the transmission of information to agricultural populations.

Today, agriculture represents 20% of the GDP in India, a country in which 60% of the population lives in rural areas. Industry that depends on agriculture comprises 9% of the GDP. Indian agriculture must continue increasing its production by 4 to 5% annually in order to continue its economic development. In 2007 and 2008, 227 million tons of food commodities were produced, which translates into a constant increase over the past 3 years.

According to estimates, the country should produce 340 million tonnes of food in 2020 if a 7% annual increase in GDP is considered, as well as the desire to increase levels of nourishment to meet international standards.

In the 1960's, India experienced a serious crisis due to the population explosion and a decline in mortality. The population increased by millions of citizens every year.

In 1966-1967, there were floods and a severe crisis during which the country became dependent on imports and international humanitarian aid. This historical episode enabled the country to focus on using technology for agriculture, a period often called the "green revolution".

The use of technology, the choice of good fertilisers, a national preservation programme and seed promotion as well as extensive agriculture in thousands of villages enabled production to double in 5 years. At the end of the 1970's, when the program was applied to rice cultivation, the country was able to become self-sufficient in producing its own food.

In 1987, the worst floods in the history of India occurred, but India was able to navigate them without international humanitarian aid, because its reserves were sufficient and its agriculture diversified.

Since then, the "2<sup>nd</sup> green revolution" began with a research programme on genetically modified seeds under the Ministry of Agriculture. 44 million hectares of rice paddies represent enormous potential. Water management is also one of the most critical points for India's future, as well as the use of technology and satellites, and pesticide management. The government also intends to develop employment and create job prospects in rural areas.

Objectives for the year 2012 are to increase rice production to 10 million tonnes and wheat production to 8 million tonnes. The 2009 Indian agriculture budget comes to 2 billion, with the use of technology one of its key points. A program has also been launched to develop micro-irrigation and organic agriculture. The government is also guaranteeing up to 12 billion Euros to cover prices and allow small producers to develop and make it through the financial crisis. Market price support is also provided, as well as development aid for roads and conservation measures on a national scale.

### **New technology for a greener revolution and better management of climate change (P.C. Kesavan)**

Food security is an important concept to emphasize. In India, 60% of the population not only lives in rural areas but also lives on marginal agriculture. 88% of land owners do not own more than 2.5 hectares, meaning that the farmer is not just a producer but also a direct consumer. He lives off of subsistence agriculture which provides him with food but does not allow him to profit from his products.

Yesterday's Green Revolution, established in India during the 1960's, facilitated food security at a national level. It transformed the image of India from that of a "begging bowl" to a "bread basket". Better use of farm soil through intensification methods allowed for the conservation of 85 hectares of forest and its associated biodiversity between 1988 and the 2000's.

But this agricultural revolution failed at the local level. Indeed, there are 3 million people suffering from hunger today in India. Professor Swaminathan, one of the architects of the first Green Revolution, understood that the programmes deployed to develop Indian agriculture did not take into consideration early enough factors such as environmental damage, deterioration of natural resources, soil and water. The ecological balance shows a decrease in agricultural biodiversity, an increase in chemical use and waste, excessive irrigation, waste of water and electricity as well as soil salinisation. Socially, this revolution widened social-economic inequalities between rich and marginal farmers. The 1<sup>st</sup> Green Revolution affected all of the basic elements of sustainable agriculture.

This is why Professor Swaminathan developed the process for the "evergreen revolution", which he advocates from within the M.S. Swaminathan Research Foundation. We are not just concerned with improving agricultural productivity, as food security is not just linked to production capacity. On the one hand, we support the increase of agricultural products, but on the other hand, there are between 400 and 500 million people in India, especially in rural areas, who do not have the money to buy these products. Therefore in the "evergreen revolution", it is not sufficient to show farmers how to increase the yield from their land, it is also necessary to teach them how to earn money and give them the means to do so.

The “evergreen revolution” necessarily integrates sources of knowledge and technology for sustainable and ecological agriculture. The Swaminathan Foundation works towards the development of biotechnology and the transmission of this technology for endangered species, especially mangroves, true ecosystems that constitute one of the natural defences against cyclones and tidal waves, against rises in the water level and salinisation in coastal areas.

The use of information and communication technology (IT) was also chosen as a solution for fighting against one of the problems linked to food security. The “evergreen revolution” works intensively to transmit and share knowledge and new strategies for sustainable agriculture. It needs biotechnology and IT to diffuse genetic awareness, education, to develop connectivity and information resources.

In 2004, the M.S. Swaminathan Research Foundation and the ISRO launched the creation of “Village Resource Centres”, based on the use of satellite data to improve connectivity in isolated rural areas and access to telemedicine and tele-education. But new technologies and resource centres must come about as a response to the needs expressed by farmers, and must provide solutions to the proper questions. It is important to provide training and coaching programmes so that a link is made between knowledge and action. It is important to connect data generators to data managers, who then transmit data to rural families.

Different programs have been developed in India thanks to the transfer of knowledge and experiences for a more sustainable agriculture and better management of climate change:

- Cultivation of mushrooms paired with rice cultivation, creating additional income,
- Use of additional insects to reduce pesticide applications,
- Portable phones to guide fishermen towards shoals of fish...

IT also plays a role in managing climate change. Studies show that a temperature increase of 1°C could cause a 750 kg/hectare loss of wheat. Arid agriculture today affects 85 million hectares in India (60% of cultivated land). This is where “evergreen revolution” programmes must be developed. It is necessary that water management resources are involved, alongside ecological caution and traditional knowledge, and supervised in each community. This implies the implementation, via IT, of training, practices and workshops for agricultural communities, sharing and diffusing agro-climatic information. IT must also support farmers in accessing information on market prices, so that they may anticipate output and sales.

In order to reach these objectives, it is important that all national and regional actors unite their efforts. The “National Alliance for Mission 2007” was determined in 2004, a national movement that aims to make 600,000 Indian villages self-sufficient through rural knowledge centres. The year 2007 was chosen as a target, because it represents the 60<sup>th</sup> anniversary of India’s independence. This initiative aims to support the MSSRF’s research programme, called the Virtual National Academy for food security and prosperity in rural regions, so as to evaluate the incidence of IT on reducing poverty in rural Indian areas.

## **Session 4**

### **The satellite revolution in India, an example for developing countries?**

*Session facilitated by Pascal Faucher, CNES.*

*Participants:*

- *K.R Manjunath, ISRO*
- *Radhika Ramachandran Spatial attaché of the ISRO to the Ambassador of India*
- *Eric Glover, Courier International*

#### **Pascal Faucher**

CNES and the ISRO have cooperated for years. CNES, partners since the beginning of the Tech for Food operation, choose the Forum as a place of encounter for its representatives from the Indian Space Agency. Space science techniques today play a part in our everyday life, with satellites that

facilitate communication, placement and navigation. Space techniques are vital for resource management in countries of the South, especially in Africa. India is a space power that is focused on social problems in the domains of agriculture, land management, education and even health. Telemedicine and tele-education are justified by the size of the continent and the country's political conviction. Space sciences represent a substantial budget in the Indian economy, with a Ministry of Space focused on earth observation and telecommunications. 3000 people in India work in the Ahmedabad centre, where 900 scientists are completely dedicated to space sciences. A comparable centre does not exist in Europe.

### **The role of remote sensing in agricultural development and food security: the Indian experience (K.R Manjunath)**

India is the 2<sup>nd</sup> biggest global producer of wheat and rice and the largest global producer of dried fruit. Indian agriculture depends heavily on the level of precipitation and the monsoon period: in the southwest of the country, the monsoon brings 75% of rainfall. The country benefits from many fertile regions and a very efficient irrigation system, particularly in wheat producing regions. A large amount of land is difficult to cultivate because it is located in mountain regions (180 million hectares). Therefore, in order to achieve the 4% annual increase in agricultural production, the country must develop its productivity, double growth in irrigated areas, improve its water management as well as recover undesirable land and diversify its production in moving towards value added agriculture

To reach these objectives, the ISRO uses observation satellites to map the country and indicate agricultural distribution over different regions. Satellites facilitate supervision of crop surfaces areas across the country and potentially cultivatable land. Satellite data can be used to help manage irrigation and rainy seasons to improve water distribution for different crops.

Satellites also enable the maintenance of telecommunications in "Village Resource Centres" (VRC) which allow rural populations to monitor the weather. Satellite data is gathered and transmitted to VRCs to facilitate food security: agriculture can be extended without exhausting resources by considering, from space, the vegetation and environment in the development of cultivatable land. Monitoring soil erosion and the impact of crops on soil thus permits the elaboration of recommendations for crop diversification or intensification of operations. The ISRO's use of satellites provides information on crop growth and cycles. By combining several types of data such as weather, land and surface information on a large and small scale (regional or local), it is possible to predict the output of land plots and the decisions that should be made. With this data, it is possible to calculate exportation and importation needs. By combining space data with economic and technical parameters (fertiliser proportioning, crop hydrometry levels...) farmers can calculate efficiency, production costs for a plot of land, income and net profit.

On the environmental level, observation satellites facilitate water management and monitoring of the state of rivers and water tables. After the satellite information is analysed, meetings are organised with local farmers for the dissemination of reports on the state of water resources and to show the location of irrigable or non-irrigable regions.

### **Space technology used in Village Resource Centres and nearby social programmes. (Radhika Ramachandran)**

The goal of the ISRO is to deliver applications to rural Indian populations. There are 20 satellites in operation, originally for different services: tele-education, telemedicine, support for on-line decision making and interactive consulting services for farmers. Doctors are not always located nearby villages, and telemedicine allowed part of the population access to consultations with specialists. Created by the ISRO in partnership with the Swaminathan Foundation, Village Resource Centres represent a significant source of information for isolated rural populations. Their services have multiplied and are intended for agricultural populations (courses and markets, credit, consulting) as well as students (e-learning, exams and opportunities) and even women (nutrition, law, education, services for children). These services arise from public and private partnerships. These centres allow information access via portals in regional languages, exchange and pairing between different regions, as well as informing populations on climate conditions, illnesses, etc.

India began its space program in 1995 and intends to continue placing satellites into orbit until 2012, so as to improve quality of life for citizens and continue offering services adapted to their needs.

## **Session 5**

### **What role does new technology play in the agricultural revolution in countries of the South?**

*Session facilitated by Jean-Paul Hébrard.*

*Participants:*

- V. Sreenivasan, IT Infotech limited for the e-choupal initiative
- Rikin Gandhi, Microsoft Research Lab in India and the Digital Green project
- Sachin Shah, Akashganga
- Alpesh Shah, Akashganga

#### **e-choupal, a community and advisory centre for Indian farmers that uses new technology. (V. Sreenivasan)**

E-choupal sees India as a large business whose success depends on its competitiveness in exporting its products. To this end, it must ensure that farmers have a good foundation. In the past, doyens would address villagers around a tree and diffuse their knowledge. Today this model must be extended through the computer. Indian businesses wish to be self-sufficient and competitive: therefore they must be trained to use computers. In 3 to 7 days, e-choupal offers express training to farmers in specialised centres. By allowing farmers to access this knowledge, they become aware of the market. From the moment when farmers discover the price of products at the Chicago stock exchange and learn how to convert the dollar to the rupee, they begin to become competitive. In 2000, when the e-choupal project began, nobody believed the stories about weak bandwidth in villages and the difficulty of accessing electricity. The initiative began by using tractor batteries to power computers! Today there are 6,400 e-choupal centres distributed over 38,000 villages covering 4 million farmers. Farmers who use the e-choupal network represent 2 million tonnes of food products and a sales turnover of 400 million dollars.

#### **Digital Green, a system for sharing agricultural information via participatory video. (Rikin Gandhi)**

Video was used during the Green Revolution of the 1960's-1970's, but technology was not as well developed as it is now. Today, with digital cameras, inexpensive DVD readers can be distributed down to the root of the production chain, rural villages. The impact of video makes even more sense when technical and technological constraints are poor. Videos show experts and scientists addressing problems in socio-cultural comprehension. By using the media closest to their daily experience to demonstrate good practices, farmers are better motivated and more interested in accepting the advice and reaping the benefits of their production. This media also enables outreach to youth who are intrigued by the arrival of television in their villages. For this video training, it is important to retain an intermediary who directs recommendations: when the video is diffused, the intermediary explains the purpose of these recommendations and practices and can send training results and observations to Digital Green centres.

By introducing the camera into this training process, farmers are shown and respected amongst their communities. These films are 8-10 minute amateur videos that can be sent to the [digitalgreen.org](http://digitalgreen.org) site, where they are validated to ensure that the practices being diffused are good practices and where certain comments are added. The films are also burned to DVD and sent by post or person to person. Beyond diffusion, this resource helps create dialogue within villages: the video can be paused and rewound to answer questions and ensure that the message has been sufficiently transmitted. Digital support also goes beyond distribution to videotaping the public while they watch these videos. This initiative was launched over 15 months in 13 villages, 3 evenings per week.

Digital Green offers another approach to technology, as the initiative does not require a direct internet connection. The material used (cameras, DVDs and DVD readers) can then be connected to the internet for further diffusion.

**Akashganga: the use of IT to improve collection in dairy cooperatives. (Sachin Shah and Alpesh Shah)**

Akashganga performs tests and weighs milk for farmers. Farmers have a smart card that identifies them and allows them to follow their dairy production in quantity and quality. The system's essential appeal is its ability to directly pay farmers after weighing and testing the quality of milk. Akashganga also operates assistance centres for illiterate people, where the tests performed on dairy products are translated and explained. This simple but appropriate technology uses information technology to facilitate milk collection and, consequently, generate higher profits in rural milk-producing areas. Milk producers therefore avoid losses due to packaging and treatment delays. Akashganga allows for direct payment, more precise analysis, reduced delay time and total transparency. This system also makes it possible to offer consumers better quality milk. Dairy cooperatives have thus been able to increase purchases, decrease putrefaction and improve sanitary conditions. The Milk Union has thus increased the quality and quantity of milk and implemented a monitoring program for dairy operations using the database generated by its centres and cooperatives. The business model is based on product and service technology to help dairy cooperatives become more effective and productive. Today 1500 Akashganga centres exist in India and the software created has been translated for development in Vietnam and Nepal. In the future, Akashganga seeks to develop this principle and integrate different activities among farming families to allow them to better manage the profits from their products in different agricultural domains.