

# Feeding *the* Future

## World Peacemaker:

### President Carter Awarded 2002 Nobel Peace Prize

The Norwegian Nobel Committee awarded the 2002 Nobel Peace Prize to former US President Jimmy Carter for “his decades of untiring effort to find peaceful solutions to international conflicts, to advance democracy and human rights, and to promote economic and social development.”

President Carter joins Dr Norman Borlaug as a Nobel Peace Prize Laureate. Dr Borlaug was recognised in 1970 for his work to bring an agricultural Green Revolution to millions of poor farmers, especially in food-deficient Asia. In bestowing a diploma and gold

medal on President Carter, Norwegian Nobel Committee Chairman Gunnar Berge called him one of the most deserving laureates. “He was the politician who during his presidency attempted to bring about a more peaceful world,” Berge said. “He was, and continues to be, the



mediator who seeks peaceful solutions to international conflicts. He has shown, and still shows, an outstanding commitment to democracy and human rights. His humanitarian and social activities have been, and are still, far-reaching.”

Berge continued, “As if  
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## Water harvesting: Fighting drought in Ethiopia

The year 2002 brought severe drought to Ethiopia – a country known for its cyclical droughts, which are often followed by famine. The government, headed by Prime Minister Meles Zenawi, is recognised for its commitment towards poverty reduction and food security. In 1995, two years after SG 2000 Ethiopia was launched, the government financed the national extension intensification programme (NEIP).

Of Ethiopia’s 69.1 million inhabitants, 85 percent are subsistence farmers. SG 2000 was introduced to the country to demonstrate to smallholder farmers and government officials how improved technologies could greatly enhance food production in relatively



Small-scale surface irrigation using shallow aquifers, rivers and streams.

high moisture areas. Following the success of SG 2000’s demonstration plots in 1993/94, the government initiated NEIP, which continues in the central, western and southwestern highlands where rainfall is more reliable. “Millions of farmers are still participating in the programme,” reports SG 2000 Project Co-ordinator Takele Gebre.

“However, farmers living in the drier northern and eastern areas are still subject to recurrent droughts and food shortages, which have forced the country to rely increasingly on food aid.” The failure of the rains in 2002 led to an extremely serious drought similar to that experienced in the mid-70s and mid-80s. Thanks to the timely appeal by the government to the international community and the prompt worldwide response, the drought did not lead to serious famine.

It did, however, force the Ethiopian government to embark on another campaign aimed at minimising the effects of drought in drier areas. This  
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## World Peacemaker: *continued*

mediation, human rights, and disarmament were not enough, The Carter Center has, in cooperation with other organisations, headed a number of important health campaigns. So far the best results have been achieved in the fight against guinea worm infection. Today the number of cases has been reduced by over 95 percent. Having overcome smallpox, the world is now on the verge of exterminating another major epidemic disease.”

During his 20-minute Nobel lecture, President Carter emphasised the responsibility of

powerful nations to preserve peace and alleviate suffering. “Most of The Carter Center’s work is in remote villages in the poorest nations of Africa, and there I have witnessed the capacity of destitute people to persevere under heartbreaking conditions,” he said. “I have come to admire their judgment and wisdom, their courage and faith, and their awesome accomplishments when given a chance to use their innate abilities. But tragically, in the industrialised world there is a terrible absence of understanding or concern about those who are enduring lives of despair and

hopelessness.”

A farmer himself, it is no surprise that President Carter actively promotes agriculture and food security, stating: “Agriculture plays an important role in international cooperation and development in Africa and around the world. We must keep agriculture moving because it provides a livelihood for the majority of people, enhancing peace and prosperity.”

During the past 17 years, millions of farmers associated with SAA and The Carter Center have shown that it is possible to double and

triple yields in staple food crops with improved technology. “It is imperative for national governments, international foreign assistance agencies, and the private sector to continue to increase their attention and financial support to transform these crop demonstrations into permanent improvements in the agricultural landscape,” President Carter says. “The global community must believe that people can improve their lives when provided with the necessary skills, knowledge, and access to resources.”

## Water harvesting: *continued*

programme is directed at harvesting rainwater runoff, developing springs and sinking shallow wells in order to introduce supplementary irrigation. Over 150,000 rainwater harvesting ponds and underground pits, which will be dug by farmers, are planned for 2003. Several ponds and underground runoff collection pits have already been dug with the technical assistance of extension workers.

SG 2000 is currently participating in the programme by assisting some 30 farmers in establishing small water harvesting and improved irrigation plots, to effectively utilise water harvested from runoff. The schemes are being established at strategic locations where farmers, extension officers and policy decision makers can visit them in order to transfer the improved

technologies to other parts of the country.

The SG 2000 project will involve a number of models. “With current practices, water is harvested from runoff and rivers,” explains Gebre. “In this project, water will also be harvested from shallow ground wells.” Once the water supply is sufficient for the introduction of supplementary irrigation, participating farmers will be given credit facilities (repayable in the short and medium term) to introduce drip irrigation techniques.

SG 2000 also plans to introduce supplementary irrigation using water from shallow underground wells. Two approaches are envisaged. One will involve sinking wells, where rechargeable underground water is available, and introducing drip irrigation technologies at household farm level. The other will involve schemes for use at the community level.

SG 2000 is collaborating with private ground water exploration and development enterprise GEOMATRIX, which is introducing the use of rechargeable shallow ground water for domestic, livestock and possibly supplementary irrigation. Solar pumps will be used to lift the water to reservoirs.

In executing this programme, SG 2000 is also collaborating



Runoff is stored in water tanks on the farm.

with the Ministry of Rural Development, the Department of Extension of the Ministry of Agriculture, the Ministry of Water Resources, the Ethiopian Agriculture Research Organisation (EARO), and the International Livestock Research Institute (ILRI).

SG 2000 water harvesting activities are underway in Oromia, Amhara and Southern regions (see table). The demonstration sites are located in a total of eight *woredas* (administrative districts) and close to US\$ 40,000 will be invested to establish these pilot demonstrations.



A concrete dome has a capacity of up to 66,000 litres.

Regional State	District	No. of schemes	No. of participating farmers	Water source
Oromia	Lume	3	3	Runoff
	Ada'a	3	3	Runoff
	Adama	5	5	Runoff
	Mieso	3	3	Runoff
	Arsi Negele	7	7	River
	Siraro	3	3	Runoff
Amhara	Minjarna Shenkora	3	3	Runoff
SNNPR*	Alaba	3	3	Runoff
<b>Total</b>	<b>8</b>	<b>30</b>	<b>30</b>	

\* Southern Nations Nationalities and Peoples Region

## OECD should establish subsidy compensation fund

The wealthy OECD countries collectively subsidise their farmers US\$ 360 billion a year. These subsidies take various forms – from direct cash support payments to farmers, to payments to take land out of production, to minimum guaranteed commodity prices, to export subsidies. OECD countries differ considerably in subsidy policies, with countries such as Australia, New Zealand, Canada and Argentina providing very little in the way of subsidy support, to countries such as Switzerland, Japan, the EU and USA providing substantial subsidies.

The effects of OECD member country subsidies on developing countries' economies are positive and negative. They are positive in that they allow countries to import food commodities at relatively low prices, which benefits consumers – and especially poor consumers – since this helps to keep food costs down. They are negative in that they hurt developing country farmers by undercutting prices of domestically produced crops, thus holding back the development of commercial markets and the adoption of productivity-enhancing technology. They also create trade barriers that keep developing country agricultural exports out of subsidising nations.

Since OECD country subsidies cause economic damage to developing country agriculture, some level of compensation can be justified. While one can hope for significant progress in “leveling the playing field” during the WTO Doha round, it is unlikely that OECD countries that

heavily subsidise their farmers will substantially change in the short term.

Until such reductions occur, we propose the establishment of an OECD Agricultural Subsidy Compensation Fund (ASCF). If, for example, OECD member governments were to pay proportionally a 5 percent surcharge on their national agricultural subsidies into the Compensation Fund, some US\$ 18 billion would be generated annually at current rates of subsidisation – roughly equal to 18 days of OECD farm subsidies.

How might these funds be distributed? One possibility would be according to a formula based on the number and proportion of hungry people in the world, and the ability of different regions to meet the UN Millennium Development Goal (MDG) of reducing hunger by one half by 2015. Thus, ASCF financial transfers might be allocated as follows:

- 40 percent, or US\$ 7.2 billion

to Sub-Saharan Africa;

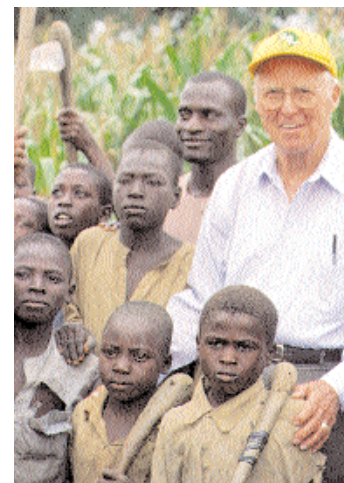
- 40 percent, or US\$ 7.2 billion to Asia;
- 20 percent, or US\$ 2.6 billion to Latin America & the Caribbean.

As OECD country subsidies decline, so would the contributions to the compensation fund. ASCF payments to recipient countries would be proportional to levels of hunger and poverty and should also be tied to meeting MDG milestones for hunger and poverty reduction.

How might ASCF be used in Africa? The following applications might be considered:

- two billion dollars annually (two days of OECD subsidies) to support local school lunch programmes for 50 million primary school-aged children;
- one billion dollars annually (one day of OECD subsidies) for food aid programmes to support 25 million HIV/AIDS widows and orphans;
- two billion dollars annually for community-based infrastructure programmes (feeder roads, potable water, school and clinic construction);
- one billion dollars annually for public goods research and extension activities;
- one billion dollars annually to support emergency food relief in disaster situations.

Such a range of ASCF-supported



**Dr Norman E Borlaug,  
SAA President**

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activities could greatly help to:

- 1) stimulate commercial demand for domestically produced foods;
- 2) accelerate adoption of technological innovations;
- 3) contribute to poverty reduction and economic growth through infrastructure; and
- 4) provide important social nets for the most nutritionally vulnerable segments of the population.

ASCF interventions would have little negative impact on farmers in OECD countries, since most of the intended beneficiaries in developing countries are too poor to purchase imported food anyway. More likely, the long-term impact could be simultaneously beneficial to OECD economies and farmers, and to low-income farmers and consumers in Africa and other developing regions.

### About Sasakawa Global 2000

Agricultural projects of Sasakawa Global 2000 are operated as joint ventures of two organisations – Sasakawa Africa Association (SAA) and the Global 2000 programme of The Carter Center in Atlanta. SAA, whose president is Dr Norman E Borlaug, serves as the lead management organisation for the SG 2000 projects in Africa. Working through The Carter Center's Global 2000 programme, former US President Jimmy Carter and his advisers provide policy advice to national political leaders in support of programme objectives. Funding for SG 2000 projects comes from the Nippon Foundation of Japan whose chairperson is Ayako Sono and president is Yohei Sasakawa.

# Africa's agricultural education challenge

Enhanced agricultural education (both formal and informal) is critical to achieving sustained food security and poverty reduction in Africa. "An educated agricultural base has been fundamental to economic and social progress throughout history," says Deola Naibakelao, Director of the Sasakawa Africa Fund for Extension Education (SAFE).

Building African capacity in agricultural education involves a mixture of formal and informal activities to increase technical competence and leadership. But what specific qualities are needed in today's agricultural extension worker?

Daniel Sherrard, Dean of Academic Affairs at Earth University in Costa Rica, argues that agricultural education programmes should produce young leaders who:

- possess a strong social consciousness and are committed to rural communities, conservation of the natural environment and biodiversity;
- possess strong entrepreneurial skills and are capable of identifying new opportunities;
- have solid grounding in the scientific and technical principles and underlying practices, as well as the practical experience that will enable them to develop holistic solutions to the problems they will encounter in their careers;
- are life-long learners capable of taking advantage of relevant new information and technologies as they are being generated;

- possess strong leadership, interpersonal and team-building skills;
- are able to integrate across disciplines and skills and to deal with collective issues;
- are critical thinkers able to manage complexity, conflict and unpredictability;
- are creative and responsive to developing themselves;
- are team players able to facilitate learning in groups and communities;
- are co-designers rather than simply disseminators of innovations;
- possess an ability for matching the technical and social dimensions of innovations.

"Current agricultural education programmes in Africa are far from producing graduates of this caliber," says Moses Zinnah, SAFE West Africa Co-ordinator. Some of the most difficult challenges facing agricultural education programmes today are:

- agricultural education that is generally aimed at producing biological scientists with very little appreciation for human relations skills;

- policy makers and donors who tend to view agricultural education, extension and research as separate entities, thus leading to waste of resources and less attention on education;
- diminishing financial support from both national governments and donors;
- inadequate collaboration between education and agriculture ministries leading to unclear policies on agricultural education;
- weak connections with the other critical components of the agricultural education system – universities, colleges, vocational schools and farmer training networks;
- lack of regular assessment of the critical human resource needs of the agriculture sector;
- lack of participation by stakeholders, leading to a myopic vision of how institutions should be, rather than responding to the needs of society;
- graduates of agricultural training institutions no longer being automatically employed by government agencies, and dissatisfaction from private sector employers who are demanding that graduates should possess computer literacy, entrepreneurial and human relations skills. They are also not happy with the focus on specialisation, rather than the multidisciplinary approach more suited to a rapidly changing world;

- a failure to attract the best students from secondary schools to pursue agriculture as a first choice;
- a lack of democracy within the training institutions themselves – especially the absence of clear policies and procedures for promotion (tenure) and other rewards for lecturers.

## Future direction

"These many challenges are not new either to developed or developing countries," comments Jeff Mutimba, SAFE East Africa Co-ordinator. However, the situation can be improved to make future agricultural education programmes more responsive to the needs of society if the following suggestions could be taken into consideration:

- there must be sustained political commitment and financial support from national governments and the donor community;
- the training institutions must have committed leadership with a clear vision regarding the needs of society, both at the present time and in the future;
- formal linkages must be forged between training institutions and other agencies and organisations in the wider community which they were created to serve;
- periodic strategic planning should be carried out in consultation with stakeholders in order to restructure curricula



**Dorothy Effa was one of the first generation of students on the SAFE BSc course for mid-career extension workers at the University of Cape Coast in Ghana. Her Supervised Enterprise Project (SEP) – the practical backbone of the course – involved women processors of 'dawadawa', an important food additive made from increasingly rare locust beans. By showing how soya beans can be substituted for locust beans, she has provided a lifeline to the failing local economy.**



# Africa's agricultural education challenge



Isaac Akpabi was working at the Ministry of Food & Agriculture's Information Support Unit in Ghana. He joined the BSc course UCC to improve his information skills.

For his SEP, he produced communication materials to persuade farmers to build improved storage facilities for maize – 'the improved narrow crib'. This was in response to a national priority for improving crop storage facilities so that farmers would not fall victim to seasonal changes in food prices and availability.



based on a thorough understanding of present and future social needs;

- the practical, experiential learning component of the education programmes should be expanded;
- agricultural education programmes at the various levels of the education system – primary, secondary, intermediate and higher – should be synchronised;
- an adequate number of qualified and experienced teaching staff should be recruited, motivated and retained to nurture the training programmes;
- the training approach should shift from teaching towards learning – it should be learner-centered;
- the training, at least at the certificate, diploma and undergraduate levels, should be focused on generalist orientation and problem-solving rather than

**Building African capacity in agricultural education involves a mixture of formal and informal activities to build technical competence and leadership.**

narrow specialisation, in order to provide a solid foundation for a more flexible career for the graduates;

- the training should promote gender diversity, with particular attention to training female leaders to address the unique problems of women farmers and entrepreneurs;
- students should be exposed to the relationships between health and

agricultural productivity – that poor health leads to poor agriculture (i.e. the threats of infectious diseases such as HIV/AIDS);

- administrators should document and share successful innovative case studies of agricultural education initiatives with others;
- partnerships between and amongst agricultural training institutions and other agencies and organisations should be strengthened in order to offer responsive agricultural education programmes.

## An innovative case study

"Restructuring agricultural education institutions in Africa will not be easy," admits Deola Naibakelao, "but the good news is that there are already a number of case studies of innovative and successful models, which can provide useful guidelines." SAFE is one of these, and is aimed at, among other things:

- creating training opportunities for mid-career agricultural extension staff in Africa, both male and female, with certificates and diplomas in agriculture and related fields, many of whom are already working in the field to improve upon their technical and human relations skills;
- reforming agricultural extension curricula in selected African agricultural universities and colleges to make it more experiential and learner-centred;
- assisting participating training institutions to acquire relevant instructional materials;
- fostering networking among the participating institutions with the aim of building strong pan-African academic partnerships;
- training agricultural extension leaders for extension organisations in sub-Saharan Africa;
- bringing about institutional reform within African agricultural universities and

colleges, not only in terms of the development of curricula, but also the reform of the institutions themselves.

The SAFE initiative has demonstrated that employers can and should influence the design of curricula at colleges and universities; universities respond to well articulated demands from the larger society – contrary to the 'ivory tower' phenomenon that usually characterises institutions of higher learning; and field experience can enrich the curricula and teaching-learning processes.

SAFE-type programmes have been developed at Alemaya University in Ethiopia; the University of Cape Coast and Kwadaso Agricultural College in Ghana; Sokoine University of Agriculture in Tanzania; Makerere University in Uganda; Ahmadu Bello University in Nigeria and the Rural Polytechnic University for Training and Applied Research in Mali. Many agricultural universities and colleges in other parts of Africa, including the University of Abomey-Calavi in Benin and the Polytechnic University of Bobo-Dioulasso in Burkina Faso, are planning to launch similar SAFE programmes in the near future (see page 10).

## Final thoughts

Agricultural education in Africa in the 21st century must encompass much more than just the production of agricultural commodities. As Kamyar Enshayan aptly noted in his article on "Rethinking Agricultural Education" which appeared in the *American Journal of Alternative Agriculture* (volume 7, number 4, 1992), "... agriculture involves people, cultural traditions, stewardship ethics, communities, stories and memories; it should weave these together."

# SG 2000 external evaluation exercise continues

The first public presentation of results of the external evaluation of SG 2000 country projects by the International Cooperation Centre for Agricultural Education (ICCAE) of Nagoya University, Japan, were presented at a seminar at Tsukuba in March. The seminar was attended by agricultural scientists, university lecturers, representatives of the Japan International Cooperation Agency (JICA), and other development agencies.



**Dr Tetsuo Matsumoto (left) and Mr Osamu Koyama (right) receive a warm welcome from a village elder in Burkina Faso.**

Speaking at the seminar, Dr Shuichi Asanuma, Head of Research Planning at the Japan International Research Centre for Agricultural Sciences (JIRCAS), and a member of the Uganda evaluation team, said that he believed technology diffusion was “only successful when farmers started practising new technology for themselves.” Giveaway projects destroy motivation.

“In Uganda, SG 2000 is trying to establish an environment where self-reliance can be stimulated – by developing input supply systems within the community, encouraging farmers to form associations, and empowering women through their own organisations.”

Dr Asanuma was impressed with the level of enthusiasm among farmers, but posed the question,



**Rice harvesting at a multiplication site in Bareng, Guinea**

“can farmers who graduate from the programme remain self-reliant?” He mentioned the catalytic role played by SG 2000 in Uganda, working with many of the stakeholders – donor agencies, national institutes, the private sector, and NGOs – to help formulate policies towards the alleviation of poverty. Thus SG 2000 had contributed positively and substantially to the Ugandan government’s Plan for the Modernisation of Agriculture (PMA).

“The PMA was clearly inspired by the SG 2000 method of technology diffusion,” he said, “and I highly commend this contribution.” He wondered, however, if the main characteristic of the programme – to demonstrate agricultural

technology – should be more forcibly emphasised.

Mr Osamu Koyama, Director of the Development Research Division at JIRCAS, who was part of the Francophone evaluation team, along with Dr Pierre Antoine, Regional Representative for West Africa of Winrock International, also gave his views.

He said he was impressed with a number of the aspects of the SG 2000 programme despite the problems of the harsh Sahelian environment in Burkina Faso and Mali, and rapid soil degradation in Guinea.

“Technology demonstration has been successfully carried out on crops such as maize, sorghum, millet and rice, including the new Africa x Asian rice varieties (called NERICAS, or New Rices for Africa) developed by the West African Rice Development Authority (WARDA),” he stated. In all three Francophone countries, SG 2000 no longer provides large amounts of credit and farmers have to pay cash for inputs. He applauded innovative interventions such as the *Caissees rurale d’epargne et de prêt* (CREPs). But while diversification of the programme was necessary, “it should not try to satisfy all parties concerned – or the process will never end.”

ICCAE field visits to eight countries were undertaken during 2001/02, with the analysis and report-writing period continuing into 2003. The final report of this comprehensive external evaluation of SG 2000 field programmes is expected later in the year.

Country	Date	External evaluators	Internal facilitators
Ghana	2-14 Sept 2001	Dr Matsumoto, ICCAE; Dr Donald Plucknett, Principal Scientist, Agricultural Research and Development International; Dr Hiroyuki Takeya, Graduate School of Bioagricultural Sciences, Nagoya University	Dr Marco Quiñones, SAA Regional Director for Africa; Dr Ernest Sprague, Senior Advisor for Food Security, The Carter Center
Malawi	24 Feb-9 Mar 2002	Dr Matsumoto; Dr Plucknett; Dr Kunio Takase, Advisor, International Development Centre of Japan (IDCJ)	Dr Quiñones; Dr Sprague; Michio Ito, Administrative Officer, SAA
Mozambique	10-22 Mar 2002		
Uganda	26 May - 6 June 2002	Dr Matsumoto; Dr Plucknett; Dr Shuichi Asanuma, Head of Research Planning Section, JIRCAS	
Nigeria	11-22 Aug 2002	Dr Matsumoto; Dr Plucknett; Dr Bashiru Mohamed Koroma, Researcher, United Nations Centre for Regional Development (UNCRD)	
Ethiopia	23 Aug-4 Sept 2002		
Burkina Faso	14-17 Oct 2002	Dr Matsumoto; Dr Pierre Antoine, Winrock International; Osamu Koyama, JIRCAS	Michio Ito
Mali	15-31 Oct 2002		
Guinea	1-9 Nov 2002		

# NEPAD: putting the spotlight on agriculture

African ministers of agriculture, representatives of the World Bank, bilateral development agencies, international research centres and agribusiness companies attended a workshop in Johannesburg last November jointly sponsored by the Sasakawa Africa Association (SAA) and the New Partnership for Africa's Development (NEPAD). The workshop was funded by the Nippon Foundation and organised by NEPAD and the Geneva-based Centre for Applied Studies in International Negotiations (CASIN). Dr Norman Borlaug and Professor Wiseman Nkuhlu, Chairman of NEPAD's steering committee, co-chaired this high-level policy forum entitled, "From Subsistence to Sustainable Agriculture".

"In essence, the workshop was organised to put the spotlight firmly on agriculture," commented Professor Nkuhlu. "It is the prime engine for Africa's economic growth, but investment in agriculture has been falling. It needs to be back at the top of Africa's policy agenda."

The workshop focused on four interrelated themes:

- enhancing agricultural research, extension, technology dissemination and application;
- land management, soil fertility and small-scale water resource development;
- transforming subsistence agricultural systems to sustainable commercial ones;
- food security strategies, including strategies to deal with HIV/AIDS in agriculture.

"We felt that the workshop and the

experts who took part helped to provide NEPAD with a better understanding of the challenges that needed to be addressed in its own Comprehensive African Agricultural Development Programme," said Norman Borlaug. "NEPAD intends to develop an agricultural system that promotes best practices that have been known to work in Africa and in similar situations elsewhere. We will give every possible support."

The importance of agriculture in Africa has been emphasised in the preparatory stages of the third Tokyo International Conference on African Development (TICAD), which takes place in late September. SAA's Dr Marco Quiñones and Toshiro Mado attended a two day TICAD III Preparatory Meeting at the Economic Commission for Africa (ECA) in Addis Ababa in March.



From left to right: Dr Wiseman Nkuhlu, Nicéphore D Soglo and Dr Norman Borlaug

The meeting was chaired by Tetsure Yano, Senior Vice-Minister in Japan's Ministry of Foreign Affairs, and Ambassador Shirisuke Horiuchi, and opened by Ethiopia's Minister of Finance, Sufian Ahmed. Over a hundred representatives from NEPAD member countries, United Nations organisations, multilateral development agencies and non-governmental organisations were present.

One of the objectives of TICAD III will be to place TICAD within the framework of recent initiatives emerging from Africa and the G8 Summit, particularly NEPAD. Items on the TICAD agenda include the increase in agricultural productivity and incomes, food security and response to crisis. "It was clear from the Addis meeting that Japan will spare no effort to promote Africa's development and is giving full support to NEPAD," said Marco Quiñones. "Former US President Jimmy Carter will be delivering a major paper on agriculture in Africa to African leaders in Tokyo in the build up to TICAD."

On a visit to London in May to celebrate Africa Day, Professor Wiseman Nkuhlu said, "While we see encouraging signs such as the strengthening of Africa's ability to produce food, as well as the emergence of new seed varieties such as the new rice varieties (NERICAs) in West Africa, African leaders must continue to campaign strongly against

agricultural subsidies in industrialised countries which have a destabilising impact on African food production".

The NEPAD vision for agriculture is that the African continent should, by 2015:

- attain food security in terms of availability and affordability and ensure that the poor have access to adequate food and nutrition ;
- improve the productivity of agriculture to attain an average annual growth rate of six percent, with particular attention to small scale farmers, especially focusing on women;
- create dynamic agricultural markets between nations and regions;
- integrate farmers into the market economy with Africa to become a net exporter of agricultural products;
- achieve a more equitable distribution of wealth;
- be a strategic player in agricultural science and technology development;
- practice environmentally sound production methods and have a culture of sustainable management of the natural resource base.



Ahmed Falaki, SG 2000 Nigeria (left) and Dr José Antonio Valencia, SG 2000 Malawi/Nigeria (right)

The Sasakawa Africa Fund for Extension Education (SAFE), operating in close collaboration with Winrock International and agricultural universities and colleges in six African countries, continues to expand and strengthen. Plans are under way to introduce new programmes in Benin and Burkina Faso.

In the last decade, more than 1,000 students have participated in BSc and Diploma courses. SAFE has opened up career opportunities for these graduates, improved their communications and analytical skills, enhanced the status of the extension profession and increased farmer participation.

### Alemaya University, Ethiopia

Graduates of the mid-career programme at Alemaya held their first alumni congress in December 2002. The congress highlighted both the positive and negative experiences encountered by alumni since graduation.

“SAFE graduates felt they could better exploit their new skills if the programme was better understood in the regional government structure, where misplacement of graduates still occurs,” says SAFE director, Deola Naibakelao. Graduates urged Alemaya to continue to promote the goals of the programme until all levels of government are familiar with it, and also to offer an MSc in Agricultural Extension to further enhance career progression.

### Sokoine University, Tanzania

The second intake of students on the mid-career programme at Sokoine graduated in November 2002. The 36 graduates included five women.

### Makerere University, Uganda

Fifteen students from the third intake group of the mid-career programme at Makerere graduated in January, including four female students. One female student graduated with first class honours (one of only 49 out of 2,502 undergraduate degrees awarded at this graduation) and ten students passed with upper-second class honours.

“The programme continues to move forward,” reports Jeff Mutimba, SAFE East Africa Co-ordinator. Thirty-nine new students were admitted in October for the sixth intake, with 20 receiving government scholarships. “The Government of Uganda’s continued support is vital for the sustainability of the programme,” stresses Mutimba.

### Kwadaso Agricultural College, Ghana

In March, the second batch of students graduated from the University of Cape Coast affiliated Diploma programme at Kwadaso Agricultural College (KAC) in Kumasi, Ghana. A quarter of the 35 students, including one woman, graduated with first class honours. Plans are currently under way to upgrade KAC and the other three certificate-granting agricultural colleges in Ghana to diploma-granting institutions.

### University of Cape Coast, Ghana

The SAFE BSc Agricultural Extension programme at the University of Cape Coast (UCC) celebrated the graduation of its eighth class in March 2003. Two of the 23 students graduated with first class honours. “SAFE support to UCC has been greatly reduced over the past two years,” reports Moses Zinnah, SAFE West Africa Co-ordinator, “because local stakeholders are making steady progress toward ensuring programme sustainability based on domestic resources.”

### Ahmadu Bello University, Nigeria

The new SAFE BSc Agricultural Extension programme at Ahmadu Bello University (ABU) in Nigeria has admitted 50 mid-career agricultural extension students, including one woman, in its first year. ABU Vice-Chancellor Professor Abdullahi Mahadi, has



The third group of mid-career extensionists graduates from Makerere University, Uganda.

pledged his full support for the programme, but reports that, “one of our challenges for the future is to increase the intake of female students.”

### Institute for Training and Applied Research, Mali

The new SAFE programme, which began at the Institute for Training and Applied Research (IPR) in Katibougou, Mali, in the last quarter of 2002, continues to make steady progress. The first 15 students have commenced their second semester and are progressing well. Due to a lack of adequately qualified and experienced agricultural extension

professionals at IPR, a specialist has been hired to implement and nurture the new programme in its first two years. Like ABU in Nigeria, IPR also needs to encourage enrollment of more female students.

### Upcoming SAFE programmes

Discussions are ongoing between SAFE and the University of Abomey-Calavi in Benin and the Polytechnic University of Bobo-Dioulasso in Burkina Faso for launching new agricultural extension training programmes in the near future.

## SAFE statistics as of March 2003

Mid-career BSc and Diploma Courses	Graduated	Current	Total
UCC, Ghana	177	57	234
Alemaya University, Ethiopia	103	89	192
Makerere University, Uganda	32	88	120
Sokoine University, Tanzania	50	140	190
KAC, Ghana	63	78	141
IPR, Mali	-	15	15
Ahmadu Bello University, Nigeria	-	50	50
<b>Sub total</b>	<b>425</b>	<b>517</b>	<b>942</b>
Scholarships	Graduated	Current	Total
BSc	16	7	23
MSc	45	10	55
PhD	3	-	3
<b>Sub total</b>	<b>64</b>	<b>17</b>	<b>81</b>
<b>TOTAL</b>	<b>489</b>	<b>534</b>	<b>1023</b>



# Agroprocessing programme

It has now been a decade since SAA teamed up with the International Institute of Tropical Agriculture (IITA) to bring improved agroprocessing equipment and practices to small-scale farmers as new rural business opportunities. Toshiro Mado, SAA agroprocessing programme leader, gives two examples of how this improved equipment can be used to set up business concerns providing services to the local farming community.

## “Mr Grater” in Benin

Cassava is a staple food crop in West Africa and is processed into several different types of food. The most popular processed food made from cassava is “gari”, which is easy to prepare and can be preserved for several months. However, processing cassava – particularly the grating stage – is time consuming and labour intensive. “Despite this,” says Mado, “processing remains an important means of income generation for many rural women.” A simple, locally manufactured, mechanical grating machine not only saves on time and labour, but can also improve the quality of the gari produced.

Eugene Boni from Boron village in Benin was faced with real hardship when he was made redundant. His father had seen an

IITA-designed grating machine during a Ministry of Rural Development/SAA field demonstration, and advised Eugene to use his termination allowance to buy one, together with a motorbike. Eugene now provides a mobile grating service to rural women in and around his village. The service has been well received in both his village and in neighbouring communities. His business is doing well and has also raised his social status in the village.

## “Mr Thresher” in Ethiopia

Teff is a staple food crop in Ethiopia, covering approximately two million ha of cultivated land. Farmers use four to five oxen to thresh teff, which takes approximately five hours per 100 kg. An IITA designed



**Ayele Hirpho explains the benefits of using a thresher to members of his local community.**

multi-crop thresher can thresh approximately 200 kg of teff in one hour, as well as several other crops, including maize, sorghum, wheat, rice, haricot beans and soybean.

Ayele Hirpho, a 28-year-old farmer with a 1 ha farm in Shashemene, in Southern Ethiopia, uses a donkey-cart to transport his thresher to his neighbours. During peak season, he works six full days a week to meet the demand of his customers. In the last threshing season (four months) he operated a thresher for 770 hours and raised Birr 17,710 (approximately US\$2,050). Ayele says, “I can’t be sick, since many people are depending on my service.”

Ayele recently attended a voluntary training course on water

resource management and plans to use his new skills to bring improved technologies to his neighbours. In effect, Ayele has become an extension worker and is known in his village as “Mr Thresher”.

“Both these cases demonstrate how agroprocessing can provide good rural business opportunities and why promotion of agro-based industry is one of the major agricultural development policies in Africa,” says Mado. “However, policies tend to put too much emphasis on large-scale industry, and not enough on the potential of small-scale rural agroprocessing enterprises and job creation. Eugene and Ayere have proved that small-scale agroprocessing services are a valid option for rural development.”

## Agroprocessing equipment sales in Benin, Ghana and Ethiopia

Type of equipment	Benin 1995-2002	Ghana 1995-2002	Ethiopia 2002	Total
Grater	189	323		512
Double screw press	152	353		505
Fermentation rack	36	254		294
Bagging stand	22	258		280
Sifter	37	264		301
Chipper	3	34		37
Thresher	58	13	26	97
Digester	5	51		56
Wet-grinder	42	7	1	50
Rice mill	1	2		3
Flour mill	0	0	1	1
<b>Total</b>	<b>545</b>	<b>2</b>	<b>28</b>	<b>575</b>

## Manufacturers Network in Benin wins award

The eighth International Art and Craft Show – an exhibition which promotes and rewards high quality craftsmanship – was held in Ouagadougou, Burkina Faso, from 25 October to 3 November 2002. COBEMAG, a member of the manufacturers network in Benin, was awarded first prize in the Creative Craft-workers Pavilion for its exhibit of agroprocessing products, including wet-type grinders and shea nut crushers, which are used for processing shea butter.

# SG 2000 country profiles



## Burkina Faso

Despite the late start to the rains in 2002, the seasonal average of 807 mm in the eight regions where SG 2000 is active compared favourably with 811 mm in 2001, judged to be a good year. Cereal production in 2002 reached 3.12 million t, with record maize production at 610,000 t. Cotton production was also a record. The country's only deficits were in wheat and rice production, with net imports declining.



**A delegation of MPs visits the Cascades region to learn about the benefits of small-scale irrigation.**

“We can report good results with Production Test Plots (PTPs) in millet, sorghum, maize, soybeans, groundnuts and the green manure grain legume, *Mucuna*,” comments country director Marcel Galiba, “and all targets were met.” Maize accounts for the largest use of chemical fertiliser and other inputs, although farmers are now required to purchase PTP inputs with cash. Galiba also reports that the QPM variety, Ma Songo, “was again the most widely planted maize variety among farmers.” SG 2000 produced 22.3 t of certified seed in 2002 in village-based, small-scale irrigation schemes.

Galiba reports that the contractual arrangements introduced in the Centre Ouest region two years ago between maize producers and agroprocessors are proving to be beneficial to both parties. Commercial millet and sorghum

grain – using IKMP1 and IKMP5 millet varieties, and the sorghum variety Framida – were grown for agroprocessors by farmers under contract, involving five villages and 121 producers. In February this year, 36.6 t of millet and 4.6 t of sorghum grain were duly delivered to agroprocessors who, impressed with the quality, paid a premium price.

“It seems that these commercial purchases will continue,” says Galiba. “The agroprocessors were

happy to have produce of a high standard, without stones or dirt, as is often the case in the open market where cereals are sold in bulk and up to 15 percent can be contaminated. Consumers were happy, too.”

The SG 2000 programme in Burkina Faso was reviewed towards the end of March at a meeting led by the General Secretary of the Ministry of Agriculture. The main programme priorities were discussed and a significant change of emphasis agreed upon. The meeting also drew on the external review carried out by the International Cooperation Centre for Agricultural Education (ICCAE) at Nagoya University, Japan, commissioned by the SAA board of directors (see page 6).

Past activities had embraced soil fertility restoration and improvement; agricultural intensification through PTPs and Production Plots; collective action through savings and loans schemes or the *Caisses rurales d'épargne et de prêt* (CREPs), the village-based microfinance associations (there are currently 14 in Burkina Faso).

Starting from the 2003 rainy season, a new strategy for SG 2000 will be launched. This will involve the further encouragement of farmers to purchase inputs on a cash basis, while strengthening fertiliser

dealer networks and the CREP movement. Seed production will concentrate on QPM and the New Rices for Africa (NERICAs) from the West African Rice Development Association (WARDA). National plant breeding institutions will be closely linked to the development of breeder and foundation seed. The national maize programme will test a new QPM yellow-grain variety, *Espoir*, that should be released soon.

As a sign of its commitment to food security, the Ministry of Agriculture, Water and Fisheries, led by Minister Salif Diallo, is increasingly involving political leaders as agents for change. Thirty members of parliament from all parties recently visited the Cascades region to meet producers and learn more about the contribution of small-scale irrigation to the production of maize and vegetables during the off-season. Each parliamentarian was subsequently provided with 10 ha of land to promote off-season activities in their home areas.

“Burkina possesses nearly 500,000 ha of low-lying land suitable for small-scale irrigation,” says Galiba. Following last year's pilot phase, 10,000 ha are coming under small-scale irrigation, and 50,000 t of grain are expected to be produced – greater than the national food security reserve.

### PTP results, 2002

Crops	No. of Villages	No. of observations	Yield (kg/ha)		Yield increase %
			PTPs	Check plots	
Maize	98	215	2,980	1,767	69
Millet	18	14	905	627	44
Sorghum	18	33	1,678	778	116
Rice	10	36	2,989	1,756	70
Cowpea	48	180	884	621	42

Last year's failure of the main season (*meher*) rains resulted in a decline of 25 percent in grain production compared with the previous year – and a 21 percent decline on the previous five-year average.

“The shortage of food production has been felt across the country,” says SG 2000 Project Co-ordinator, Takele Gebre, “but most significantly in the drought-prone eastern parts of the country. Here production was down by over 80 percent. All agricultural sectors suffered – livestock, cash crops such as coffee, and employment in agriculture generally.”

However, Gebre notes that during this year's short rainy season, which is responsible for ten percent of national food grain production, “most of the country received normal, or near normal, rainfall.”

Averting the food crisis and trying to reduce poverty are priorities for the Ethiopian government, led by Prime Minister Meles Zenawi. Over the last few years, hundreds of thousands of smallholder farmers have been provided with improved agricultural technology in high potential areas of the country – and US\$ 12 million has been allocated for the purchase of fertilisers in 2002.



**A farmer in Arsinegele receives horticultural seedlings from SG 2000.**

The government is taking measures to avert future shocks in traditionally drought-prone areas. These include voluntary resettlement programmes, with some 30,000 households being moved to less-degraded arable land, and the establishment of small-scale irrigation projects. Around 150,000 ponds will be dug before the advent of the rains as part of runoff water harvesting schemes. More assistance will be given to households and the community in general in more vulnerable areas.

During the 2002 crop season, SG 2000 sponsored a total of 821 on-farm demonstrations in 25 districts – nearly half involving conservation tillage. For the first time in Ethiopia, 82 farmers – mainly in East Wolega – planted QPM for family consumption. The Ethiopian Health and Nutrition Research Institute (EHNRI) is conducting nutrition studies with these families involving children of one and two years of age.

SG 2000 continues to provide support for government extension and research programmes. Strategic interventions include the promotion of improved crop varieties, such as rice and soybean, simple farm implements, postharvest activities and fertiliser studies.



**Nearly half of all on-farm demonstrations in 2002 involved conservation tillage.**

In response to the drought crisis, SG 2000 is working with the government to develop and demonstrate a number of water-harvesting technologies to serve as models for extension workers and farmers. These include small-scale drip irrigation projects capable of irrigating up to 500 m<sup>2</sup> per household, as well as credit facilities for participating farmers. Some 30 pilot demonstrations will be sponsored by SG 2000 during the current year (see pages 1 and 2).

SG 2000 is working in collaboration with the national research and extension services as well as international organisations, such as the International Livestock Research Institute (ILRI). These organisations have assigned professionals to serve on an advisory and technical committee in support of pilot demonstrations.

“We hope that this programme will contribute to capacity building and serve as a database of knowledge and skills in water-harvesting and small-scale irrigation development,” comments Gebre.

SG 2000 is also becoming involved in popularising cassava – grown by farmers in south and southwestern Ethiopia as a “poor man's crop”.

“We believe that it should be given greater attention by research and extension in Ethiopia,” says Gebre. “It has the potential of playing a significant role in poverty reduction and the attainment of food security.”

SG 2000 recently sent a delegation of agricultural professionals to Uganda to study Uganda's experience with cassava and is developing a programme in support of cassava research and extension in Ethiopia.

## Maize yield comparison (averages), 2001/02 cropping season

Region	Zone	District	EMTP* yield range (t/ha)	SG 2000 EMTP (t/ha)	National Extension Intervention Plot (t/ha)
Oromiya	Jimma	Kersa	6.5-7.8	7.2	5.5
SNNPR†	Hadiya	Badewatcho	6.0-8.0	7.0	5.5
	Sidama	Awasa	5.5-7.3	6.8	5.5

\* Extension Management Training Plot

† Southern Nations Nationalities and Peoples Region

The agriculture sector in Ghana grew at four percent in 2001, about double the rate of 2000. Low use of improved production inputs, such as fertilisers and improved seeds, is still negatively affecting farmers' yields. Fertiliser use in Ghana is lower today than it was 20 years ago, despite a 60 percent increase in total population. Food production is increased through area expansions. Average yields of all major staple crops have been declining for the past five years.



**President John Agyekum Kuffour, accompanied by ministers of state, visits the SG 2000 stand at the Annual Farmers' Day.**

Despite the availability of improved varieties and planting materials for virtually all of the major Ghanaian food crops, the quantities of the certified seeds produced have also declined in recent years, and only cover relatively small proportions of the respective areas cultivated. In 2002, national certified seed stocks were sufficient to plant 34,685 ha of maize, 17,950 ha of rice, 2,720 ha of soybean, 4,444 ha of cowpea and 525 ha of groundnut.

## Agribusiness skill development training

SG 2000's major programme focus in 2002 was agribusiness skill development training for farmers. "The objective of this," explains SG 2000 Project Co-ordinator, Benedicta Appiah Asante, "was to strengthen farmers' groups, particularly the former Farmers' Production Plot (FPP) groups, into self-sustaining business orientated Farmer Based Organisations (FBOs)." This ties in with a major

component of the government's Agricultural Services Sector Investment Programme (AgSSIP)—the *Development of Farmer-Based Organisations* (Component 4).

Agribusiness skill development training was offered to farmers in three modules: Entrepreneurial Awareness (Module 1), Management (Module 2) and Association Development or Group Dynamics (Module 3). In 2002, a total of 245 farmers from Ashanti and Central regions, belonging to 19 farmers' groups, took all three modules. Topics included income and expenditure, accounts, pricing of commodities, customer relations and conflict management. Farmers and their collaborating field extension staff have become skilful in these areas and it is hoped that this will produce an improvement in farmers' investments and net incomes in the long-term.

## Field programme achievement

In 2002, nearly six thousand Extension Test Plots (ETPs) were planted, with the involvement of 479 farmers' groups. Over 5,000 of the ETPs planted used "No-Till" technology. By commodity, maize was the most important demonstration crop (79%), followed by vegetables (10%), rice (5%), groundnut (4%), and cassava (2%). There were also 52 FPP groups, comprising 712 farm families, cropping between 0.8 ha and 2 ha of mainly quality protein maize (QPM). In Ashanti and Central regions, SG 2000 collaborated with Monsanto and a number of community based organisations to plant 140 Verification Demonstration Plots (VDPs) in 11 districts (see table).

## Other programme achievements

SG 2000 organised a study tour to Benin for 18 farmers and five extension co-ordinators to study microfinance initiatives as an

alternative source of financing to formal banking institutions.

SG 2000 also participated in the Annual Farmers' Day celebration. Visitors to the SG 2000 exhibition stand included the President and the Minister of Food and Agriculture.

## Activities for 2003

The SG 2000 Ghana programme is scheduled to come to a conclusion at the end of 2003, after 17 years of operation, although selected activities will continue to be supported through regional SAA and SG 2000 initiatives. During 2003, SG 2000 plans to continue its agribusiness skill development by offering follow-up training to 19 groups trained in 2002 and to offer training to 15 additional groups. The programme will also focus on post-harvest technology transfer and agroprocessing micro-enterprise development.



**Maize was the most important demonstration crop, by commodity, in 2002.**

## ETP yields of major crops (t/ha), 2002

	Maize	Rice	Groundnut
Number of plots	4.7	324	223
Average yield (kg/ha)	4.0	3.7	2.5
Yield range (t/ha)	2.3-5.3	2.8-3.8	1.8-2.3
National yield (t/ha)	1.45	1.6	1.0

It has been three years since scientists from the West African Rice Development Association (WARDA) assured President Lansana Conté that Guinea's experience in rain fed rice production could be taken as a model for other African countries. Now Guinea has taken a leading role in the promotion of NERICAs (the new rice for Africa developed by WARDA from inter-specific crosses between African and Asian species). "In fact, the year 2002 could be described as the year of NERICA in Guinea," says country director Tareke Berhe. "It has become a key part of the SG 2000/Government of Guinea programme."

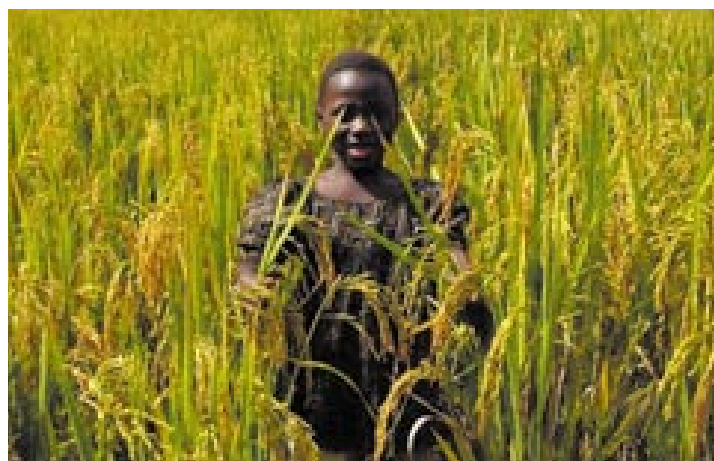
Last year, through the programme, 8 mt of NERICA seed was distributed to farmers through the *Service National de Promotion Rural et Vulgarisation* (SNPRV). Some 125 mt of fertiliser were distributed to farmers who already had their own seed. Around 2,000 NERICA demonstration and seed production plots were established on 1,000 ha under supervision. SG 2000 also facilitated the export of 1.7 mt of NERICA seed to Gambia, Sierra Leone and Ethiopia. As a sign of its regional commitment, Guinea's Deputy Minister of Agriculture, M. Elie Fasou Damey, led a high level delegation to the launch of the African Rice Initiative, held in Côte d'Ivoire.

"The early-maturing characteristics of NERICAs enable farmers to grow a second crop of rice or legumes," says Tareke Berhe. "It has the capacity to transform rice production in Africa."

There has been considerable Japanese interest in the development of NERICAs. A joint

SAA/Japan International Cooperation Agency (JICA) mission visited demonstration plots and farmers' production fields in Guinea last August. Later in the year, Dr Berhe gave a presentation on NERICAs to international development staff at JICA headquarters in Tokyo and at the Embassy of Japan in Addis Ababa. The Japanese ambassador in Conakry held a NERICA food tasting at his residence – an event which was replicated by UNDP in Tokyo. Considerable international awareness of the potential of NERICAs has been created through media activities organised by UNDP in New York and Conakry.

Other SG 2000/SNPRV activities have included field demonstrations with the yellow-seeded QPM, CMS-475 (selected from lines introduced from Brazil in 1998), as well as improved varieties of cowpeas and soybeans from the International Institute of Tropical Agriculture (IITA). Completed field activities in 2002 involved over 5,000 farmers' plots (see



**The NERICAs have the capacity to transform rice production in Africa.**

## Field activities, 2002

Crop	No of plots	Area (ha)	Average Yield (t/ha)
Upland rice	1,902	956	2.2
Lowland rice	1,308	602	3.3
QPM	1,495	622	3.0
Cowpeas	244	93	0.8
Soybeans	195	97	1.0
<b>Total</b>	<b>5,144</b>	<b>2,370</b>	

table). Five narrow cribs for post harvest storage were constructed and 40 women trained in QPM, Mucuna and soybean processing. Soil fertility and restoration are major problems in Guinea and an integral part of the SG 2000/Government of Guinea programme. One important agricultural area – the Fouta Djallon in middle Guinea – is badly affected due to high levels of acidity, aluminium toxicity and phosphorous deficiencies, although the improved NERICAs have been grown successfully in this area.

SG 2000 is therefore working with combinations of legumes – Mucuna and soybeans – rock phosphate from Mali and Senegal, and chemical fertilisers, with the results reported at an International Fertiliser Development Centre (IFDC) soil fertility workshop, held in Lomé, Togo.

Tareke Berhe sees capacity building as an essential part of Phase Two of the programme in Guinea. "We are aiming to transfer ownership of our programme to

Guineans," he says, "but we know that this will only happen through training and technical support, allied to a strengthening of the necessary agricultural institutions." Close co-operation has therefore been developed with extension research in four of the country's research centres, with three schools of agriculture, and with the University of Faranah, Guinea's leading agricultural university.



**Field activities in 2002 involved over 5,000 farmers' plots.**



**Part of a 50 ha QPM field in Dittin, Mamou region**

Malawi should increase the production of maize – its staple food – in the 2002/03 season by more than 500,000 t. Yields will rebound from 1 to 1.2 t/ha on roughly 1.5 million ha. “After last year’s difficult climatic conditions, this is good news,” says country director José Antonio Valencia, “although Malawi is still far from achieving its potential.”

In 2001/02 there was acute drought in some parts of the country. The lack of accessible and affordable inputs for farmers and price uncertainty were also major constraints. Even with an improvement this year, Malawi will not achieve self-sufficiency in maize production, with the deficit estimated to be around 135,000 t. Given the right incentives, the average national yield could quite easily be in the 2.5 to 3.0 t/ha range.

Valencia bases his estimates on results achieved in four years of demonstrating and disseminating

maize production technologies in Malawi. The SG 2000 programme is run in partnership with the regional Agricultural Development Divisions (ADDs) of the Ministry of Agriculture and Irrigation and the National Research Institute for Agriculture (NRIA). The average maize yield of the SG 2000/ADDs demonstration programme, operated across the country, is around 5 t/ha.

Low grain yields remain a major problem in Malawi, much to the frustration of the farmers, who believe that had they been able to receive adequate inputs before the 2001 food crisis, they would not have needed free food from the international community – and the distortions that this produces in the local market.

Farmers are enthusiastic about the impact of conservation technology given the labour-saving benefits and improvements in soil fertility. Some 166 conservation tillage plots have been established in the 2002/03 season. “Hoes are no longer required for land preparation and weeding,” says Valencia. “Farmers even want to



**Farmers are enthusiastic about the labour-saving benefits of conservation technology.**

start planting maize in the winter season using conservation tillage technology.”

In 2002/03, a total of 6,381 Management Training Plots (MTPs) were established in six ADDs across the country – over 5,000 MTPs with conventional maize, and nearly 1,000 with the nutritionally superior Quality Protein Maize (QPM). Rice and soybean are also being demonstrated (see Table 1).

Malawi imported 46,199 t of urea (46-0-0) and 39,773 t of

compound fertiliser (23-21-0-45 of NPK and S), mainly for maize production in the current season.

“The national agricultural research system has recommended that Malawi follows the lead established by the SG 2000/ADDs programme,” says Valencia.

“When hybrid seed and fertiliser become affordable and accessible to farmers, their aspirations, and those of the country, will be met on considerably less land area, thus freeing up land for other crops.”

**Table 1. Number of MTPs, 2002/03 season**

Type of demonstration	No. of MTPs
Conventional maize	5,127
Conservation tillage	166
QPM	952
Conventional rice	61
Conventional soybean	75
<b>Total</b>	<b>6,323</b>

**Table 2. MTP average maize yields compared to farmers’ traditional practices**

	Type of MTP	Average grain yield	
		1998/99 kg/ha	2001/02 kg/ha
Blantyre	Conventional	4,600	5,311
	Conservation Tillage	-	6,098
Machinga	Conventional	4,600	4,790
	Conservation Tillage	-	4,718
Lilongwe	Conventional	4,750	5,660
	Conservation Tillage	-	4,623
Salima	Conventional	-	4,204
	Conservation Tillage	-	3,944
Kasungu	Conventional	-	4,947
	Conservation Tillage	-	4,040
Mzuzu	Conventional	5,267	5,648
	Conservation Tillage	-	4,967
<b>National Average</b>		<b>1,712</b>	<b>1,002</b>



**SG 2000/ADDs have established over 6,000 maize MTPs in 2002/03.**

The Quality Protein Maize (QPM) variety, Denbanyuman – based on Obatanpa from Ghana – was first introduced in 1996, and has found growing acceptance. In the irrigated areas of the *Office de Niger*, Denbanyuman has steadily grown in popularity with farmers, covering 1,800 ha in 2002, with yields reaching 4,000 kg/ha. In the rain-fed cotton-growing area of Niamala, Sikasso region, 77 percent of farmers that have tested the variety have decided to adopt it (Table 1).

“Seed availability, however, continues to be a major bottleneck,” says country director Marcel Galiba, “and something we needed to tackle more aggressively.”

In 1998, SG 2000 linked up with the national research institute (*Institut d’Economie Rurale*) to produce good quality foundation seed, and with the national seeds service (*Service Semencier National*) and private seed growers to produce commercial certified seed. In 2002, 110 t of Denbanyuman seed were produced. Introduced only last year, a yellow QPM – Mali’s first yellow maize – is also showing promise. Some 7.4 t of seed are available for testing at 30 sites, in collaboration with the maize national research programme.

“These are substantial advances,” says Galiba. “SG 2000 has been able to bring together eleven groups – from researchers to farmers’ organisations – to promote QPM.”

QPM was given a national platform on Women’s Day in

March in Bamako where, at the Palais des Congrès, six communes competed by preparing 30 different dishes made from QPM. The First Lady of Mali, the wife of President Amadou Toumani Touré, was guest of honour and over 1,000 women attended.

SG 2000 is also promoting the New Rice for Africa (NERICA) varieties in Mali. In 2002, 500 Production Test Plots (PTPs) were planted by 315 men and 185 women in 87 villages in the cotton belt of southern Mali. Four varieties were selected: WAB 189 BBB 8 HB; WAB 56-104; WAB 181-18, and WAB 450 IBP 91 HB. Yields averaged 3,000 kg/ha compared with the normal local production of 1,200 kg/ha. A NERICA seed multiplication programme for the four varieties is expected to provide 18 t of seed for planting during the rainy season.

Over the past three years, SG 2000 has been playing a catalytic role to link farmers who have graduated from the SG 2000/MRD demonstration programme with

**Table 1. Denbanyuman expansion in Niamala Areas**

Village	Total maize area (ha)	QPM area (ha)	Adoption (%)	QPM yields (kg/ha)
Djila Maro	87	50	57	3,600
Tionsala	30	20	67	3,500
Bontola	60	40	67	3,000
Tiefala	150	100	67	4,000
Chobougou	28	20	71	3,500
Tienkouno	51	40	78	3,500
Kondji	50	40	80	3,500
Tonfaga	50	40	80	3,800
Niamala	200	180	90	4,000
Shola	14	14	100	3,500
Tebezana	30	30	100	3,500
Berala	30	30	100	3,500
<b>Total</b>	<b>780</b>	<b>604</b>	<b>77</b>	<b>3,600</b>

**Table 2. Input stockist sales in the Ségou region, 2002**

Village	Planned	NPK (kg) Sold	Sold (%)
Tingoni	5,000	5,000	100
Zambougou #1	2,000	2,000	100
Selinkegny	4,000	4,000	100
Niamabougou	6,000	6,000	100
Kondogola	5,000	4,000	80
Diakobougou	2,000	1,500	75
Wolodo	5,000	3,500	70
Zambougou #2	1,000	750	75
<b>Total</b>	<b>30,000</b>	<b>26,750</b>	<b>89</b>

fertiliser dealers. One dealer – *Société Malienne d’Inrants Agricoles et de Service* (SMIAS) – contracted with 2,493 farmers from 48 villages in 2001 and 2002, distributing 2,682 t of fertiliser. The credit recovery rate from farmers last year was 95 percent.

The payment of cash for inputs has also encouraged stockists to become more actively involved in the programme. Eight stockists in Ségou region, for example, had cash sales to farmers averaging 89 percent – with four reaching 100 percent (see Table 2). Following a workshop on inputs in December 2002, more stockists are joining the programme.

New programme activities have involved the country’s youth. In partnership with the Foundation for Africa, a group of 12 young men and three young women, aged 12 to 18, have been selected to participate in a one-year training programme involving agricultural technology and formal literacy education. The main school in Sanankoroba, near Bamako, made a classroom available. Practical training in the field is reinforced by agricultural education by SG 2000 staff. For each day of field work, the students receive a US\$ 1.50 stipend. The programme is set to expand.



**Mali’s First Lady (centre) samples dishes prepared from QPM on Women’s Day.**

Phase One of the SG 2000 Mozambique project came to an end in 2002. “The first six years have proved to be an intensive and challenging learning process,” says SG 2000 Project Co-ordinator Carlos Zandamela. Field demonstrations began in two provinces in 1995/96, with 40 farmers evaluating an improved maize production package. Since then, field demonstrations have expanded to all ten of Mozambique’s provinces. Some 15 food and cash crops have been included in the Ministry of Agriculture/SG 2000 field demonstration programmes, with participating farmers growing a total of 8,943 demonstration plots.



**In Phase Two, conservation tillage will be incorporated into the standard package for maize and rice demonstrations.**

Demonstration crop yields of maize and rice are three times higher than the national averages – approximately 3 t/ha compared to traditional yields of 1 t/ha. “Demonstration programme yields represent only about 50 percent of the genetic potential of the varieties being demonstrated,” says Zandamela. “But even if the demonstration programme yields became the average in Mozambique, the country could easily eliminate maize and rice

imports, improve nutrition, and meet national demand on much less area.”

Completion of Phase One was endorsed by the external evaluation team, led by Dr Tetsuo Matsumoto of the International Centre for Agricultural Education (ICCAE) at Nagoya University, which had visited the country in March 2002 (see page 6). Following extensive meetings with several stakeholders, including

high-ranking government officials in the Ministry of Agriculture and Rural Development, the evaluation team noted that:

- 1) the objective of creating an awareness for the need of Science-based Crop Production Technology (SBCPT) had been achieved at all levels;
- 2) the Government of Mozambique was willing to continue working towards achieving the programme’s goals; and
- 3) the conditions for effective transfer to nationals had been created.

“In Phase Two, SG 2000 faces a new set of challenges,” explains Zandamela, “which are emerging as a result of farmers adopting better production practices like QPM technology, conservation tillage, post harvest technology and agroprocessing.”

SG 2000 Mozambique Phase Two priorities are to:

- 1) attain higher yields in the demonstration plots;
- 2) continue to encourage commercial financial institutions and input suppliers to extend input credit to farmers who have adopted recommended technologies;
- 3) incorporate conservation tillage technology into the standard package for maize and rice demonstrations and widely disseminate this technology to extension workers and farmers;
- 4) collaborate with the *Instituto Nacional de Investigación Agropecuaria* (INIA) in research to determine the response of important crops (maize and rice) to different

fertiliser applications, and to develop a series of response curves to different fertiliser rates and materials.

Current activities involve around 9,000 demonstration plots being planted for the 2002/03 cropping season. Of these, 42 percent are using the Sussuma (QPM) variety and 10 percent the ITA 312 rice variety, with the remaining plots being planted with cash and food crops, such as sorghum, cotton, groundnut, soybean, cowpea, sesame, sunflower and vegetables.

**Current activities involve around 9,000 demonstration plots for the 2002/03 cropping season.**

Testing New Rice for Africa (NERICA) varieties has been underway since the 2001/02 cropping season using selected germplasm from INGER Africa Nurseries in collaboration with the West African Rice Development Association (WARDA).

Nine fertiliser response curves have been established in Manica and Nampula using the Sussuma maize variety as a test crop. Two extension workers completed their fieldwork in Mozambique in March 2003 and are expected to receive their BSc degrees later this year from the University of Cape Coast in Ghana.

Since 2001, Carlos Zandamela has been SG 2000 Project Co-ordinator in Mozambique. Engineer Zandamela was born in Mozambique and gained his BSc in Agronomy from Eduardo Mondlane University in Maputo. He then obtained an MSc in Crop Production and Management from the University of the Philippines.

Prior to joining SG 2000, Zandamela was a Technical Adviser at the National Directorate for Rural Extension. From 1993-97, he was Director at INIA, where he helped to design the Special Programme for Food Security (PAN) and provided technological input for SG 2000 Mozambique. He has also been Director General of the Chokwe Irrigation Authority, which manages irrigation schemes, procurement of inputs for smallholder farmers and produces viability studies to support credit negotiations with banks.





The ‘best maize harvest of the decade’ was the verdict of the farming community—despite initial concerns about the late arrival of the rains in 2002. The Federal Government, through the National Strategic Grains Reserve (NSGR), contributed to the mood of optimism by purchasing maize from farmers involved in the SG 2000 programme, which helped to stabilise prices.



**SG 2000 Project Co-ordinator Dr Falaki pays homage to the people of Dull, after being honoured with the title of ‘Santali’.**

Maize prices fluctuate considerably between seasons. For example, the average price for maize in December last year was \$240/t at harvest, dropping to \$160/t in February. NSGR was able to offer farmers \$200/t, leading to farmer net incomes that averaged \$1,152/ha.

Management Training Plot (MTP) hybrid maize yields during the rainy season were impressive, averaging 5.2 t/ha, (see Table 1). The highest average yield of 5.7 t/ha was recorded in Maigana Zone of Kaduna State – followed by Bauchi and B/Gwari (5.5 t/ha), Katsina and Lere (5.4 t/ha), Gombe (5.2 t/ha), Kano (4.9 t/ha) and Jigawa (4.3 t/ha).

Country Director, Dr José Antonio Valencia, who also has responsibility for Malawi, took the opportunity of visiting Nigeria’s Minister of Agriculture, Malam Adamu Bello, at his office in Abuja in December 2002, to brief him on the outcome of the

SG 2000 programme external evaluation, completed last August (see page 6). “The Minister expressed his commitment to a nationwide expansion of the programme,” commented Valencia.

While in Abuja, Valencia met with Professor C. P. E. Omaliko, Director and Chief Executive Officer of the National Biotechnology Development Agency (NABTA), to discuss potential areas of collaboration.

Apart from visiting dry season MTPs in Kano and Jigawa, Valencia paid a courtesy call on the Governor of Bauchi State, Dr Ahmadu Adamu Mu’azu, to thank him for the support he has given to farmers by sponsoring training programmes and providing inputs on credit and transport to increase field mobility. The Governor indicated that he would be sponsoring a further 10,000 MTPs across the state during the 2003 wet season.

In a special ceremony in January, SG 2000 Project Co-ordinator, Dr Ahmed Falaki, was “turbanned” with the traditional title of

**Table 2. Conservation tillage maize MTPs, rainy season, 2002**

State	No. of farmers	Area (ha)	Yield range (t/ha)	Average yield (t/ha)
Gombe	25	9.1	2.8-5.1	4.2
Kano	9	2.5	3.8-6.4	4.4
Katsina	6	2	5.9	5.9
Kaduna				
- Lere	6	1.5	4.9	4.9
- B/Gwari	2	0.5	4.8	4.8
<b>Total</b>	<b>48</b>	<b>15.6</b>	<b>2.8-6.4</b>	<b>4.8</b>

“Santali” by the people of Dull in Bauchi State. Traditionally, Santali is the closest person to the paramount ruler and his principal adviser on agriculture and water resources.

Dr Falaki also accompanied Governor Adamu Mu’azu and his delegation on a visit to South Africa, facilitated by Monsanto. The visit included tours of Monsanto agricultural stations, establishments related to conservation tillage and GM crops, a dairy farm, Hydraform Africa and the South African National Park Headquarters, where discussions were held with the Coordinator of Conservation Services. Mutual agreements were reached between Monsanto, the other organisations and the Governor on how to move agriculture forward in Bauchi State.

New programme activities include

collaboration with Agricultural Development Programmes (ADPs) to assist secondary schools in six states to establish MTPs. These will be used as demonstration plots in six crops for students and local farmers, thereby helping to disseminate improved technologies within the community.

SG 2000 and CANDEL (Monsanto representative in Nigeria) have agreed to produce an “M-Box”, a package of inputs – seed, agrochemicals (herbicide, insecticide and fungicide) and storage chemicals – required for the establishment of an MTP of 0.25 ha. A production guide translated into the local language will also be included and fertiliser will be provided alongside the M-Boxes, due to its bulkiness. The M-Boxes will save farmers from having to source inputs individually and are designed to be portable and affordable.

**Table 1. SG 2000/ADP hybrid maize MTPs, rainy season, 2002**

State	No. of farmers	Area (ha)	Yield range (t/ha)	Average yield (t/ha)	Traditional yield (t/ha)
Bauchi	325	86	4.2-6.7	5.5	1.4
Gombe	308	144	1.7-7.7	5.2	1.3
Jigawa	424	106	1.1-6.4	4.3	1.6
Kano	433	144	2.1-6.7	4.9	1.4
Katsina	269	174	3.8-7.4	5.4	1.3
Kaduna					
- Lere	457	118	2.3-7.0	5.4	2.0
- Maigana	267	63	3.8-7.4	5.7	1.4
- B/Gwari	271	68	2.5-6.0	5.5	1.5
<b>Total/average</b>	<b>2,754</b>	<b>901</b>	<b>1.1-7.7</b>	<b>5.2</b>	<b>1.5</b>
<b>National average yield 1.25 t/ha</b>					

SG 2000 continues to work with the Ministry of Agriculture and Food Security (MAFS), in preparation for a new World Bank-funded project, Participatory Agricultural Development Project (PADEP), which will support a range of community-based initiatives to enhance agricultural productivity and conserve the natural resource base. It is expected that PADEP will become effective by July 2003. With its long history of working with extension officers and farmers in seven regions of the country, MAFS extension and crop production officers have sought SG 2000 collaboration to assess a range of new productivity enhancing and resource conserving technologies.



**SG 2000 has a long history of working with farmers in Tanzania.**

### Quality Protein Maize (QPM) – a promising start

Since the late 1990s, with technical backstopping from CIMMYT, SG 2000 has assisted the Maize Research Programme at the Selian Agricultural Research Institute (SARI), in Arusha, to evaluate QPM materials. In 2001, two QPM hybrids and one open-pollinated variety were released for commercial use. At present, efforts to multiply the seed are ongoing and researchers at SARI have been working on the conversion of some popular normal-protein open pollinated varieties to QPM.

In efforts to promote QPM in Tanzania, SG 2000, in collaboration with MAFS, organised two workshops in December 2002 and March 2003, in Mbeya and Arusha, respectively. Participants included farmers' representatives, agricultural/livestock officers, researchers, human and animal nutritionists, seed producers and staff from MAFS Headquarters. Topics discussed included new developments, agronomy and the role of QPM in human and animal nutrition. Marco Quiñones, SAA Regional Director for Africa, participated in both workshops, while Wayne Haag, QPM Co-ordinator for Africa, participated in the workshop at Arusha.

During March 2003, field assessments of the QPM variety, Lishe H1, were made in the southern highland villages of Inyala, Mshewe and Songwe in Mbeya region. "During the assessment, the QPM crop was approaching maturity and the field observations indicated excellent yields," says Jiro Aikawa, an SG 2000 agronomist based in Tanzania. "Farmers were eager to continue using QPM, and it is anticipated that there will be great demand for seed for the next season. SG 2000 will continue to collaborate with MAFS and other stakeholders to promote QPM and ensure that good quality seed varieties are made available to farmers."



**Farmers in the southern highland villages are eager to continue using QPM.**

### Supporting the distribution and use of Minjingu Phosphate Rock

The Minjingu phosphate deposits, located in the Arusha region of northern Tanzania, were formed over millions of years during the Pleistocene age, from the bones and droppings of the flamingo birds which inhabited Lake Manyara. During the late 1990s, under Phase 1 of the SG 2000 Tanzania project, Minjingu phosphate rock (MPR) was used in a phosphorus-composting project and showed its efficacy in recapturing P-deficient soils. Yields were enhanced when "phospho-compost" was used in combination with nitrogen fertiliser.

During the 2001/02 crop season, SG 2000 made a number of demonstrations in six districts on the value of MPR for direct application (see table). "The data doesn't show dramatic increases in

maize yields, since not all the plots were applied with nitrogen fertiliser," explains Aikawa. "However, it does show the effectiveness of MPR for increasing yields, when compared to control plots. So far, the major constraint in using fertilisers in Tanzania is mainly economic. Farmers do not have the cash or access to credit to purchase them."

At present, the government of Tanzania, through MAFS, is considering increasing the use of this local resource to increase crop productivity and to restore phosphate to the soil. A programme has been commissioned to support distribution and utilisation of MPR. As one of the main collaborators, SG 2000 would play an important role in working with smallholder farmers to sensitise them to the potential benefits of MPR for soil fertility improvement as a component of better land husbandry.

### Maize yields under MPR direct application and control plots, 2001/02

District	MPR yield (kg/ha)	Control plot yield (kg/ha)
Arumeru	2,850	2,667
Mbarali	2,587	1,772
Singida	2,790	2,233
Songea	1,202	516
Tabora	3,220	Not recorded
Kahama	1,150	Not recorded

Uganda's food security status is currently stable with "appreciable amounts of grain being procured internally for areas affected by civil unrest in parts of northern Uganda," reports country director Abu Michael Foster.



**One Stop Centres will help to train rural communities in agroprocessing activities.**

According to Uganda Grain Traders (UGT), there was an increase of maize farm gate grain prices from US\$ 17/t after harvest in 2001/02 – when prices virtually collapsed – to US\$ 111/t in February this year, after the second season's harvest in 2002.

"UGT's pre-season announcement of floor prices for maize and beans revived farmers' interest in growing these crops with improved technologies," comments

Foster. "Distributors have reported a pre-season surge in seed and agro-input sales."

Competition is much fiercer as several new companies have entered the market place with a broader range of products. An estimated 500 t of Nalongo, the popular Longe 5 QPM variety, will be available in the market from more than one seed company.

## Summary of planned programme intervention, 2003

Activities	Districts	Sub-Counties
One Stop Centres	7	7
NAADS	2	2
Voucher Assisted Demonstrations	15	70
Pigeon peas seed increase	5	19
Rice seed production	4	13
Groundnuts seed increase	1	1
On-farm research maize/rice	4	8
Pig feeding trials	2	3
Rice production	3	10
Tillage	14	44
Threshers	2	3
Transport (ox-carts)	9	
<b>Agroprocessing and postharvest</b>		
New groups	7	8
US\$ 50 postharvest grants	10	36

Farmers have been encouraged by the higher prices of food staples and the expansion of NAADS (National Agricultural Advisory Delivery Services) into ten districts and some 70 sub-counties. SG 2000 is adjusting its activities to integrate better with NAADS and to support private advisory services and capacity building for farmer institutions where local governments have specifically requested such assistance.

SG 2000 hopes to build sustainability for demonstration programme activities using the One Stop Centre (OSC) to backstop technology delivery. The first OSC – focusing on agroprocessing and providing inputs, equipment, communications networks and a skills base for farmers – was inaugurated in May 2002. A second, focusing on grain marketing and rural poultry feed processing, was launched in May 2003. Four new OSCs will be established in four new districts this year.

"The establishment of OSCs will greatly enhance SG 2000's capacity to train rural communities for more diversified agroprocessing opportunities, where there are sufficient supplies locally of raw materials," says Foster.

Postharvest and agroprocessing are now receiving more emphasis particularly in locations being

prepared for OSCs. US\$ 50 grants for postharvest activities will be channelled directly to farmers who can mobilise local materials and contract village artisans to build improved storage and drying structures. Groups that can jointly store and market their produce are also involved.

In 2003, SG 2000 will carry out 822 crop production demonstrations in maize, in rotation or intercropped with beans, groundnuts, and pigeon pea. In a targeted intervention for poor farmers in 16 sub-counties, women, youth and families affected by HIV/AIDS will receive a one-time grant of seed, fertiliser and crop protection products through stockists, to plant 0.5 acres – and will then continue to participate normally in demonstration training activities.

SG 2000 has joined with a regional ICRISAT initiative to promote pigeon pea production. Some 677 ha of pigeon pea will be sown in 2003, as part of a joint national programme co-ordinated by SG 2000 and involving NAADS, Catholic Relief Services, Technoserve and other NGO rural networks.

Two upland rice varieties (Superica 1 - WAB 450, and Superica 2 - P90) were released in collaboration with Nalweyo Seed Company (NASECO) and are being demonstrated in seven new districts in 2003.



**Mrs Gireli Kibuka fed her pigs on QPM, resulting in a litter of nine healthy piglets.**

# SG 2000 publications and videos

For copies please contact Raitt Orr & Associates Ltd in London

## Publications



1. SAA Annual Report 2001/02.
2. Proceedings of Workshop 2001: Food Security in a Changing Africa.
3. Proceedings of Workshop 2000: Extension Education – Reshaping African Universities and Colleges for the 21st Century.
4. Proceedings of Workshop 1999: The Food Chain in Sub-Saharan Africa.
5. Proceedings of Workshop 1999: Innovative Extension Education in Africa.
6. Proceedings of Workshop 1998: Partnerships for Rural Development in Sub-Saharan Africa.
7. Proceedings of Workshop 1998: Microfinance in Africa.
8. This is SAA: An introduction to the work of the Sasakawa Africa Association.

## Other publications available:

- SG 2000 in Nigeria – The First Seven Years (1999).
- Proceedings of Workshop 1998: Enhancing Postharvest Technology Generation and Dissemination in Africa.
- Proceedings of Workshop 1997: Agricultural Intensification in Sub-Saharan Africa.
- Proceedings of Workshop 1996: Overcoming Rural Poverty in Africa.
- The Earth and the Sky – the change and challenges in African agriculture, (1998).

## Videos



1. Setting the Grassroots on Fire – Norman Borlaug and Africa's Green Revolution, (1999).
2. Ethiopia, My Hope . . . My Future . . . The 'Green Revolution' in Ethiopia, (1998).
3. Breaking the Mould. Bringing African Universities into Development, (1997).
4. Fulfilling the Promise. How nutritionally-improved maize can alleviate malnutrition in maize-dependent countries, (1997).
5. Facing the Future. The SG 2000 Programme for Agricultural Development in Africa, (1996).
6. You Can't Eat Potential. Breaking Africa's Cycle of Poverty, (1996).

All videos are available in English, French and Japanese. Video formats are PAL, Secam and NTSC.

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