



Women taking Africa forward

Africa Rice Center (WARD) Annual Report 2006–2007

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About Africa Rice Center (WARDA)

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The Africa Rice Center (WARDA) is a leading pan-African research organization working to contribute to poverty alleviation and food security in Africa through research, development and partnership activities. It is one of the 15 international agricultural research Centers supported by the Consultative Group on International Agricultural Research (CGIAR). It is also an autonomous intergovernmental research association of African member countries.

The Center was created in 1971 by 11 African countries. Today its membership comprises 22 countries, covering West, Central, East and North African regions, namely Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Côte d'Ivoire, Democratic Republic of Congo, Egypt, the Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Republic of Congo, Senegal, Sierra Leone, Togo and Uganda.

WARDA's temporary headquarters is based in Cotonou, Benin; research staff are also based in Senegal, Nigeria, Tanzania and Côte d'Ivoire.

For more information visit:

www.africaricecenter.org

Contents

Message from the Board Chair and the Director General	2
Breaking the chains of subsistence	4
Improved rice and social change	7
Rice switch brings extra income	9
Women in science	12
Rice – the locomotive pulling growth forward in Africa	16
Donor profile – African Development Bank	19
The period under review May 2006 to December 2007	22
Financial statement	31
Board of Trustees	37
Postgraduate trainees in 2006–2007	41
Training courses	45
Publications 2006	47
Publications 2007	52
Acronyms and abbreviations	56

Message from the Board Chair and the Director General

Outlook as well as perception determines whether a bowl is half-empty or half-full; whether crisis is opportunity in disguise; whether commitment means more than clever words; and how a new vision approach will tackle a radically-changing African rice sector.

Recent global market events underline more than ever how Africa needs its own agricultural science research structure to find solutions to scarcity of food and to rural poverty, and the pivotal importance of advanced rice technology and varietal development in providing African answers to these problems.

The changed scenario of depleted world grain stocks, coupled to export controls and steadily rising world prices, has rightly again focused attention on the potential benefits of an African ‘Green Revolution’ and the continent’s ability to feed its own millions from the small grain most suited to its varied ecologies and climate zones – rice. Competition for the limited surplus of rice available on the world market means it is no longer a case of seeking to substitute Asian-grown imports with a cheaper home-grown product; scarcity now drives the effort to turn more African land over to rice production.

With some gentle prodding from the Africa Rice Center (WARDA), politicians are also grasping the opportunity to bolster domestic food supplies through new rice development programs and fresh financial commitment, particularly from WARDA member States which have responded with unprecedented payment of subscriptions to the Association. We welcome this response wholeheartedly and will seek to ensure that this renewed commitment is sustained so that an invigorated rice research center can fully meet its commitments to helping satisfy the food and social development needs of the African population.

The relevance of WARDA and its mission has once again been underlined in the positive report by the Fifth External Program and Management Review (see pp. 16–18). In accepting the 18 recommendations put forward by the EPMR panel, WARDA is seeking to fulfill the expectations of both the EPMR panel members and the Science Council that the Center will move forward and become a much stronger and larger rice research center profiting from the great opportunity for technological change provided by the increasing trend in rice prices.

WARDA’s own senior scientists are helping spearhead change in response to the New Vision outlined for the Center at the beginning of the new Director General’s term of office. Scientific achievement remains the goal of the Center’s research staff but they also recognise that an externally-changing donor environment means they must not only have ‘ownership’ of their agreed research projects but also lead from the outset in ensuring donors understand the importance of funding the pioneering research that leads to real and quantifiable change in rice fields and in the economies of countries as well as households directly touched by new technologies.

Reinforcing this greater involvement by scientists in the acquisition and funding of projects, the new Center marketing unit is designed to bring professional expertise to refining project proposals and to redefining the relationship between the Center and its donors.

Partnership of all kinds remains a vital element of WARDA’s modus operandi – evidenced by the presentation to the Center in late 2006 of the United Nations Award for South-South Triangular Partnership. Consultative meetings have taken place with IRRI and CIAT to increase partnership sharing of expertise in rice and rice-related science with the objective of benefiting rice producers not only in Africa but in Asia and Latin America as well.

The Council of Ministers has reiterated that WARDA’s primary host country is Côte d’Ivoire and that when all conditions are suitable for a safe return the Center should again occupy its official headquarters at M’be. Meanwhile, during the ongoing relocation to Cotonou the initiative has been taken to consolidate WARDA’s presence at the Togoudo Station by a transfer of administration of station facilities this year from IITA. Recent investment in the station at Togoudo has seen the completion

and fitting out of genebank facilities to complement those at M'be and at IITA Ibadan, a new library building and new office accommodation for GSS. Close cooperation with INRAB, the Benin NARS, has enabled scientists to extend their field trials to dedicated sites in suitable ecologies outside the southern coastal area.

Donor funding is under pressure throughout the agriculture science research sector and WARDA's New Vision has recognized the need for a holistic approach. WARDA's advance to becoming a medium-sized \$15 million center continues to depend on careful financial stewardship, which is reflected in significant reductions in some areas of expense. Total income from grants and other sources was \$11,436,473 in 2006 calendar year while \$10,684,196 was received by the year-end in 2007. The decision to place particular emphasis on the collection of outstanding membership subscriptions met with a highly positive reception from Member States which demonstrated their commitment and responsibility towards WARDA.

This past year has brought strengthening in the activities of the Center's economists and WARDA's Advocacy and Policy Research Group which conducts rice policy research and advocacy in support of national and regional common agricultural policies (UEMOA, ECOWAS and NEPAD). Of particular interest among those policy research themes are the effects of food aid on local and regional production and markets; effects of tariffs and non-tariff measures on the rice sector; and the input supply market; and determining the gender dimension with specific reference to women in post-harvest operations.

It is appropriate that this annual report for 2006–2007 has as its theme an oversight of the valuable and pervasive role of women in the African rice sector – from field to plate – and in agricultural science research. WARDA and its partner NARS have long recognized the essential involvement of women in participatory research and in extension. The signs are now that the female place in African society is being strengthened as a result of the higher status gained through success in growing NERICA varieties for household consumption and for commercial sale. The reports that follow salute our pioneering African women scientists and forward-looking female farmers.



Gaston Ipreux


Breaking the chains of subsistence

The scientific case for NERICA varieties is generally contained in scientific papers and monitoring and evaluation reports that mean little to the villagers and rural farmers experiencing real change in the lives. Over the following pages this Annual Report examines how NERICA is stimulating change where it matters – in the lives of African families. In particular, the pre-eminent role of women in helping bring about that change through adoption of technologies including improved rice varieties such as NERICA is highlighted in several countries where local and national administrations are seizing the opportunities provided by the Africa Rice Center research network.

A powerful combination of women farmers and the potential offered by NERICA varieties is transforming daily life and helping rural people in The Gambia break out of the confines of subsistence farming.

By adopting a ‘business culture’, rice yields are improving and income increasing sufficiently to cover both family needs such as school fees and medicine and investment needs for mechanizing and modernizing farming techniques.

Rice growing in Gambia is dominated by women – in fact, women are to be found heavily involved all along the rice chain from initial soil preparation through to the supply of seed for the next crop. Now they are at the forefront of the switch from a subsistence-oriented culture in the countryside to a more commercial culture in which NERICA varieties are playing a crucial part in the extension activities of the National Agricultural Research Institute, with support from the African Rice Initiative.

Of the advantage of NERICA varieties, members of the Yirima Kafo group at Jambur in the east of The Gambia are quite certain. The higher yields generated in fields grown to NERICA1 and WAB450-1-B-P163-1-4, although locally it is called NERICA koyo (white NERICA in Mandinka), amply meet their needs. Yirima Kafo has 33 members – 18 women and 15 men – and has become one of the most dynamic grower associations in the area since it was founded in 1998. Its chairperson, Kade Bojang, points out that the 3.5 tonnes per hectare (t/ha) of rice harvested last year allowed members to supply their household needs and sell the remainder of the rice at 25 GMD (1.2 USD) per kg.

Since the group started growing these NERICA varieties, the improved income has allowed them to build a store between 2004 and 2006 for safeguarding the harvest in good conditions. The social status of the women involved has been

enhanced thanks to these new varieties, giving the women more say in running local affairs, and children’s education has been boosted.

The success of Yirima Kafo has enabled it to open an account with a bank and put in place a microcredit system to benefit its members. Women who find themselves in need of short-term financial help can obtain loans which are paid back with interest within the year. The self-organizing group can also assist would-be farmers. The group’s secretary, 45-year-old Omar Bojang, is permitted to grow 16 ha of vegetables and 5 ha of rice for home consumption on land passed on by other group members.

Despite the advantages conferred by the NERICA varieties it is not all plain sailing for the group members, explains Mrs Bojang. Getting the best plot preparation each year is always an issue. Fieldwork is still exhausting – most of the plots don’t have access to draft animals so land preparation has to be done by hand. Mineral fertilizers and other chemical inputs are scarce and organic alternatives rare. A harvester-thresher would also be invaluable for improving group productivity, she says. However, even after threshing, it is still necessary to carry the rice on foot for several kilometers so it can be milled. Group members would like to sell more of their rice to the wider market but are still short of the necessary cleaning and preparation technologies as well as the means to acquire them.

NERICA varieties have shown Gambian growers yield potential of which they had previously been unaware. At Jambanjelly, grower Binta Jatta praises the greater height of the NERICA varieties which means she no longer has to put up each evening with the back pain she previously suffered from bending low to harvest her crop. She is a member of the Niodema group at Jambanjelly – ‘niodema’ means ‘joining of hands’ in Mandinka.

The group's technical adviser Bore Bayo, a 56-year-old mother of seven, has the job of encouraging members to organize their work properly and follow the cropping calendar.

She recommends growing vegetables, groundnuts and even rice in the off-season, but confirms that rice is overall the most profitable crop, ahead of maize and 'hungry rice' or fonio (*Digitaria exilis*). Lack of mechanization of labor is again seen as the main obstacle to greater farming success and the advent of less rigorous working conditions.



Women from the Niodema group at Jambanjelly: Bore Bayo technical adviser (left) and Binta Jatta (right)

This group is predominantly composed of women, with just two males among the 50 members growing rice on 120 ha loaned to the group. NERICA varieties – NERICA4 and WAB450-1-B-P163-1-4 – have replaced the traditional practice of growing groundnut in this area. Why? NERICA gives much better results than groundnut in the off-season.

Children are the major beneficiaries of the improvement in income from rice cropping. Every village child of age now goes to school thanks to the cooperative which uses the balance of funds from surplus crop sales after deducting handling charges. There is still some profit left for the group to organize an annual harvest festival and grand celebration where everyone can eat, sing and dance until they drop!

And, Binta Jatta confirms that individual growers have something to celebrate. Her market gardening activities in between rice production last year produced about 20 buckets of peppers – worth about 500 GMD (24 USD) and a useful household supplement.

A cautious approach to NERICA by the much larger cooperative at the village of Tudjereng has nevertheless shown this group of 295 women and five men the potential of these varieties. The coop chairwoman Manya Ceesay admits they started modestly with just 1 ha planted with both NERICA4 and WAB450-1-B-P163-1-4 in their first year with the new rice; last year the coop harvested 5 tonnes from 3 ha and this year they plan to cultivate 5 ha of these welcome new varieties based on the good returns they are seeing.

Last year's harvest of these NERICA varieties brought in 35 000 GMD (1600 USD), most of which was reinvested in plot preparation for the next crop but some was retained in a revolving fund to support farming activities. Mme Ceesay again singles out lack of a tractor as a major barrier to good seedbed preparation, but also road access to market is a difficulty now there is potential surplus grain to sell.

Although these coops are demonstrating to their members the promise offered by NERICA varieties, there are cultural problems to be overcome. Saho Mambur, a private farmer in the village of Fasse Saho, highlights what is at issue. He was introduced to WAB450-1-B-P163-1-4 by a farmer-friend who told him of the benefits of the new seed and 'sold' him 40 kg of seed at a symbolic price of 1 USD. Being delighted with the first results of growing that seed on a small plot, Mr Mambur decided to increase his production of the improved variety and share the benefits with family and friends. However, he too demanded a symbolic payment for the seed he shared so that his fellow farmers would also place greater value on the new seed.

This argument that small farmers place greater value on something for which they have paid is one that is held dear by James Tsay, head of the Taiwanese rice program in The Gambia. He has been disappointed that NERICA varieties are not being taken up more rapidly in the country despite the huge enthusiasm it has generated. Shortage of seed is partly to blame, as is lack of infrastructure for irrigated rice. However, African customs may also be responsible, he suggests.

According to Mr Tsay, African culture frequently calls for giving to others with the potential result that the recipient does not always appreciate the value of the gift he is being offered. Introducing even that symbolic charge for NERICA seed could help the rice revolution along more than making seed available free-of-charge!



Mambur Saho in his rice field, another farmer who adopted the NERICA varieties

Improved rice and social change

Keeping the classroom filled

Aminata N'Diaye, 53-years-old and the mother of nine children, has an attractive face on which time has left few traces. Educating her family is not as difficult as you might expect; each youngster of school age is attending school thanks mainly to sales of rice produced under the wing of the cooperative to which she belongs.

Aminata is president of the association of female rice growers at Diawar, a village in the Senegal River Valley about 20 kilometers from Saint-Louis. The women members of the association grow 22 hectares of rice, most of it the Sahel 108 and 202 varieties, and highlight not only the additional yield over traditional varieties but also the organoleptic qualities of the improved rice; Sahel 108 has good color, making it perfect for white rice, while Sahel 202 has the greater cooked bulk that makes it an ideal ingredient for Senegal's national dish – tieboudienne or fish and rice.

Overcoming the land hurdle

Access to land suitable for cultivating rice is not automatic for most women in this region and their needs are often ignored. However, development partners such as the

SAED (Société nationale d'aménagement et d'exploitation des terres du delta du fleuve Sénégal et des vallées du fleuve Sénégal et de la Falémé), which is responsible for developing agriculture in the Senegal River Valley, and also donors will often attach funding conditions stating that benefiting villages must ensure that at least 10% of land in a development scheme is farmed by women. At the same time, some women inherit plots when their husbands die. Women are often more productive and generate more income than male farmers.

Last season the women of Diawar had a bountiful rice harvest growing the Sahel varieties. Management and distribution of the income from rice growing varies within the seven groups that make up the cooperative. Some simply share the profits among the group members while others use some of the profit to set up credit schemes. For example the group may lend 5000 CFA to a member who must then pay it back at the end of three months with interest added of 10%.

Don't assume that the women of Diawar are in some way exceptional. Senegal has a thriving national association of women farmers led by the redoubtable Madame Penda Cissé, one-time accountant with the Senegalese NARS, ISRA (Institut sénégalais de recherche agronomique). Since retiring from that post in 2004 she has invested heavily in the rice sector and is



Children benefit indirectly from the adoption of the NERICA varieties as their parents have sufficient income to send them to school

herself a major producer of seed as well as encouraging other women farmers to train in new techniques for rice growing to help lift them from the unenviable position of being the most deprived and poverty-stricken in rural society.

Cross-river flows

Similar dynamic cooperatives led by women exist on the other side of the River Senegal in Mauritania. One of the best known and most dynamic is Masara Sidi Fall whose president is Zeinabou Mint Atana. This cooperative was financed by the African Development Bank and is managed with the help of FAO.

The Sahel rice varieties developed at the Africa Rice Center's St-Louis Station in Senegal are just as appreciated in Mauritania. Good quality and high yield mark them out, according to Modiome Diakhite, secretary general of the women's association in the village of Tounguen, not far from Rosso. By working together they monitor the prices in the market before deciding when is the best time to sell their rice

at sufficient profit to pay off any outstanding borrowings used to finance growing their crops. Some cooperative members have even greater surpluses which they are able to store and sell throughout the year, thereby safeguarding their financial health right through to the next harvest.

The opportunity to invest in new village resources is a common theme among the village farming communities that have adopted improved rice varieties in the Senegal River Valley. The co-operative of Degobreungouyar, which has both male and female members, has found a novel way of investing the profits from rice for the benefit both of the village and the weary traveler. Boubacar Diaye, president of this 64-member association, says the new varieties enable them to grow 30 ha of rice in the off-season as well as the main 264 ha. The benefits are impressive; the village rice producers are responsible for all investment in village infrastructure. Taking pride of place is a new building that not only provides a meeting place for the cooperative but is also a three-room guesthouse, complete with showers, bringing in extra income from visitors and travelers.



Members of the Masara Sidi Fall cooperative with its president (in pink) Zeinabou Mint Atana

Rice switch brings extra income

Women farmers are prominent among those in Guinea benefiting from the rapid expansion of the NERICA varieties there. Early success can, however, highlight difficulties that need to be resolved before full transformation of the rice sector can take place.

Guinea is one of the pioneers in successful dissemination of the NERICA varieties with an estimated 50 000 hectares planted in 2007. Various studies place the adoption rate at about 10% of the country's total rainfed upland rice area which is estimated at between 300 000 ha and 500 000 ha. Farmers in Guinea were also among the first multipliers of NERICA seed for the African Rice Initiative (ARI) and exporters of seed through ARI to neighboring countries. Growers in Guinea have chosen to grow NERICA1, NERICA3, NERICA4 and NERICA6.

The new ARI project supported by the African Development Bank has revived interest in the NERICA varieties but such success means that Guinean farmers now face the same shortages of quality seed experienced by other growers in West Africa. Failure to provide adequate separation for rice varieties either in the field or in store means that many stocks of what should be undiluted NERICA seed contain instead seed of other varieties of variable quality.

Enthusiasm has been dented only slightly by this and by the winding down of some agricultural support projects, but NERICA varieties nevertheless continue – as in neighboring Gambia – to replace traditional fonio cultivation and is even proving more profitable for some women's groups than traditional revenue-earning activities such as soapmaking and market gardening. Just as in The Gambia, there is a shortage of the cash needed to invest in the inputs which help generate high returns from NERICA varieties.

At present, weeding is mostly carried out by hand at a cost of GNF 6 000 (USD 1.30) a day and can involve as many as 60 different people in keeping one hectare free of weeds in the crucial part of the growing season. A rice grower for eight years, Mamadi Camara from Kelementin believes it would be more profitable to be able to buy the three liters of herbicides (GNF 30 000 per liter) needed to treat 1 ha.

However, he is able to rely on family labor, including on Sundays the five children he has been able to send to school thanks to the extra income produced by growing the NERICA varieties released in Guinea. Illness is also less of a disruption to his farming activities because the household also has enough cash to buy necessary medicines.

Winnowing is still handled manually by most farmers



The Koutamodi group close to the border with Sierra Leone comprises six women farmers and three men. They also report that fonio and the older varieties of rice are being replaced in favor of NERICA varieties. The women also highlight a potential constraint to uptake of new technologies. These active group members have collective access to land for growing rice but do not own any land as individuals.

Yet they are heavily involved – sometimes forming the majority – in all cropping activities from land clearance and soil preparation through transplanting and weeding to harvest and winnowing.

In the rare cases where a woman farmer has her own plot of land it is generally through chance or misfortune because a husband has died and there is no male heir to take over the plot belonging to the deceased. Some local development agencies in Guinea call for 10 per cent of their managed land to be made available to women but this is far from the norm. Indeed, women are underrepresented at training sessions and workshops held for farmers in Guinea, although Dr Inoussa Akintayo of the Africa Rice Center believes their contribution could be greatly increased with the benefit of knowledge of new techniques and technologies.

There are several examples illustrating how the dynamic of communities are changing:

Faranah: producer unions created only three years ago are becoming increasingly active and organized.

Sérédou: communities of women traditionally dealt with market gardening and soap manufacture, and they are now increasingly adopting NERICA production as a further cash crop. This is the case in uplands at Sérédou, where rice was not previously grown by these women on uplands (2 ha of NERICA, in connection with the ARI project in 2006). In this instance, although the villagers enjoy eating the improved varieties, the crop is being produced mainly for profit.

Kamara (Faranah): one federation groups together three women's communities (Benkali, Wakila and Sodja) to comprise 60 people. The aim of these communities, long centered on market gardening, is now to produce seed of NERICA varieties. Despite the failure of a 2005 trial through lack of fertilizer resulting in no yield, they persevered in 2006 with a successful crop from 2 ha and will increase that area for 2007. The four released NERICA varieties are not suitable for all the country's rice-growing areas for which varieties with a longer cycle are preferred, but the women point out that the NERICA varieties are ripe just at a time when they need money to pay school expenses. They are also delighted with the training and technical back-up provided by country's extension service, the SNPRV, even to being prepared to contribute to its funding.

However, they are still not free from constraints. Fertilizer is difficult to come by but the women are prepared to borrow money if necessary because they are determined

not to abandon NERICA cultivation. There is a shortage of suitable tools for plowing, and weed competition remains an issue because of the short cycle of the NERICA varieties available.

Husking is not the constraint it can be in other areas since SG 2000 has made a suitable thresher available in the area. The women insist, however, they would continue to grow NERICA even if this machine goes out of action.

NERICA adoption – a success story

Varieties such as those making up the NERICA family can be extremely beneficial to countries such as Guinea, according to an independent expert.

Where governments are prepared to give the farming sector the means to produce – perhaps through fertilizers, encouragement of private initiatives, transport subsidies or non-exemptions for imported rice – improved varieties are most likely to maximize the potential generated.

Dr Jacques Brossier, of INRA, France, carried out an evaluation in early 2007 of the impact of the NERICA rice varieties in Guinea. He confirmed that up to 50 000 ha had been planted with NERICA and that demand for NERICA seed remains strong. "NERICA dissemination in Guinea is thus both real and significant, even allowing for the resources mobilized," he wrote. "We can only be delighted at the adoption of these improved varieties, when such success stories remain rare in sub-Saharan Africa, and for Guinea this is a real strength."

The reasons for this success, added Dr Brossier, were:

- the intrinsic qualities of NERICA varieties: short-cycle and high-yield, resistance to moisture stress, and taste that appeals to consumers
- strong political support at all levels
- partnerships with national institutions (Government, IRAG, SNPRV etc.), international financial organizations (SPAAR, WARDA, UNDP, IFAD, Japan, ADB etc.) and NGOs (Rockefeller Foundation, SG 2000 and many others active locally) have allowed considerable resources to be mobilized

- NERICA varieties arrived at the right time when Guinea had just experienced a prolonged drought, which incited the Government, with donor and NGO help, to ask WARDA for short-cycle, drought-resistant varieties
- the commitment of farmers very eager to experiment with the new varieties using farmer experimental units, participatory variety selection and the community-based seed system.

His full report makes a number of recommendations for the Guinean authorities and extension services and for action by WARDA to build on the achievements so far. In particular, he urges WARDA to become involved in joint information gathering in Guinea, in supporting seed, training and extension initiatives by national institutions and in promoting further improved rice varieties and their evaluation through systems approaches and joint ventures.



The switch to growing NERICA varieties has brought success to this farming couple from Guinea

Women in science

The key role played by women at the heart of agricultural activities in developing countries is widely recognized. However, familiar images of women laboring in the fields may simply be a distraction from the true extent of women's involvement in all aspects of agriculture from field to plate.

In many households not only do women carry out traditional food preparation and cooking duties, they are more and more often taking control of the household finances and increasingly active in decision-making processes long before crops are turned into food. There is some evidence that women are more open to new technology – particularly laborsaving technologies – and researchers and extension agents find that women farmers are often at the forefront in extension activities such as participatory varietal selection. With their involvement in the process from field to plate, women are particularly well-placed to feed back to plant breeders preferences stemming from their comprehensive knowledge of what features of rice varieties are most desirable—from reducing the burden of field labor through to cooking qualities and taste.

One of the prime reasons for the success of the NERICA varieties is their early maturing ability that means they are ready to harvest before other crops, helping to spread the agricultural workload.

Women are clearly active throughout the rice value chain but what is their role in other linked spheres such as science? That women are under-represented in the scientific domains is both evident and symptomatic of the social realities of difficulties in access to training and in building a subsequent career that face women who have completed a scientific education. The Oréal-UNESCO prize for women and science was instituted around 10 years ago as a response to such obstacles and to support women already committed to science as well as raising the awareness of school-age girls to help them in choosing a scientific career.

Although women are far from numerous in science as a whole, there are nevertheless several exceptionally-gifted female researchers to be found in international agricultural research centers where they are encouraged to advance their careers on an equal basis to their male counterparts. That

certainly applies at the Africa Rice Center in respect to Khady Dramé, a laureate of the Oréal-UNESCO Prize.

Understanding the motivation of such scientists for what they are doing is a useful way of demonstrating the important contribution they can make for Africa and for African women in particular.



Dr Khady Dramé a worthy winner of the l'Oréal-UNESCO fellowship grant designed to encourage women to pursue careers in science

Dr Khady Nani Dramé is one of the three 2007 African laureates. This devotee of crossword puzzles declares it was not a question for her of having a sudden revelation of a vocation in sciences. A brilliant scholar, she decided to concentrate on plant physiology after obtaining her baccalaureate in science. Then with her DEA under her belt, she decided to specialize in plant biotechnology with a doctorate at Paris XII-Val de Marne, Créteil. Wishing to make use of her new skills in Africa, she followed the advice from a scientist at the Africa Rice Center to enter and then win the competition for the prestigious Oréal-UNESCO Prize which carries with it substantial funding.

Since joining the Africa Rice Center, Dr Dramé has researched the genetic basis of the drought tolerance found in *Oryza glaberrima* so that this knowledge can be used to develop improved varieties of rice suited to African conditions. Seven new potential sources of drought tolerance have been identified, and low leaf drying and rapid recovery confirmed as major mechanisms of drought tolerance in this species.

Crosses between two drought-tolerant glaberrimas and a sensitive but high-yielding *O. sativa* with good grain quality have been made so the traits can be transferred. F1 seeds were obtained from the crosses and the segregating populations from backcrossing will be used for QTL identification. One of the goals for this research is to select varieties with the capability to tolerate water deficit at any stage of plant development, from germination to harvest.

Dr Marie-Noëlle Ndjiondjop, WARDA's head of biotechnology, is another scientist determined to ensure that Africa competes on the highest levels of research aimed at solving regional problems.

After completing her doctorate in biotechnology in 1999 at the Université du Sciences et Techniques du Languedoc at Montpellier, Dr Marie-Noëlle joined the Africa Rice Center (WARDA) as a post doctoral fellow and worked closely with Dr Monty Jones, who carried out the first successful interspecific crosses that led to the NERICA family of rice varieties.

To help breeders understand the genetic basis for the success of the NERICA varieties and further improve them, Dr Marie-Noëlle and her team have completed the molecular profiling of the NERICA varieties. And as part of an overall aim of a more comprehensive exploitation of the African cultivated gene pools, particularly that of African rice, which is a rich reservoir of genes for resistance to several local stresses, valuable work has been done to assess its genetic diversity.

In line with WARDA's mission, she and her staff have (i) established the Center's anther culture and molecular biology laboratories; (ii) coordinated the biotechnology research at WARDA; (iii) raised funds to support the salary of all

personnel including Post Docs and to make the laboratory functional by securing equipment and reagents; and (v) developed research strategy in biotechnology for the benefit of resource-poor farmers in Africa. She has trained research assistants, technicians undergraduate and PhD students in molecular techniques and installed molecular laboratories in four countries where these newly-acquired skills can be put into practice for the benefit of Africa.

Backed by the USAID-funded project on Marker-assisted selection for improvement of rice varieties resistant to RYMV for West Africa, Dr Ndjiondjop, who is from Cameroon, is not only supervising four PhD students undertaking relevant biotechnology research in WARDA but is supporting the establishment of functioning biotechnology laboratories in Burkina Faso, Guinea, Mali and The Gambia. She is responsible for arranging the setting-up and equipping of the laboratories, for in situ technician training and further advanced training in Cotonou.

Dr Ndjiondjop and her staff have developed improved lines incorporating the RYMV-resistance gene. These RYMV-resistant introgressed lines have been sent to NARS for more complete evaluation and incorporation into their resistance breeding programs programs so that each country can continue to grow a popular variety already known to farmers but with the welcome addition of resistance to RYMV.



Dr Marie-Noëlle Ndjiondjop, Head of the Biotechnology Unit, Africa Rice Center (WARDA)

Gene bank spearheads WARDA's biodiversity role

The Africa Rice Center's genebank has entered a new phase in its contribution to global biodiversity thanks to its team of seed conservation specialists and World Bank funding.

Since 2003 the Bank has been funding CGIAR seed banks under a Global Public Goods project designed to ensure that valuable seeds are conserved to international standards. The first phase (2003–2006) of the project coincided with WARDA's establishment of its temporary headquarters in Cotonou and the Center was able to benefit from the construction and fitting out of a new genebank which was officially opened on the Togoudo site in September 2006 by His Excellency Pascal Irénée Koukpaki, Minister of Development, Economy and Finance of the Republic of Benin.

Genebank staff were trained to international standards during the building phase, explains Dr Ines Sanchez, head of the Genetic Resources Unit. This will help underpin the second phase (2007–2009) of the project designed to ensure all CGIAR genebanks can cooperate fully and each develop a plan to sustain high international standards on their sites.

Among the first fruits of the collaboration is the dispatch of specially-prepared samples of African rice seeds from WARDA in Cotonou for safety back-up in the long-term storage north of the Arctic Circle in the Svalbard Vault in Norway thanks to the support of the Norwegian Government and the Global Crop Diversity Trust.

Dr Ines Sanchez

A Colombian national, Dr Ines Sanchez has been head of the GRU at the Africa Rice Center since October 2005. Her PhD thesis was based on a study of genetic variability in *Terminalia superba* Engler & Diels, a tree found in Africa's tropical forests, but she is now focussed on helping exploit the genetic resources in rice that are the building blocks for the high performance varieties needed to bring food security to Africa.

As well as a major role in the collection, characterisation, conservation and distribution of rice genetic material, Dr Sanchez

is deeply involved in investigating the genetic diversity of rice in Africa, particularly the Africa rice species *Oryza glaberrima* Steud. thought to have been cultivated for nearly 3000 years along the Niger River.

Each accession is recorded in at least two databases, WAGIS (WARDA Genebank Information System) and SINGER (System-wide Information Network for Genetic Resources), together with passport data and information revealed during characterisation and evaluation.



Dr Ines Sanchez holding samples of seed germination tests

Managing the genetic inventory

How does the Genetic Resources Unit ensure that Africa's genetic resources are available for use by today's scientists and by future generations? Generally speaking, it takes the form of the following phases:

- collection of genetic material in conjunction with the plant protection service of the specimen's host country
- multiplication and agromorphological characterisation in the field. Young leaves may also be taken at this stage for DNA extraction and molecular characterisation in collaboration with the Biotechnology Unit
- harvested seeds are dried to 12% moisture content before threshing, winnowing and triage
- varietal purity is confirmed after triage with the help of a reference sample
- the second drying stage brings the moisture content down to 9%, enough for good temporary conservation at 18–20°C.
- temporary or short-term storage during which quality controls for germination and seed health are carried out. Further field regeneration will be carried out if necessary, for example if there is a very low quantity of seed, if germination is poor (less than 80% viability), or if disease levels are high.
- When all tests are satisfactorily concluded, the final drying down to 6% moisture is carried out in a special drying room equipped with dehumidifiers.
- Three seed samples are prepared from each batch being conserved: one is for long-term conservation at -18°C, the second is for the safety backup at -18°C in another genebank and the third for medium-term storage at 5–10°C. This last sample is the one that is used when requests for germplasm come in and for routine checks on the viability of the accessions.

Thanks to the support of the World Bank and the skills of its GRU staff, the Africa Rice Center is now able to take its place

among the many organisations devoted to conserving the planet's biodiversity.



Genetic Resource Unit accessions at WARDA, Cotonou, Benin

Rice – the locomotive pulling growth forward in Africa

The Africa Rice Center's resilience and the continuing relevance and need for its rice-based research focused on Africa were highlighted in a positive report from the Fifth External Program and Management Review of the Center.

These and other findings by the EPMP panel led by Prof. Eric Tollens were endorsed in December 2007 by the Science Council of the Consultative Group on International Agricultural Research, which shared the panel's optimism about WARDA's future and the stronger and larger rice research contribution it can make, particularly to strategic research.

The Science Council joined the panel in its praise of the way in which WARDA had weathered the Ivorian crisis in spite of the series of forced relocations of the Center's headquarters. It also noted the panel's conclusion that WARDA has continued to do "reasonably good research, maintained functioning corporate services, and is now poised to launch a period of phased growth, consolidation and stability, guided by an effective Board of Trustees, and ably led by its senior managers."

A stronger and larger rice research Center, in collaboration with IRRI and CIAT, WARDA's many NARS and international partners was envisaged by the EPMP panel in its report which underlined the growing strategic importance of WARDA now that rice is the fastest growing staple food in SSA. This presents WARDA with a great opportunity for technological change provided by the increasing trend in rice prices. Both the EPMP and the Science Council urged WARDA to place more emphasis on strategic research; in the words of the Science Council "not just because NERICAs are not a 'silver bullet' that can solve all of Africa's rice production problems, but because the genetic variability of African rices remains largely untapped, the genetic basis of the NERICAs is too narrow, and NERICAs remain a 'black box' with respect to the genetics and physiology that underlie their superior performance."

Highlights of the EPMP report include the findings that WARDA has conducted "very relevant work" focusing both on genetic and non-genetic solutions to rice production systems in Africa resulting in many achievements in line with its mission and CGIAR system priorities; that resource allocation between the major rice ecologies is satisfactory but more emphasis should be placed on strategic rather than applied research; very good progress has been made on the implementation of measures to ensure quality of science; excellent work done on the genetic diversity of *Oryza glaberrima*; relevant research of good scientific quality on natural resource management issues; and good social science research, including research on adoption and impact.

Seed remains a critical constraint, says the report, and WARDA needs to delve into understanding farmers' rationale for purchasing and storing seed. "There is a need for better data on areas under modern rice varieties, on improved agronomic practices, and rice markets and policy. A multi-agency workshop on the issue is suggested."

WARDA's partnerships and networks were commended by the panel but it also recommended that WARDA's specific role in partnerships needed to move upstream, seeking collaborations that are more science-oriented. At the same time, WARDA needed to learn more from its partners, from their field experiences and the downstream Genotype × Environment interactions, and to use this feedback more systematically in its own research.

The EPMP made 18 recommendations to enable WARDA to move forward and deliver on a more ambitious rice research program. These recommendations, subsequently accepted by the Center, were that:

Rice genetic improvement

- more systematic exploration be carried out of the phenotypic variability of *O. glaberrima* for desirable traits
- core collections of *O. glaberrima*, representative of the diversity of the whole species, be defined

- the set of *O. glaberrima* and *O. sativa* accessions used as parents in interspecific hybridization be broadened
- the funding of INGER-Africa is secured on a sustainable basis

Natural resources management

- water management research is mainstreamed into the Center's core research program; two relevant scientists recruited; the capacity of national organizations for conducting research on the rice-water-soil interfaces is strengthened in consultation with IWMI, IVC and regional centers
- a strategic vision is developed for future research in weed management, revisiting the decision to focus almost entirely on the expected weed competitiveness of NERICA varieties

Quality and relevance

- a more systematic approach adopted to priority setting
- more time and resources allocated to development of concepts and methodologies, and to understanding genetic and physiological mechanisms and processes responsible for superior performance in the appropriate genetic backgrounds
- a reasonable balance is achieved between in-house scientific activities and external network or partnership activities that focus more on development than on research

Social sciences

- gaps in the social sciences research program are filled through recruitment

Research support

- communication facilities that meet the performance standards expected of an international research station are provided
- a full-time biometrician is recruited

Partnerships and linkages

- medium- and long-term strategies are developed for phased expansion in Central, East and Southern Africa in line with available funds, and without compromising critical mass in West Africa
- the convening role for SWIHA is transferred to a more suitable partner

Adoption and impact

- involving suitable interdisciplinary teams from its research program in adoption and impact studies

Governance and management

- introducing a Board-appointed Scientific Advisory Committee of external outstanding scientists to provide in-depth guidance on technical quality and strategic directions of science undertaken by WARDA
- updating the Financial Procedures Manual and ensuring compliance
- continue the alignment of WARDA and IITA corporate services, while ensuring that research quality and relevance are not compromised and that adequate technical support remains available to scientists.



Villagers say there is less bending involved in tending some NERICA varieties thanks to their vigorous early growth and taller stance when compared to local rice strains



Donor profile – African Development Bank

The AfDB at a glance

The AfDB is a multilateral development bank whose shareholders include 53 African countries and 24 non-African countries from the Americas, Asia, and Europe. It was established in 1964 with its headquarters in Abidjan, Côte d'Ivoire, and officially began operations in 1967.

The African Development Bank is the premier financial development institution of Africa, dedicated to combating poverty and improving the lives of the people of the continent and engaged in the task of mobilizing resources towards the economic and social progress of its Regional Member Countries. The Bank's mission is to promote economic and social development through loans, equity investments, and technical assistance.

In May 1999, the Board of Governors of the African Development Bank Group adopted the Vision of the African Development Bank – A Re-Invigorated Bank: an Agenda for Moving Forward. This “vision”, a product of extensive consultations with all of the Bank's stakeholders on its mission stance, sets out the long-term strategic focus for the Bank

Political instability in Côte d'Ivoire in 2002 resulted in the governors deciding to relocate the bank headquarters temporarily to Tunis in Tunisia.

A lasting partnership

Partnership between the African Development Bank and the Africa Rice Center (WARDA) is not a recent phenomenon. WARDA has been able to count the AfDB among its most loyal donors since the 1990s; indeed, the AfDB part-financed the construction of the center's purpose-built headquarters at M'bé in Côte d'Ivoire, and the Bank was among the group of donors that supported the project that allowed Dr Monty P. Jones to carry out pioneering work on interspecific breeding that led to the development of the NERICA varieties.

A number of WARDA's scientists, as well as others who have obtained their doctorates under WARDA supervision, owe their career progression to the grants and fellowships generously given by the African Development Bank.

The AfDB and ARI (African Rice Initiative)

This enduring partnership between the two institutions has been further cemented in recent years by the AfDB decision to support the work of the African Rice Initiative, which has been nested with its coordinator in WARDA since 2005. Activities got underway in 2006 thanks to the Bank's agreement to make available USD 35 million to seven pilot countries in West Africa – Benin, The Gambia, Ghana, Guinea, Mali, Nigeria and Sierra Leone to support infrastructure development and dissemination of NERICA varieties in these countries.

It is a major undertaking with 33,000 farming families involved in the participatory selection (PVS) of the next generation of improved varieties of rice. Through this early involvement in the confirmation of the most suitable varieties for particular conditions and countries, the acceptance process for new varieties is speeded up, together with the dissemination of improved varieties which are made known to smallholder farmers much earlier than under conventional breeding and assessment systems.

Fields of activity in the AfDB-sponsored NERICA Project

Seed availability

The project focuses primarily on the production and dissemination of quality seed of NERICA varieties with the aim of alleviating the scarcity of high-grade seed in most of Africa. It does not deliver farm-ready seed direct to farmers but concentrates instead on ensuring that national systems establish which of the many varieties of NERICA most closely fits their countries' needs, and then on helping them to produce the foundation and basic seed from which seeds for farmers to use are then multiplied.

ARI's regional coordination unit itself produced about 200 tonnes of foundation seed between 2005 and 2007, but also helped in the production of more than 4,000 tonnes of foundation and certified seed in the pilot countries. However, meeting the huge demand for seed of NERICA varieties has proved difficult throughout Africa. In response to a specific request from Nigeria, the ARI coordination unit provided that country in 2007 with 100 tonnes of foundation seed.

Reinforcing the capacity of extension workers and small farmers

Capacity building of all the players in the rice sector is an integral part of the NERICA Project. Under the strategic guise of 'Training the Trainers', the project has trained about 85 technicians in improved methods of seed production and in participative approaches, while more than 3,600 smallholder farmers have been trained in seed production. To help monitor the effects and valorize this training, the Project has also supported training more than 20 specialists in impact evaluation.

Rather than attempting a one-size-fits-all strategy, these capacity building activities are increasingly being undertaken by each pilot country to ensure that the needs of that country are specifically being met. For example, in 2006 Nigeria trained 850 of its extension workers in a range of topics associated with rice production, while a further 700 farmers were trained in seed production. The AfDB-funded project in Nigeria plays an important role in the Presidential Initiative in Rice set up by outgoing Nigerian President (and farmer) His Excellency Olusegun Obasanjo.

In Mali, the national coordination unit has developed four training modules on rice production, farmer groups, management of cooperatives and on seed quality. Meanwhile, 2006 saw about 165 producers of NERICA seed become active in Ghana thanks to intensive training of smallholder farmers.

Such capacity building activities, including recovery of seed stocks, are particularly important in post-conflict countries, such as Sierra Leone where rice remains a staple food now that calm has returned to that country.

Development of related technology

To help build the productivity of the NERICA varieties, a number of complementary technologies, such as improved crop management options, are being evaluated in the pilot countries in collaboration with scientists from the Africa Rice Center, JICA and other agencies. ARI has also signed agreements with many other countries throughout sub-Saharan Africa that will eventually lead to the transfer and development of relevant locally-oriented technologies and adoption of NERICA varieties.

Private sector and NGO involvement

In-country platforms sustain the AfDB Project in the pilot countries in conjunction with local and international partnerships. In Benin, for example, the project has brought the private sector into the production of NERICA seed for the first time in West Africa. This intervention by Beninese businessman Mr Babatunde Olufindji, who was honored in 2007 by the FAO for his active role in the dissemination of improved varieties of rice, has brought NERICA to the attention of many thousands of Benin smallholders in just a couple of years.

Looking ahead

The longstanding relationship of more than 10 years between the AfDB and the Africa Rice Center (WARDA) has been productive and brought dividends to the rice sector. Talks are under way to extend the AfDB support for the NERICA Project to another phase in different countries. Both sides of this pan-African partnership are truly committed to the development of Africa.



Sekou Dian women farmers' association in Guinea celebrates a successful harvest of NERICA varieties thanks to the intervention of the African Rice Initiative supported by the African Development Bank

The period under review May 2006 to December 2007

May

SWIHA Workshop

A stakeholder workshop at Makurdi, Nigeria (**10–11 May**) planned the implementation of the SWIHA/CABI project: Building Resilience to HIV/AIDS among Smallholder Farmers in Benue State, Nigeria. It was organized by the National Cereal Research Institute (NCRI) and Benue State Agricultural and Rural Development Authority (BNARDA). A total of 32 participants drawn from government institutions, non-government organizations (NGOs), youth and community-based organizations (CBOs) took part in the workshop which included a practical data-gathering exercise in a nearby village.

June

National Experts Committee

NARS Directors from 13 member countries, together with representatives from 11 other countries and institutions, attended the 5th Biennial Regional Consultative Meeting of the National Experts Committee (NEC) in Cotonou, Benin, **19–20 June**. After hearing extensive reports from the WARDA Management and scientists on the Center's progress and research, the NEC made a number of decisions and recommendations. These included recommendations on avoiding duplication of research, making studies on technology adoption, continued emphasis on biotechnology and on policy advocacy, and on partnership with other institutions but continued independence for WARDA.

Extraordinary session of the Council of Ministers

An extraordinary session of the Africa Rice Center (WARDA) Council of Ministers was held on **22 June** at Abuja, Nigeria to confirm the appointment of Dr Papa A. Seck as Director-General of the Center. Following the meeting, A WARDA delegation, comprising the incoming and outgoing Directors-General, members of the Council of Ministers and of the National Experts Committee, took part in an audience with His Excellency Olusegun Obasanjo, President of the Federal Republic of Nigeria, who commended the Center for its work.

July

CCER on Socioeconomics

This review chaired by Professor Mathias von Oppen of Germany completed its assignment on **26 July**. The other panel members were Prof. Koffi Tessio of Togo and Prof. Shabd Acharya of India. The review report is part of the series taken into consideration during the Center's 2007 EPMR.

Africa Rice Congress

About 175 participants from all over the world, but particularly from West, East and Central Africa, took part from **31 July–4 August** in the first Africa Rice Congress, which was organized by WARDA under the aegis of the Tanzanian Ministry of Agriculture, Food and Cooperatives, with support from USAID, Canadian Fund for Africa, Sasakawa Africa Association,

CORAF, ASARECA, the European Union and the Rockefeller Foundation. Organization and coordination was primarily through the ROCARIZ rice network in West Africa and the ECARRN rice network in Eastern and Central Africa.

The Honorable Joseph Mungai, Minister for Agriculture, Food and Cooperatives, Government of Tanzania, who inaugurated the Congress, said that African governments needed to focus on those African centers of excellence such as the Africa Rice Center (WARDA) that were already doing world-class research. World-renowned researchers who attended the congress were confident that a rice-based Green Revolution in Africa was achievable and could be accelerated through strong partnership among national and international research centers, the private sector, nongovernmental organizations and policymakers.

The Congress adopted a number of resolutions impacting on rice in sub-Saharan Africa. Delegates called for rice to be the cornerstone of a Green Revolution for Africa that anticipates the needs of future populations and for an urgently-needed, new capacity-building program focusing on the development of a multi-disciplinary cadre of scientists and extensionists. The value of micro-financing and participatory learning as powerful means both for technology dissemination and for developing appropriate infrastructure to improve access to seeds, fertilizers, mechanization and market systems was highlighted, and the Congress also urged all stakeholders to maintain the identity of the Africa Rice Center (WARDA) and to strengthen its capacity for the welfare of African rice farmers.

August

Impact Assessment Methodology Learning Workshop

Fifteen participants, including four women, from 11 countries in West and East Africa took part in a post-Rice Congress workshop in Dar es Salaam, Tanzania from **7–9 August**. They were introduced to state-of-the-art methods and tools in the rapidly growing field of impact assessment that underlies modern evaluation theory and practice with a particular focus on application of these tools to assessing the impact of agricultural research and projects.

September

35th Anniversary Celebrations

His Excellency Pascal Irénée Koukpaki, Minister of Development, Economy and Finance of the Republic of Benin, was guest-of-honor on **15 September** at the 35th Anniversary Celebrations of the founding of WARDA, during which he officially opened the new Genebank on the Togoudo site at Cotonou. A day of displays and celebrations included the presentation of 31 long service awards to staff, some of whom joined the Center when it was based in Liberia. The occasion also marked the launch of a special children's book explaining NERICA.

October

New Vision for the Africa Rice Center (WARDA)

Incoming Director-General Dr Papa A. Seck addressed staff on the Center's New Vision designed to enable the Center to continue to work towards overcoming Africa's problems of growing population, poverty, land degradation and low

productivity. He emphasized increased institutional competitiveness and strong partnership, particularly with the NARS. He presented 26 decisions to underpin the New Vision with its aim of making WARDA a powerful tool for the development of Africa's rice sector.

PVS workshop

Pioneering participatory varietal selection work carried out with NARS and other partners was thoroughly reviewed in a workshop held in Cotonou, Benin, with support from the UNDP and the Rockefeller Foundation. Attended by participants from throughout Africa, this workshop reviewed and evaluated the current WARDA agenda of PVS activities in the light of emerging issues and assessed both the achievements and potential impact of PVS activities carried out by Programs in relation to rice improvement. The current model of PVS extension and research collaboration with NARS and partners for effectiveness in delivering germplasm-based technologies for impact was assessed, and proposals to donors initiated for funding of future phases of PVS activities.

November

Coordination Working Meeting on the REPCA

All actors involved in the preparation of the Regional Plan for Collective Action (formerly the WCA MTP) met from **November 6–8** in Cotonou to discuss and agree that the research agenda for the REPCA should comprise Programs defined along the line of the System Priorities, with each Program including 2-3 projects which are expected to produce outputs, outcomes and impacts. Issues raised by the Science Council were taken into account in revising the REPCA. Among the topics to be addressed by the Programs will be biodiversity conservation, vegetables and fruit trees, sustainable use of genetic resources, and improvement of policies, institutions and infrastructure. The regional plan will use the guidelines of the Center MTPs. The REPCA should be organized around a 3-year fixed term plan with some flexibility built in. It is not to be managed as an annually rolling plan.

Research Days

Scientists from all WARDA research stations took part in Cotonou in the Research Days. Together with partners from NARS and other CGIAR Centers, the progress and results from ongoing research were analyzed and discussed, and planning and preparation reviewed for the following year's work program.

December

United Nations South-South Cooperation Award

The 2006 United Nations Award for South-South Triangular Partnership was presented to the DG Dr Papa A. Seck in a ceremony at the United Nations in New York. This prestigious award was given in recognition of the Africa Rice Center's New Rice for Africa (NERICA) initiative, and is conferred only on individuals or institutions who spearhead, transform, empower, mobilize and/or expand the South-South agenda by increasing human and financial resources of the South through

partnership for development. His Excellency Eladio Loizaga, Permanent Representative of Paraguay to the United Nations in his capacity as President, High-level Committee of South-South Cooperation of the United Nations General Assembly, announced: “WARDA is receiving this award because of its pioneering efforts in brokering North-South partnerships in order to create hybridized varieties of rice applicable to conditions in the South.”

Burkina Faso Presidential Prize

Lowland rice breeder Dr Moussa Sié and the rice program of the Institut de l’environnement et de recherches agricoles (INERA) received the Burkina Faso Presidential Prize in December 2006. This prize honors the development of products that have contributed to achieving national development priorities including health, energy, agricultural development and poverty alleviation.

Dr Sié and the national rice program received the Prize for the success of nine rice varieties, including seven New Rice for Africa (NERICA) varieties, which are helping to increase the rice productivity and production in Burkina Faso. It was presented during the seventh anniversary celebration of the Forum for Scientific Research and Technological Innovations (FRSIT) in Ouagadougou, Burkina Faso on **15 December 2006**.

January

Dr Monty Jones Inaugural Lecture

The only African to win the World Food Prize, the former WARDA scientist Dr Monty Jones, who is now Executive Secretary of FARA, delivered the first of what is to be an annual series of lectures in his name. Speaking in Cotonou, Benin, Dr Jones expressed his deep gratitude to the Africa Rice Center (WARDA) for establishing the Dr Monty Jones Lecture. The announcement of the lecture series was made by the Africa Rice Center (WARDA) Director General Dr Papa Abdoulaye Seck during a special ceremony organized by the Center to honor Dr Jones, the Father of NERICA.

February

Communications upgrade at St-Louis

The new VSAT connection at the Saint-Louis Research Station was officially inaugurated by Director General Dr Papa A. Seck on **27 February**, thereby giving the station staff greatly improved e-mail messaging and internet access with 64k/128k bandwidth. Wi-fi was also made available at the station.



March

Board of Trustees

The Board of Trustees of the Africa Rice Center (WARDA) held its 27th meeting on **18–23 March, 2007** at the Center's temporary headquarters in Cotonou, Benin. The Board strongly endorsed the process of harmonization of specific activities of the Center with those of CIAT, IITA and IRRI. WARDA is joining forces with IRRI and CIAT as part of a new wave of partnership aimed at creating a strong synergy for rice research in Africa. For the first time, IRRI representatives – Board Chair Dr Keijiro Otsuka and two Board members, Dr Ronald L. Phillips and Prof. Ruth K. Oniang'o – took part in this meeting as observers at WARDA's invitation. The Board welcomed two new members common to IITA and WARDA: Dr Barbara Becker from Germany and Dr Adama Traoré from Mali, as well as other new members – Dr Tsekede Abate from Ethiopia, Dr Getachew Engida from the UK and Dr Kiyoaki Maruyama from Japan. Two representatives of the WARDA External Program and Management Review (EPMR) Panel – Prof. Eric Tollens, Panel Chair, and Dr Pammi Sachdeva, Panel member for Governance, also attended.

Important announcements made at the Board meeting included those on the launch of the post-MSc internship program, a high-level advocacy strategy to influence African policymakers, Board support for streamlining the research structure and thematic groups, and an update on the satisfactory status of the facilities at WARDA's Côte d'Ivoire headquarters.

Outgoing Board members, Mrs Mary U.B. Mokuwunye from Nigeria and Prof. Takeshi Horie from Japan were thanked for their valuable contribution to the Center.

April

5th External Program Management Review (EPMR)

The first phase of the 5th EPMR was conducted from **1–6 April** in Cotonou by a Panel comprising: Prof. Eric Tollens (chairman) from the Catholic University of Leuven, Belgium; Dr Brigitte Courtois, CIRAD, France; Dr Zelia Menete, DG of the Manica Polytechnic Institute, Mozambique; Dr Pammi Sachdeva, consultant USA; Ms Mary Ncube, Chief Executive of MT Ncube and Associates, Zambia; and Dr Toshihiro Hasegawa of the National Institute for Agro-Environmental Sciences, Japan

Presentations were made by WARDA Management and key scientists to introduce and outline the Center's activities past and present before Panel members followed up in their individual specialist areas of interest, and undertook missions to visit NARS and other WARDA partners.

Visit of CIRAD delegation

A new partnership between WARDA and the French research institutions was the main focus of an **April 13** visit to Cotonou by a six-strong delegation from the Centre de coopération internationale en recherche agronomique pour le développement (CIRAD). The delegation led by Dr Robert Habib, Director of CIRAD PERSYST, met with the WARDA DG, the two ADGs and scientists to follow up on the DG's earlier visit to Montpellier and discuss the plan to develop joint proposals with CIRAD.

ARI Steering Committee

National coordinators from the seven pilot countries of the NERICA Dissemination Project funded by the African Development Bank took part in the Africa Rice Initiative Steering Committee meeting in Cotonou on **23–27 April**. Also present were Dr Kae Yanagisawa from UNDP, Dr N Nguyen from FAO and Dr Robert Anyang from the Uganda Agricultural Productivity Enhancement Program. Among recommendations made at the end of the meeting were: more emphasis on the participation of women in project activities; to focus on recycling seed stock every three years; that WARDA and NARS should address the susceptibility of NERICA1 and NERICA2 to *Sitopholus*; to adapt the Uganda success in using the private sector to boost NERICA seed enterprise, the use of post-harvest equipment and inputs; the continued facilitation of complementary technologies; and enhancement of the capacity in member countries to produce all categories of seed.

May

Father of NERICA honored

Dr Monty Jones was voted one of the world's most influential people by the US news magazine *Time* – just one of five Africans on the 2007 TIME 100 List. In its accompanying editorial, *Time* praised Dr Jones as an “innovator” for his development of the first NERICA varieties. Selection for the TIME 100 is made from individuals whose ideas and achievements are judged to have changed the world and made history.

Training in Japan

Five WARDA research assistants were selected by JICA to undertake intensive training in Japan during 2007. They were Boubakary Cissé (upland variety selection techniques); Mamadou Fofana (plant physiology); Moussa Mahaman (GIS technology for sustainable management of natural resources and agricultural production); Abibou Niang (soil diagnosis and conservation); and Abou Togola (integrated pest management).

June

CIAT-IRRI-WARDA Programmatic Alignment Planning Meeting

Top-level scientists from the three GIAR centers with a major interest in rice met on **27–29 June** in Cotonou to discuss priority activities under the joint research themes previously identified by the centers. Also invited were representatives from IITA, IWMI, FAO, the CGIAR Central Advisory Service on Intellectual Property, NGOs, NARS, universities and the private sector. As well as paving the way for efficient center activity, the meeting proposed the establishment of the Sub-Saharan Africa Rice Consortium (SARC) to be a platform for collective action by the CGIAR centers and their partners to promote rice and rice research in the region.

July

Fifth EPMR second phase

An intensive series of meetings from **7–22 July** with WARDA staff and partners throughout Africa brought the 5th External Program and Management Review to a positive and successful conclusion for the Africa Rice Center (WARDA). The eight-strong panel led by Prof. Eric Tollens made 18 major recommendations designed to help the Center improve its performance. Presenting the preliminary findings to WARDA staff on 20 July, Prof. Tollens said: “The Panel is optimistic about WARDA’s future and visualizes a stronger and larger rice research center serving all of SSA in collaboration with IRRI and CITAT, and WARDA’s many NARS and international partners.”

EPMR Panel Chair
Prof. Eric Tollens (right)
examines NERICA
varieties



August

Ant-based pest control in African tree crops

Tanzania joined Benin and Guinea for the second phase of the Conservation, Food and Health Foundation (CFHF)-funded project on ‘Promoting Ant-based Pest Control in Tree Crops in Africa’. The project, which primarily makes use of weaver ants, was launched in August in Dar-es-Salaam. Tanzania was incorporated into this second phase because it is a focal country for WARDA and it has ample inland valley systems with rice and tree crops.

September

Intensive Japanese liaison visit

Director General Dr Papa Abdoulaye Seck spent **9–13 September** in a series of meetings in Japan at the special invitation of the Government of Japan. Accompanied by Drs Inoussa Akintayo and Moussa Sié, Dr Seck met representatives of the

Ministry of Foreign Affairs, the Ministry of Agriculture, Forestry and Fisheries, the Japan International Cooperation Agency, the Japan International Research Center for Agricultural sciences and the Foundation for Advanced Studies on International Development. Three important presentations were made by Dr Seck during the course of the visit, covering ways of increasing Japanese support for rice development in Africa, the case for NERICA within increased agricultural research, and on his vision and perspective for rice in Africa and WARDA's new strategies.

Council of Ministers

The 26th session of the Council of Ministers of the Africa Rice Center was held in Abuja, Federal Republic of Nigeria on **28 September**. The opening address by His Excellency Umaru Musa Yar'Adua, President of the Federal Republic of Nigeria, was delivered by the Vice President, Dr Jonathan Goodluck. The President underlined the urgent need to invest more in rice research and development for Africa, and he emphasized the relevance to African conditions of the technologies developed by WARDA and its partners.

The Council formally approved the geographic expansion of WARDA to 21 countries with the acceptance into membership of the Central African Republic, the Democratic Republic of Congo, the Republic of Congo and Uganda. It also reiterated its commitment to taking the necessary steps for WARDA to be recognized as a Center of Excellence of the African Union.

Recognizing that shortage of seed of improved varieties continues to be a major constraint to rice production in sub-Saharan Africa, the Council encouraged WARDA to be involved in the production of breeder and foundation seed in association with national programs and urged the Center to help in the development and harmonization of seed legislation at the regional level. The Council Session was held under the chairmanship of Dr Abba Sayyadi Ruma, Minister of Agriculture and Water Resources of the Federal Republic of Nigeria. Togo was approved to take over the chairmanship of the Council of Ministers for the next two years.

October

'From research to action' HIV/AIDS conference

The role of the agricultural sector in mitigating the consequences of HIV was highlighted and strengthened at a major conference – 'From research to action: mitigating HIV/AIDS impacts of agriculture and food security in West Africa' – which was hosted by WARDA from **1–4 October** in Cotonou, Benin with support from the Centre Technique de Coopération Agricole et Rurale (CTA), the Canadian International Development Agency (CIDA), Population Services International-Benin/KfW – the German Development Bank, and the International Development Research Centre (IDRC). Organized by the Systemwide Initiative on HIV/AIDS and Agriculture, the conference revealed that decentralized rural development projects focusing on HIV/AIDS in Africa have proven to be more successful than top-down approaches. About 120 participants from 20 African countries as well as other parts of the world took part in discussion.

November

Research Days

Africa Rice Center scientists from Bouaké, Cotonou, Ibadan and Saint-Louis gave detailed presentations on their recent research and outlined plans for 2008 during the annual Research Days held **12–15 November** in Cotonou. The meeting allowed scientific peers from within the Center as well as from the WARDA Board, INRAB, IITA, JIRCAS and other partner organizations to comment upon and add value to ongoing and future research.

December

AGM07 Beijing

The positive EPMR evaluation and other institutional achievements by the Africa Rice Center were hailed at the CGIAR AGM07 in Beijing, People's Republic of China, on **3–6 December**. Strong support for WARDA's new vision and research directions was expressed by a number of donors, including Austria, China, the European Union, FARA, France, IFAD, Japan, Sweden and USAID. A delegation of WARDA management staff was supported by two scientists, Dr Koichi Futakuchi and Dr Francis Nwilene, along with research assistant Amos Onasanya, representing the Center's general support staff.

Christiane Doré prize

The 2007 Christiane Doré prize awarded by the Institut de recherche pour le développement (IRD) was won by a doctoral student from Côte d'Ivoire supervised by WARDA plant pathologist Dr Yacouba Séré and IRD scientist Denis Fargette. The thesis by Fatagomo Sorho on 'Rice yellow mottle virus (RYMV) in West Africa' was unanimously selected by the Christiane Doré jury because of the excellent quality of his research work. Ms Alice Bonou, who was a trainee at WARDA in 2007 under impact economist Dr Aliou Diagne, was selected to receive an award from the Council for the Development of Social Science Research in Africa for her thesis on 'The impact of NERICA varieties on the rice biodiversity in Benin', written as part of her Diplôme ingénieur agronome studies.



In vitro culture of new generations of rice plants is one of the techniques used in the on-going collaboration between the Africa Rice Center and its partners, IIRI and CIAT.

Financial statement

Position for the years ended 2007 and 2006

ASSETS

	2007	2006
Current assets		
Cash and cash equivalent	4,327,667	2,461,376
Accounts receivable:		
Donors	2,840,593	3,148,727
Employees	186,659	172,177
Others	368,861	282,943
Inventories	435,826	339,363
Prepaid expenses	172,258	281,418
Total current assets	8,331,863	6,686,004
Property and equipment		
Property and equipment	8,053,504	9,229,963
Less: accumulated depreciation	(7,056,848)	(8,129,311)
Total property and equipment - net	996,655	1,100,652
TOTAL ASSETS	9,328,519	7,786,656

LIABILITIES AND NET ASSETS

Current liabilities		
Bank balances (Overdraft)		146
Accounts payable:		
Donors	2,905,866	1,393,601
Employees	190,745	182,267
Others	697,077	908,142
Employees investment account	214,000	214,000
Provisions and accruals	1,248,600	1,124,157
Total current liabilities	5,256,289	3,822,312
TOTAL LIABILITIES	5,256,289	3,822,312

Net assets		
<i>Unrestricted net assets:-</i>		
Undesignated	3,075,574	3,964,344
Designated	996,655	
TOTAL NET ASSETS	4,072,230	3,964,344
TOTAL LIABILITIES & NET ASSETS	9,328,519	7,786,656

REVENUE, GAINS AND OTHER SUPPORT

			Total	
	Unrestricted	Restricted	2007	2006
Grants	4,659,243	5,725,370	10,384,612	10,959,575
Member States - operating income	39,476		39,476	113,597
Member States - capital dev. income	16,906		16,906	--
Other income	243,201		243,201	363,300
Total revenue, gains and other support	4,958,826	5,725,370	10,684,196	11,436,473

EXPENSES AND LOSSES

Program-related expenses	2,339,618	5,476,204	7,815,822	8,340,921
Management and general expenses	3,404,489	249,166	3,653,655	3,470,536
Total expenses and losses	5,744,107	5,725,370	11,469,477	11,811,456

Indirect cost recovery	(951,204)	--	(951,204)	(656,784)
Total expenses and losses	4,792,903	5,725,370	10,518,272	11,154,672

Change in net assets	165,924	--	165,924	281,801
Allocated to capital fund in prior year				
Net assets at beginning of year	3,964,344	--	3,964,344	3,682,543
Change in net assets before prior-year adjustments	165,924	--	165,924	281,801
Prior-year adjustments:	--	--	--	--
Germany 2006 unrestricted over-accrual	(39,600)	--	(39,600)	--
St-Louis Station prior-year unbooked charges	(18,438)	--	(18,438)	--
Sub-total prior-year adjustments	(58,038)	--	(58,038)	--
Change in net assets	107,886	--	107,886	281,801
Net assets at end of year	4,072,230	--	4,072,230	3,964,344

MEMO ITEM

Total expenses by natural classification			Total	
	Unrestricted	Restricted	2007	2006
Personnel costs	3,635,937	1,793,007	5,428,943	5,246,813
Supplies & services	1,497,947	2,474,239	3,972,185	4,385,185
Supplies & services - collaborators and partnerships costs	1,942	795,973	797,915	639,654
Operational travel	289,204	334,582	623,786	642,494
Depreciation	319,078	327,569	646,647	897,310
Gross operating expenses	5,744,107	5,725,370	11,469,477	11,811,456

GRANTS

	Grant Period	Funds Received	Accounts Receivable	Total 2007	Total 2006
UNRESTRICTED					
Belgium	Jan–Dec 2007	439,067	--	439,067	245,271
Canada	Jan–Dec 2007	543,886	--	543,886	505,214
France	Jan–Dec 2007	--	144,756	144,756	95,645
Germany	Jan–Dec 2007	157,095		157,095	192,132
Japan	Jan–Dec 2007	--	493,330	493,330	737,965
Netherlands	Jan–Dec 2007	--	--	--	867,000
Norway	Jan–Dec 2007	--	--	--	654,688
Sweden	Jan–Dec 2007	495,459	--	495,459	426,279
United Kingdom	Jan–Dec 2007	985,650		985,650	914,800
USAID	Jan–Dec 2007		250,000	250,000	200,000
World Bank	Jan–Dec 2007	1,150,000	--	1,150,000	1,086,000
Côte d'Ivoire	Jan–Dec 2007	--	--	--	--
Total Unrestricted Grants		3,771,156	888,086	4,659,243	5,924,993
TEMPORARILY RESTRICTED					
AfDB I: NERICA Dissemination Project	Jan 04–Dec 09	379,319	--	379,319	707,362
Canada Fund for Africa (CFA)	2003–2007	208,272	--	208,272	740,172
1/ New CANADA fund for SWIHA	2006–2008	107,871	--	107,871	31,370
WCA/MTP - Regional Coll.Act. Plan (REPCA)	Jan 07–Dec 07	50,000	--	50,000	--
Conserv. Food & Health Found.	Jul 06–May 06	19,789	--	19,789	10,000
COAT-Taiwan/AVRDC Collaborative Project	Oct 03– May 06		--		13,630
CFC/FAO-Spirivwa Project	Jan 00–Dec 08	174,801	--	174,801	--

		Grant Period	Funds	Accounts	Total	Total
	TEMPORARILY RESTRICTED		Received	Receivable	2007	2006
1/	EU: Rice Policy & Tech. Impact on Food Security...	Jan 07–Dec 07	1,203,184	--	1,203,184	--
	Federal Rep. of Nigeria Seed Multiplication. Prj	2006–2007	148,402	--	148,402	4,538
	IBRD: Genebank Upgrade Project	2003–2008	189,258	--	189,258	140,492
	IBRD: WCA Regional MTP Project	Jan 05–Dec 07	32,588	--	32,588	105,533
1/	IBRD: World Bank Contrib.to SWEP-IVC	Jan 06–Mar 08	84,105	--	84,105	40,676
	IBRD: Genebank Upgrade Project (GPG-Phase 2)	Jan 07–Dec 09	109,597	--	109,597	--
	IBRD: IITA / WARDA Corporate Services Alignment Project	Jan 07–Dec 08	112,985	--	112,985	--
	IFAD: PADS Project	Mar 05–Mar 08	188,184	--	188,184	170,968
	IFAD: Congo-NERICA Dissemination Project	Aug 04–Sept 06	--	--		53,244
	IFAD: HIV/AIDS and Rural Poverty Project	Jan 07–Jun 08	67,669	--	67,669	--
	UNDP/TCDC-IHP PHASE 2	Jan 07–Dec 09	192,331	--	192,331	--
	Japan (Interspecific Hyb. Project)	Jan 00–Mar 08	430,124	--	430,124	378,220
1/	Japan (RYMV Project)	Jan 00–Mar 08	128,916	--	128,916	28,066
1/	Japan (Increasing Quality Compet.Loc. Project)	Jan 03–Mar 08	111,192	--	111,192	98,739
1/	Japan (Dev.Interspec. OG & OS Progenies)	Jan 03–Mar 08	62,135	--	62,135	169,614
1/	Japan (High Yield Varieties - Humid Zones)	Dec 05–Dec 08	89,787	--	89,787	112,340

		Grant Period	Funds	Accounts	Total	Total
1/	Japan (Phys. & Genetic Invest.-NERICA Project)	Jan 07–Mar 08	100,000	--	100,000	--
	JICA/WARDA: Collaboration Project	Apr04–Open	164,035	--	164,035	119,522
	JIRCAS/WARDA: Drought Project	Apr 05–Open	38,211	--	38,211	36,172
	Netherlands (APO/JPO Project)	2004–2007	289,320	--	289,320	469,190
	PDIM/WARDA/SONADER Collaborative Project	Jan 06–Dec07	48,218	--	48,218	35,977
	Rockefeller: FPATDD-Mali/Nigeria	Jan 01–Dec 06	--	--		37,785
	Rockefeller: Drought Tolerance Project	Mar 04–Dec 07	218,544	--	218,544	338,691
	TEMPORARILY RESTRICTED		Received	Receivable	2007	2006
	USAID: African Networks Project	2005–2006		--		96,047
	USAID: RYMV Project	Oct 06–Dec09	131,155	--	131,155	534,237
	USAID: AVRDC Project	2005–2006		--		31,011
	USAID: INSAH1-ROCARIZ Networks Project	Sept 06–Dec 07	130,026	--	130,026	38,478
	USAID: INSAH2-RiceMaize Stratification Project	Sept 06–Dec 07	147,782	--	147,782	39,746
	UNDP: New PVS Extension Project	Jun 06–Apr 08	132,140	--	132,140	201,056
	UNDP: Enhancing Capacity - NERICA	Jun 06–Dec 09	140,964	--	140,964	53,435
	UNDP: Guinea IAEC Project	2004–2006		--		18,119
				--		
	Total Restricted Grants		5,725,370	--	5,725,370	5,034,582
	Total Grants		9,496,526	--	10,384,612	10,959,575

1/ The use of these grants has been restricted to selected projects in the CGIAR-approved agenda for WARDA

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Programs Division

Marco Wopereis**	Assistant Director General, Research and Development (from December 2007)
Shellemiah Keya††	Assistant Director General, Research and Development
Cyrille Adda	Program Assistant
Kokou Ahouanton**	Research Assistant
Inoussa Akintayo	Coordinator, African Rice Initiative (ARI)

Koffi Akator	Research Assistant
Fatimata Bachabi	Research Assistant
Saidu Bah**	Research Assistant
Boubié V. Bado	Sahel Agronomist
Ibrahima Bamba**	Post Doctoral Fellow – Economist
Bila Belemgoabga	Administrative Assistant
Kone Brahima	Research Assistant
Boubacary Cissé	Research Assistant
Mamadou Cissoko	Research Assistant
Matty Demont**	Production Economist
Aliou Diagne	Impact Assessment Economist
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Attiogbev-Somado Eklou††	Post Doctoral Fellow – Genetic Resources
Koichi Futakuchi	Crop Ecophysiologicalist
Mohamed Kebbeh††	Production Economist (Sahel)
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Paul Kiepe	Scientific Coordinator, Inland Valley Consortium
Ashura Luzi-Kihupi	ECARRN Coordinator
Moussa Mahaman▼	Research Assistant
Fofana Mamadou	Research Assistant
Baboucarr Manneh	Post Doctoral Fellow – Biotechnologist
Marcel Meijs††	Water Management/GIS (APO)
Augustin Munyemana	Participatory Technology Development Scientist
Lawrence Narteh	ROCARIZ Coordinator
Akahoua N’cho	Research Assistant
Marie-Noëlle Ndjiondjop	Molecular Biologist/Biotechnologist
Abibou Niang	Research Assistant
Francis Nwilene	Entomologist
Ayoni Ogunbayo	Research Assistant
Sylvester Oikeh	Soil Fertility Agronomist
Amos Onasanya	Research Assistant
Olumuyiwa Osiname†	WARDA Coordinator in Nigeria
Victorien Randriamohanina††	United Nations Volunteer (ARI)
Jonne Rodenburg	Inland Valley Agronomist (APO)

Ines Sanchez	Head of Genetic Resources Unit
Kazuki Saito	Post Doctoral Fellow – Agronomy
Kayodé Sanni	Research Assistant
Kassa Semagn††	Post Doctoral Fellow – Biotechnologist
Mandé Semon	Upland Rice Breeder
Yacouba Séré	Pathologist
Moussa Sié	Lowland Rice Breeder
Franklin Simtowe	Post Doctoral Fellow Impact Assessment Economics
Abou Togola	Research Assistant
Ali A. Touré	Research Assistant
Amadou Touré	Research Assistant
Karim Traoré	Post Doctoral Fellow – Irrigated Rice Breeder
Paul Van Mele	Technology Transfer Agronomist
Michel de Vries	Irrigated Rice Agronomist
Ousmane Youm	Assistant Director of Research/Program Leader

Collaborating Scientists

Glenn Gregorio	Rice Breeder (IRRI)
Ryoichi Ikeda	Plant Breeder (JICA)
Virginie Levasseur††	Vegetable Specialist (AVRDC)
Horoaki Samejima	Post Doctoral Fellow (JIRCAS)
Yoshimi Sokei	Agronomist (JICA)
Hiroshi Tsunematsu	Associate Upland Rice Breeder (JIRCAS)

Visiting Scientists

Rita Afiavi Agboh-Noameshie†† Sociologist (appointed 2007 as HIV/AIDS Focal Point)

* Joined in 2006

* * Joined in 2007

† Left in 2006

†† Left or changed job title in 2007

▼ Deceased 2007

Postgraduate trainees in 2006–2007

Name and Thesis Topic/Subject	Institution/ University	Country of origin	Gender	Sponsor	Degree
Anato, Florence <i>Enquête agronomique sur l'importance des populations et dégâts des borers de tige de riz dans différentes zones écologiques du Bénin</i>	University of Abomey-Calavi, Benin	Benin	F	WARDA	DAA
Annang, Lesley <i>Livelihood strategies, lowlands rice cultivation and implication for the adoption of rice technologies</i>	Kwame Nkrumah University of Science and Technology, Ghana	Ghana	F	WARDA	MPhil
Assogba, Mireille <i>Criblage des NERICA et des sativa pour leur résistance au borer de tige Sesamia et Calamistis</i>	University of Abomey-Calavi, Benin	Benin	F	WARDA	DAA
Atchade, Nicolas <i>Caractérisation des stations pour la riziculture pluviale au sud Bénin: cas de IITA (Godomey), Niaouli, Bohicon</i>	University of Abomey-Calavi, Benin	Benin	M	WARDA	DEA
Bancole, Bernice <i>Structure de la population du virus de la panachure jaune du riz au Bénin: Variabilité pathologique</i>	University of Abomey-Calavi, Benin	Benin	F	WARDA	DAA
Bonou, Alice <i>Impact de l'introduction des NERICAS sur la diversité variétale au Bénin : Cas de département des collines</i>	University of Abomey-Calavi, Benin	Benin	F	WARDA	DAA
Dagan, Affoudji Arnaud <i>Etude des déterminants socio-institutionnels de l'introduction et de la diffusion des méthodes améliorées d'étuvage du riz au Bénin</i>	University of Abomey-Calavi, Benin	Benin	M	WARDA	DAA
Djabga, F. Justin <i>Experiences with inland valley development – a case study from the Ouémé Valley in south east Benin</i>	University of Abomey-Calavi, Benin	Benin	M	WARDA	Maitrise

Name and Thesis Topic/Subject	Institution/ University	Country of origin	Gender	Sponsor	Degree
Djedatin L. Gustave <i>Hérédité et cartographie de la résistance du riz à BLB et introgression du gène de résistance au RYMV dans des variétés élites d'Afrique</i>	University of Abomey-Calavi, Benin	Benin	M	USAID	PhD
El Hassimi Sow, Mounirou <i>Marker-assisted selection for improvement of rice varieties resistant to RYMV for West Africa</i>	University of KwaZulu-Natal, South Africa	Niger	M	USAID	PhD
Fahe, Komi Sena <i>Soil science</i>	Ecole Supérieure d'Agronomie, University of Benin in Lomé, Togo	Togo	M	WARDA	DAA
Guillaume, Solenne <i>Agronomy and feasibility of aerobic rice in the Senegal River Valley</i>	Wageningen University, The Netherlands	France	F	WARDA	MSc
Hadonou, Yovo Armelle <i>Structure de la population du virus de la panachure jaune du riz au Bénin: diversité sérologique</i>	University of Abomey-Calavi, Benin	Benin	F	WARDA	DAA
Hessou, Aline <i>Plant pathology</i>	University of Abomey-Calavi, Benin	Benin	F	WARDA	DAA
Houeyissan, Sylvestre <i>Déterminants des choix et de la volonté de payer les semences des variétés améliorées de riz dans le Département des Collines</i>	University of Abomey-Calavi, Benin	Benin	M	WARDA	DAA
Houngbedji, Seton Gilles <i>Caractérisation du système racinaire de certains cultivars de riz par rapport à la tolérance à la sécheresse</i>	University of Abomey-Calavi, Benin	Benin	M	WARDA	DAA
Idinoba, Philip <i>Sociocultural and institutional aspects of rice-based technologies</i>	Wageningen University, The Netherlands	Nigeria	M	WARDA /Wageningen University	PhD

Name and Thesis Topic/Subject	Institution/ University	Country of origin	Gender	Sponsor	Degree
Idrissou, Salimou <i>Rice policy and development</i>	University of Abomey-Calavi, Benin	Benin	M	WARDA	DAA
Kam, Honoré <i>Marker-assisted selection for improvement of rice varieties resistant to RYMV for West Africa</i>	University of KwaZulu-Natal, South Africa	Burkina Faso	M	USAID	PhD
Kouazoude, Benjamin A.K. <i>Innovations paysannes pour la gestion intégrée des adventices dans la riziculture des communes de Dassa Zoume et de Glazoué</i>	University of Abomey-Calavi, Benin	Benin	M	IVC	DEA
Lawin, Kotchipa Gabriel <i>Analyse des déterminants de l'adoption et de la diffusion du dispositif amélioré d'étuvage du riz dans la commune de Glazoue (Département des Collines/ Bénin)</i>	University of Abomey-Calavi, Benin	Benin	M	ARI	DAA
Mensah, Koami Maurice <i>Analyse de la rentabilité financière et économique de la production et de la commercialisation du riz au sud du Bénin : Cas de Deve et de Dangbo</i>	University of Abomey-Calavi, Benin	Benin	M	WARDA	Maitrise en Gestion
Okonji, Christopher John <i>Influence of nitrogen and phosphorous application and grain legume/rice sequence on the performance of NERICA rice in the moist savanna agroecology of Nigeria</i>	University of Agriculture, Abeokuta, Nigeria	Nigeria	M	WARDA	PhD
Tete, Komivi Wolako <i>Plant pathology</i>	Ecole Supérieure d'Agronomie, University of Benin in Lomé, Togo	Togo	M	WARDA	DAA
Vido, Agossou Arthur <i>History of rice in Benin</i>	University of Abomey- Calavi, Benin	Benin	M	WARDA	DAA

Name and Thesis Topic/Subject	Institution/University	Country of origin	Gender	Sponsor	Degree
Yao, Kouadio Nasser <i>Marker-assisted selection for improvement of rice varieties resistant to RYMV for West Africa</i>	University of KwaZulu-Natal, South Africa	Côte d'Ivoire	M	USAID	PhD

Successful PhD awards in 2006–2007

Barry, Mamadou Billo	Ecole nationale supérieure agronomique de Rennes, France	Guinea	WARDA/INGER
Efissue, Andrew <i>Developing durable resistant upland rice for the tropics of Africa</i>	University of KwaZulu Natal, South Africa	Nigeria	Rockefeller Foundation
Dobo, Macaire <i>Enhance uniformity and stability of rice grain quality through genetic transformation and marker-assisted breeding</i>	Texas A & M University, USA	Côte d'Ivoire	Rockefeller Foundation



Training session for the use of Marker-Assisted Selection (MAS) in Rice Breeding at the Biotechnology Unit, Africa Rice Center (WARDA)

Training courses

Courses and workshops conducted in 2006–2007

Title	Place and date	Benefiting countries	Total participants	No. of women participants
Inland Valley Consortium workshop	Banjul (The Gambia) 2–5 May	Benin, Burkina Faso, Côte d'Ivoire, France, The Gambia, Ghana, Guinea, Mali, The Netherlands, Niger, Nigeria, Senegal, Sierra Leone, Togo	44	1
Stakeholders' workshop on building resilience to HIV/AIDS among smallholder farmers in Benue State, Nigeria	Makurdi (Nigeria) 10–11 May	Benin, Nigeria, United Kingdom	33	14
Africa Rice Congress	Dar es Salaam (Tanzania) 31 July–4 August	Belgium, Benin, Burkina Faso, Burundi, Cameroon, Colombia, Côte d'Ivoire, Congo-Brazzaville, DR Congo, Ethiopia, France, Ghana, Guinea, Japan, Kenya, Madagascar, Mali, Mozambique, Niger, Nigeria, Philippines, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Uganda, USA	218	12
Impact assessment methodology learning workshop	Dar es Salaam (Tanzania) 7–9 August	Benin, Ghana, Guinea, Mali, Nigeria, Senegal, Sierra Leone, Tanzania, The Gambia, Togo	15	4
ARI seed multiplication course	Porto-Novo (Benin) 14–18 August	Benin, Ghana, Liberia, Nigeria, Sierra Leone, The Gambia	14	0
Training the Trainers workshop on rice seed production in Togo	Kpalimé (Togo) 4–9 September			
Participatory variety selection workshop	Cotonou 30 October–2 November	Benin, Burkina Faso, The Gambia, Ghana, Guinea, Mali, Nigeria, Sierra Leone, Tanzania, Togo	33	–

Title	Place and date	Benefiting countries	Total participants	No. of women participants
Visit to Biotechnology Unit, Cotonou by second year students of UATM/GASA-Formation (Université Africaine de Technologie et Management)	Cotonou 30 November	Benin	21	6
Capacity development for national agricultural research on evaluation of upland and lowland NERICA	Cotonou 8 January–2 February	Benin, Gambia, Guinea, Mali	5	0
Basics of rice science	Cotonou 5–16 February	Côte d'Ivoire, Congo-Brazzaville, Guinea, Niger, Togo	5	0
Rice and Maize Stratification Project methodological workshop	Cotonou, Benin 28–30 May	Benin, Mali, Nigeria, Senegal, Sierra Leone	8	0
Training on Regional rice production for ECA countries	Moshi, Tanzania 18–28 June	Burundi, Congo DRC, Ethiopia, Kenya, Madagascar, Mozambique, Sudan, Tanzania, Uganda	21	5
Rice Policy Study review and planning workshop	Cotonou, Benin 25–26 June	Benin, Burkina Faso, Mali, Niger, Nigeria	12	1
Impact assessment methodology workshop	Accra, Ghana 23–25 August	Benin, Burkina Faso, The Gambia, Ghana, Guinea, Nigeria	15	2
Rice multiplication training	Porto-Novo, Benin 27–31 August	Benin, Burkina Faso, Cameroon, Chad, Central African Republic, Côte d'Ivoire, Guinea, Mali, Togo	20	2
Development of research capacity for evaluation of NERICA varieties in West Africa	Cotonou, Benin 15 November–14 December	Benin, Burkina Faso, The Gambia, Guinea, Mali, Sierra Leone	10	0

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Women are active throughout the rice chain from fieldwork through harvest and threshing to point-of-sale

Acronyms and abbreviations

AfDB	African Development Bank	IVC	Inland Valley Consortium
AfRGM	African rice gall midge	IWMI	International Water Management Institute
APO	Associate Professional Officer (Netherlands)	JICA	Japan International Cooperation Agency
ARI	African Rice Initiative	JIRCAS	Japan International Research Center for Agricultural Sciences
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa	MTP	Medium-term Plan
AVRDC	The World Vegetable Center	NARES	National Agricultural Research and Extension Systems
BLB	bacterial leaf blight	NARS	National Agricultural Research Systems
CCER	Center-commissioned external report	NEPAD	New Partnership for Africa's Development
CFA	Central African franc	NERICA	New Rice for Africa
CGIAR	Consultative Group on International Agricultural Research	NGO	non-governmental organization
CIAT	Centro Internacional de Agricultura Tropical	NRM	natural resources management
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement	PERSYST	performance des systèmes de production et de transformation tropicaux
DFID	Department for International Development (UK)	PVS	participatory variety selection
DNA	deoxyribonucleic acid	QTL	quantitative trait locus (loci)
ECOWAS	Economic Community of West African States	REPCA	Regional Plan for Collective Action
ECSA	Eastern, Central and Southern Africa	ROCARIZ	West and Central Africa Rice Research Network
ECA	East and Central Africa	RYMV	rice yellow mottle virus
ECARRN	East and Central Africa Rice Research Network	SAED	Société d'aménagement et d'exploitation des terres du Delta du Fleuve Sénégal et des vallées du Fleuve Sénégal et de la Falémé (Senegal)
ECOWAS	Economic Community of West African States	SC	Science Council of the CGIAR
EPMR	External Program and Management Review	SNPRV	Service national de promotion rurale et de vulgarisation (Guinea)
EU	European Union	SONADER	Société nationale pour le développement rural (Mauritania)
FAO	Food and Agriculture Organisation (UN)	SPAAR	Special Program for African Agricultural Research
FARA	Forum for Agricultural Research in Africa	SPIRIVWA	Sustainable Productivity Improvement for Rice in Inland Valleys of West Africa
GIS	geographical information systems	SSA	sub-Saharan Africa
GMD	dalasi (The Gambia)	SWEP	Systemwide Eco-regional Program
GNF	franc (Guinea)	SWIHA	Systemwide Initiative on HIV/AIDS
GSS	General Support Service Staff	TCDC	Technical Cooperation among Developing Countries
HIV/AIDS	human immunodeficiency virus/acquired immune deficiency syndrome	TILS	Training, Information and library services
IBRD	International Bank for Reconstruction and Development	UEMOA	West African Economic and Monetary Union
ICM	integrated crop management	UNDP	United Nations Development Programme
IER	Institut d'économie rurale (Mali)	USAID	United States Agency for International Development
IFAD	International Fund for Agricultural Development	USD	United States dollar
IHP	Interspecific Hybridization Project	VSAT	very small aperture terminal
IITA	International Institute of Tropical Agriculture	WCA	West and Central Africa
INERA	Institut de l'environnement et des recherches agricoles (Burkina Faso)	WECARD/ CORAF	West and Central African Council for Agricultural Research and Development/Conseil ouest et centre africain pour la recherche et le développement
INGER	International Network for Genetic Evaluation of Rice	WUR	Wageningen University and Research Center
INRAB	Institut national de recherche agronomique du Bénin		
INSAH	Institut du Sahel		
IPM	integrated pest management		
IRAD	Institut de recherche pour le développement (Cameroon)		
IRAG	Institut de recherche agronomique de Guinée		
IRRI	International Rice Research Institute		
ISRA	Institut sénégalais de recherches agricoles		

About the Consultative Group on International Agricultural Research (CGIAR)

The Consultative Group on International Agricultural Research (CGIAR) is a strategic alliance of countries, international and regional organizations and private foundations supporting 15 international agricultural Centers that work with national agricultural research systems and civil society organizations including the private sector. The alliance mobilizes agricultural science to reduce poverty, foster human well-being, promote agricultural growth and protect the environment. The CGIAR generates global public goods that are available to all.

In a world where 75 percent of poor people depend on agriculture to survive, poverty cannot be reduced without investment in agriculture. Many of the countries with the strongest agricultural sectors have a record of sustained investment in agricultural science and technology. The evidence is clear; research for development generates agricultural growth and reduces poverty.

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International Center for Agricultural Research in the Dry Areas (ICARDA)	www.icarda.org
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	www.icrisat.org
International Food Policy Research Institute (IFPRI)	www.ifpri.org
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