



Report of the 4th Biennial Regional Consultative
Meeting of the National Experts Committee (NEC IV)

Republic of Côte d'Ivoire
24-26 June 2004

Celebrating the International Year of Rice in Africa

Africa Rice Center (WARDA)/NARS Collaboration

Biennial Africa Rice Center/National Experts
Committee Meeting Report No. 4

About Africa Rice Center (WARDA)

Africa Rice Center (WARDA) is an autonomous intergovernmental research association of African member states and also one of the 15 international agricultural research Centers supported by the Consultative Group on International Agricultural Research (CGIAR). The mission of WARDA is to contribute to food security and poverty alleviation in sub-Saharan Africa (SSA), through research, partnerships, capacity strengthening, and policy support on rice-based systems, and in ways that promote sustainable agricultural development based on environmentally sound management of natural resources.

The *modus operandi* of WARDA is partnership at all levels. WARDA's research and development activities are conducted in collaboration with various stakeholders primarily the National Agricultural Research Systems (NARS), academic institutions, advanced research institutions, farmers' organizations, non-governmental organizations, and donors for the benefit of African farmers, mostly small-scale producers, as well as the millions of African families for whom rice means food.

The 'New Rice for Africa' (NERICA)™, which is bringing hope to millions of poor people in Africa, was developed by WARDA and its partners. The success of the NERICAs has helped shape the Center's future direction, extending its horizon beyond West and Central Africa into Eastern and Southern Africa. The creation of NERICA is in harmony with the spirit of the World Summit on Sustainable Development (WSSD), the Tokyo International Conference on Africa's Development (TICAD), the Millennium Development Goals (MDG), and the New Partnership for Africa's Development (NEPAD) for sustainable development. The African Rice Initiative (ARI) was launched in 2002 to promote the dissemination of NERICA and complementary technologies throughout SSA. WARDA hosts ARI, the Regional Rice Research and Development Network for West and Central Africa (ROCARIZ), and the Inland Valley Consortium (IVC).

WARDA has its headquarters in Cotonou, Benin and regional research stations near St Louis, Senegal and at the International Institute for Tropical Agriculture (IITA) in Ibadan, Nigeria. WARDA's main research center is in Côte d'Ivoire but most scientists and researchers are temporarily located in Cotonou.

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01 B.P. 2031, Cotonou, Benin**

2005

Biennial Africa Rice Center/National Experts Committee Meeting Reports

This series of publications contains the report of the Biennial Africa Rice Center/NARS Experts Committee Meetings and papers presented during the meeting.

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1. Introduction

The National Experts Committee (NEC) met in Yamoussoukro in the Republic of Côte d'Ivoire from 24-26 June 2004 in order to review the conclusion and recommendations of the 24th Ordinary session of the WARDA Council of Ministers (COM) held on 19th September 2003 and to receive an update on the Africa Rice Center's progress and proposals for the future. This fourth Biennial Regional Consultative Meeting (NEC IV) was chaired by Prof. Hamidou Boly, INERA Director and Chair of NEC, with Ghana and Mauritania acting as rapporteurs. The following member countries were present:

- Benin
- Burkina Faso
- Côte d'Ivoire
- Ghana
- Liberia
- Mali
- Nigeria
- Senegal

The following countries were absent:

- Cameroon
- Chad
- Gambia
- Guinea
- Guinea Bissau
- Mauritania
- Niger
- Sierra Leone
- Togo

Observers:

- Ethiopia
- Congo DRC
- Sasakawa-Global 2000
- Guinea
- Uganda

2. Main report and conclusions

2.1 Opening session

Prof. Hamidou Boly, Director General of INERA, Burkina Faso and Chairman of NEC IV thanked the participants for coming to the meeting at which it would be necessary to achieve measures to avoid rising rice imports as much as possible. He went on to congratulate Dr Monty Jones for his co-laureate for the award of the World Food Prize, which is effectively the Nobel Prize for Agriculture.

In his turn the Africa Rice Center Director General, Dr K.F. Nwanze noted that NEC IV is being carried out under the theme ‘International Year of Rice (IYR)’ and as such the meeting will be in two parts comprising the NEC sessions and the IYR celebration. He highlighted the failure of some member countries to pay their contributions and encouraged a minimum token contribution. Countries that had not paid up to 10% of their arrears were not financed to attend NEC IV. This procedure will continue to be used for future meetings, especially workshops where member country costs were normally met by the Center. He appealed to NARS to encourage their countries to meet their financial contributions. NEC IV is especially important because of the diverse participation from Central, Eastern and Southern Africa.

2.1.1 COM 2003 Resolutions

The Executive Officer to the Africa Rice Center Director General, Dr Bruce-Oliver reported on actions taken to fulfill the resolutions passed at COM 2003. Some of these include the Center’s advisory role in biosafety and GMOs, admission of the Center as a specialized institution of the African Union in the framework of NEPAD, and harmonization of network and other collaborative activities at the country level.

2.1.2 Africa Rice Center DG’s Report

The report highlighted the continuing promotion and dissemination of the NERICAs in many more countries especially in Central, Eastern and Southern Africa. He singled out Uganda where there is a partnership developing between farmers, the private sector and government to further disseminate the NERICAs. He also cited the IFAD-funded project for Congo DRC as a major step forward towards

improving food security in that conflict-affected country. The Center took a number of initiatives to meet its expanding coverage by signing MOUs with the Ugandan NARS (NARO) and ASARECA, the latter involving funding a Rice Network Coordinator for Eastern and Southern Africa, by posting a Liaison scientist to Nigeria. An MOU was also signed by NEPAD/AU and the DG, on behalf of the CGIAR Center Directors' Committee. Although our temporary relocation in Bamako did not affect our research momentum, our continued absence at M'bé is sending a negative signal to our donors. A return plan to Bouaké is being studied and appropriate measures will soon be taken.

2.1.3 Africa Rice Center Asst. DG R & D Report

The Center's Assistant Director General Research and Development Dr Shellemiah Keya gave a review of the new programmatic structure based on the Strategic Plan (SP). Although there is a reduction in the number of programs to two, this does not reflect a reduction in Center activities. The two programs, Integrated Rice Production Systems and Rice Policy and Development will function through eight projects with concrete outputs and milestones based on a three-year rolling Medium Term Plan (MTP). He also gave a detailed review of 2003 research achievements and the challenge of meeting improved rice seed demand.

2.1.4 Strategic Plan (SP 2003-2012)

Dr Kouamé Miézan, Coordinator of the Sahel program, indicated that the SP 2003-2012 highlighted two major research challenges, development of improved germplasm that are acceptable to farmers and consumers and efficient use of resources, as well as rice policy and markets, and impact on poverty and the environment. The SP highlighted both change and continuity and the development of the rice sector and post-harvest and processing are important pillars. A consultative process was used involving all stakeholders including NEC and BoT.

2.1.5 Medium Term Plan (MTP)

The Assistant Director Integrated Production Systems Dr Ousmane Youm stated that the MTP is a rolling three-year plan that is designed to meet the research challenges as described in SP, while remaining consistent with the CGIAR outputs. He also indicated that a lengthy process of consultation was held mainly at the Center but the draft will be sent to partners for review and fine-tuning. The MTP focused on eight projects with highly developed outputs to enhance efficiency and allow NARS to take the lead where they have comparative advantage.

2.1.6 Key issues from the general discussion

Several participants welcomed the expansion of the Center's coverage to other parts of Africa, but hoped that this will not dilute the Center's ability to sustain its high quality research and activities in founding member countries. The Center was encouraged to extend its use of biotechnology to shorten the time needed to develop improved varieties. It was noted that although rock phosphate (RP) is a useful source of P, there are associated problems of heavy metals contamination and this should be examined. Although azola is a useful local source of fertilizer for improved rice production, adoption has been limited and there was therefore a need to work on edible legumes which are more attractive to farmers. The success of the NERICAs in Guinea as opposed to Côte d'Ivoire was due to the commitment and political will of the national system. It was noted that while we promote NERICA dissemination, we should look at the associated environmental implications. There was consensus that post-harvest and processing should be given high priority. Collaboration with the Asian Vegetable Research and Development Center (AVRDC) is welcomed because of the benefits of diversifying rice-based systems so that farmer's incomes are increased through vegetable production. AVRDC had a comparative advantage and had willingly seconded a scientist to the Africa Rice Center.

2.2 International Year of Rice Celebration

Members of the NEC took part in an interesting and enlightening field visit to five sites near to Yamoussoukro, where they saw a successful example of a self-sustaining rice production cooperative with a private sector milling machine, irrigated lowland rice fields of the cooperative Coproriz, and Africa Rice Center variety plots showcasing the elite varieties already used in the subregion. In addition, they visited a seed cold store of the Côte d'Ivoire national rice program (PNR), and also met farmers participating in an ANADER-WARDA partnership initiative on Participatory Learning and Action Research (PLAR) under which farmers are trained in rice technology dissemination.

A special celebratory ceremony was held to mark the opening of the International Year of Rice in Côte d'Ivoire, which was addressed by the Ambassador of Japan, representatives of the Minister of Agriculture for Côte d'Ivoire, the Governor of the District of Yamoussoukro, the Mayor of Yamoussoukro, and by the DG of Africa Rice Center. Representatives of local rice-growing cooperatives and farmers' associations, including women farmers displaced by the Ivorian conflict, expressed their enthusiastic support in a march-past. There was also a comprehensive exhibition of rice-based technologies and products. A NERICA-cooking competition for local restaurants attracted entries from nine restaurants which were judged by a committee and prizes awarded in different categories.

2.3 Round Table Discussion

Dr Robert Guei, Head of the Genetic Resources Unit at Africa Rice Center, stated that rice production is one of the most important economic activities in the world and it is therefore fitting that the UN General Assembly designated 2004 as the International Year of Rice (IYR). It is noteworthy that IYR 2004 celebrations kicked off in grand style in Yamoussoukro, one of the most important agricultural districts of Côte d'Ivoire, where the NERICAs have been enthusiastically adopted by farmers.

However, farmers have poor access to inputs, the market structure is weak and lacks strong institutional support, and high production costs of small-scale farms means that locally-produced rice is uncompetitive against imports. Dr Patrick Kormawa, policy economist at Africa Rice Center, said this low productivity meant that rice imports were increasing in the sub-region despite the increase in the rice area. He called on African governments to make use of the provisions of the World Trade Organization (WTO) that allowed them to take legal measures against dumping of rice. He proposed that to celebrate the International Year of Rice each country should set up a National Rice Development Fund through the imposition of a 2% levy on rice imports.

2.3.1 Key points

It was observed that imported rice is subsidized and is killing the efforts of local producers. A strong political will is needed to create an enabling environment for the competitiveness of locally produced rice. This would involve an improvement in processing and handling, functional research and extension systems, facilitation of regional and national market development. In addition, value-added activities such as commercialization of rice straw should be explored. Much of this would be achieved if strong farmer associations were formed to undertake advocacy and, if necessary, exert political pressure on national governments.

2.4 WARDA-NARS Partnerships

The Executive Officer to the DG, Dr Bruce-Oliver reported on joint activities with NARS in 2002-2004, highlighting capacity building, including short-term and advanced degree training, Africa Rice Center/NARS visits and joint publications. He detailed the trials carried out in member countries and the large number of varieties based on improved germplasm which had been tested or already adopted by farmers. Direct spending by Africa Rice Center on NARS represented a high proportion of the Center's operational research budget (18.2% in 2001, 23.4% in 2002).

2.5 Reports accepted from networks

The head of the Genetic Resources Unit with responsibility for **INGER-Africa** activities, Dr. Robert Guei, said achievements include responding to the demands of 34 countries in sub-Saharan Africa for material that is adapted to local ecosystems and national program capacities. Annual collaboration took place with 50-60 scientists, particularly on varietal nursery composition and selection of suitable varieties for evaluation and ultimate release. A number of varieties have been identified which are stable across rice-growing ecologies. High yield remains the most desirable characteristic across all regions and ecosystems.

ARI: Meeting demand for seed is the main challenge facing ARI, reported ARI coordinator Dr Innoussa Akintayo. The GRU helped with some supplies and the Africa Rice Center also played a facilitation role in the supply of seed between member countries. To meet demands from the seven countries in the AfDB-funded project, the Center's breeders have initiated seed production in Mali and at M'bé in Côte d'Ivoire, and entrepreneurial farmers in identified countries may be contracted to produce NERICA seeds. Approval for at least five of the seven pilot countries for the AfDB's funding for NERICA dissemination is expected shortly.

IVC: Coordinator Dr Philippe Morant reported on The Gambia's application to join the consortium and its presence already at a recent workshop. Togo and Benin have taken over from Côte d'Ivoire and Guinea as NCU members of the Consortium Management Committee, while FAO has replaced IITA, and Benin has been elected to the Chair. Other decisions include collaborating international institutions, such as WorldFish and AVRDC, joining the consortium.

A revised 2004 program of eight research projects in six countries has been arranged in the second phase. An external review of Phase II will take place in September 2004 and preparations for the following phase will be based on its conclusions. Dr Morant highlighted the knowledge gained on inland valleys over the past 10 years, which is available on CD-ROM and via the Web.

ROCARIZ: The Network Coordinator Dr Sidi Sanyang reported that the network supported 98 projects to the tune of US\$ 392,500 in 17 West and Central African countries in 2002 and 2003. Rokupr Research Station (RRS) in Sierra Leone was also supported to develop mangrove-swamp rice technologies. About 98 NARES scientists and development agents benefited from the grants. Most of them worked on rice varietal improvement and RYMV management, using screen houses, on-station and on-farm trials, and surveys and questionnaires. Breeder seeds of 74 inter- and intraspecific lowland and irrigated rice varieties with potential

to complement the upland NERICAs were multiplied at INERA in Burkina Faso for evaluation by other NARS in Africa. In Togo, however, 29 best performing inter- and intraspecific varieties were selected for further evaluation against major biotic and abiotic stresses. A drought screening trial in Burkina Faso showed that WAB 96-3 yielded 2.8 t ha⁻¹ and was the most suitable parent for drought resistance/tolerance screening.

2.6 Rice biotechnology and GMOs

Dr M-N Ndjiondjop, Head of the Biotechnology Unit, emphasized the use of anther culture and molecular markers to develop populations and tag useful genes from African rice and to use those markers in marker-assisted selection. Mapping populations of about 148 interspecific lines have been developed and are being evaluated in order to identify quantitative trait loci (QTLs) for agronomic traits. Near isogenic lines are being developed and F₁ hybrids and BC₁F₁ seed have been obtained. The BC₁F₁ will be genotyped using molecular markers to select plants with the African rice genome. Eighty doubled haploid lines have been created. The NARS are being trained on molecular and anther culture and it is anticipated that a Biotechnology Network will be established. Breeding activities to develop new genetic material will be supported by continued investment in capacity and facilities for the conservation and management of genetic resources, as well as the continued use of a range of biotechnology tools, including tissue-culture, gene-mapping and marker-assisted selection. On the issue of genetically modified organisms (GMOs), the Center will not introduce the transgenic rice plants developed with the John Innes Centre into any country that has not legislated to produce a biosafety protocol.

2.7 Strategic issues

2.7.1 CGIAR reform in sub-Saharan Africa

The DG reported on proposals for reorganization of the CGIAR in Africa as part of a more global discussion. One CGIAR Task Force (TF) is considering program alignment and a second TF is charged with structural options and organizational alignment. As a result of the Ivorian crisis, the impact on the Africa Rice Center could be significant if the Center is unable to return to full operations in M'bé as planned. It could be transformed into a Program at another Center, but the DG insisted the only viable option was the full re-establishment of Africa Rice Center at its headquarters. The NEC expressed its support for the Center and its major role in meeting the needs of Africa's resource-poor farmers, and called on individual

members to prepare their respective Ministries with a positive response to the fact-finding missions by the CGIAR TFs.

2.7.2 Rice R & D in Eastern and Southern Africa

Mr Tareke Berhe, Guinea country director of Sasakawa-Global 2000, reported on its plans for a regional rice program, but said SG2000 does not have its own agenda other than to support pre-existing national and other agendas with a focus on rice. A Memorandum of Understanding is being prepared with the Africa Rice Center. SG2000 has carried out fact-finding visits to several countries to help in drawing up its regional program. Among the interventions proposed were action to promote germplasm testing, seed production, water management, marketing and small-scale mechanization.

2.8 Decisions and recommendations

- The NEC once again, requests the Côte d'Ivoire authorities to guarantee the security of Africa Rice Center's return and continued stay in Bouaké and M'bé .
- The NEC requests that the Chairman of the Council of Ministers (COM) should formally announce the clearly intended return to Bouaké and M'bé .
- The NEC asks member countries to endorse the position already taken in earlier CGIAR consultation meetings when it was decided that programmatic integration and administrative alignment is the best option rather than merging of Centers based in sub-Saharan Africa.
- The NEC strongly encourages member States to regularly pay their contributions even if it means that only a token proportion of their annual dues is forwarded to allow their continued participation in the Center's fora and capacity-building activities.
- The NEC encourages the Center to facilitate member countries to put in place protocols and legislation on biosafety, particularly with respect to GMOs to enable them to make informed decisions on the use and benefits to be gained from biotechnology and its products.
- The NEC recognizes the negative impacts that globalization and international trade agreements can have on agricultural systems and commends the actions

of Nigeria and the firm commitment of its president in banning the dumping of rice products. It is agreed that ways of levying taxes on rice imports should be found through working with economists, and that the Center should support national programs to find ways of preventing dumping while complying with existing international agreements.

- The NEC believes that the Center should help improve the national systems' capacities to develop bankable research projects.
- The NEC affirms that ARI is purely for the dissemination, promotion and widespread use of NERICAs and their complementary technologies, in a spirit of functional partnership with all stakeholders. Therefore, ARI's research component must be carried out within the framework of ROCARIZ.
- The NEC affirms that INGER-Africa is an important research activity that must be carried out under ROCARIZ's breeding taskforce.
- The NEC agreed that the potential effects of heavy metal contamination in rock phosphate should be subject to further research.

Appendices

Appendix A

Report of the Director General June 2002-June 2004

The previous biennial meetings with the NARS experts have been unique in their own way, but this meeting is especially significant, because this is the first time that we have active participation not only from West Africa – our traditional and long-standing partners – but also from Central and Eastern Africa. This wide-ranging participation testifies to the realization of the new vision and name, *the Africa Rice Center (WARDA)*, which was adopted in January 2003 in recognition and expression of the Center’s leadership role in rice research and development in sub-Saharan Africa.

Progress Highlights: NERICA Promotion and Dissemination

NERICA continues to be the flagship technology of the Center, and is gaining immense popularity as a symbol of technological breakthrough initiated and led by Africans. It has been in the limelight in major international events and its growing fame has culminated in the selection of Dr Monty Jones as the co-laureate of the 2004 World Food Prize. He is the first African to win this prestigious award.

NERICA was prominently featured at the high-profile WSSD meeting in Johannesburg in 2002 through the NERICA special event organized by UNDP, the Government of Japan, CGIAR and WARDA. In September 2003, it captured the spirit of the TICAD III meeting in Tokyo, where prominent world leaders, including heads of several countries, showered praises on this remarkable breakthrough. The leaders urged that high priority should be given to NERICA’s expansion “to other parts of the continent in urgent need.”

NERICA’s international fame is underpinned by its high popularity among farmers. Countries in West Africa where NERICAs have been released or are grown are Ivory Coast (2 varieties), Guinea (7 varieties), the Gambia (3 varieties), Sierra Leone (4 varieties), and Nigeria (1). In Benin, Gabon, Mali and Togo several NERICA varieties are under extension. Burkina Faso is expected to release this year two NERICAs each for lowland and upland ecologies. Niger, Mali and Togo are also testing lowland NERICA varieties.

According to conservative estimates, NERICAs occupy 70 000 ha in Africa (of which 58 000 ha are in Guinea). They are spreading fast in East Africa, where rice is considered more as a commercial product rather than a food crop, in contrast to West and Central Africa.

There is a growing NERICA boom in Uganda where within three years of its introduction, more than 6000 hectares are under NERICA cultivation thanks to a successful partnership between the national program, international NGOs, seed companies, and farmers. Uganda is indeed poised to become as successful a model for NERICA adoption in East Africa as Guinea is for West Africa. However, in contrast to Guinea, the private sector is actively involved in the NERICA trade (food grain and seed sectors) in Uganda. Early in 2004, Uganda's President Yoweri Museveni distributed NERICA seeds to representatives of farmers' groups from 11 districts as part of a major initiative to reduce poverty through the promotion of upland rice.

Kenya is evaluating four NERICA varieties, Madagascar six and Tanzania, several varieties. With assistance from Japan/UNDP-TCDC, FAO, JICA, SG-2000, World Food Programme, and World Vision International, NERICA seed is being multiplied in WCA as well as in Ethiopia, Malawi, Mozambique, Tanzania, and Uganda.

The African Development Bank launched in 2003 a US\$ 30 million project to support national programs in the dissemination of NERICA over a five-year period in seven West African countries. About 80% of the targeted beneficiaries of the project are the rural poor, mostly women. The project estimates that about 33,000 farm families will be involved in participatory variety selection to accelerate the NERICA dissemination. About 400 000 ha of additional land is expected to be under the NERICA cultivation by the fifth year of the project. The import bill of the seven countries will be reduced by about US\$ 100 million.

NEPAD has identified NERICA as one of Africa's 'best practices worth scaling up' and has endorsed its expansion across the continent as part of the joint NEPAD-FARA program on the large-scale Dissemination of New Agricultural Technologies in Africa (DONATA).

Achievement Highlights: Awards and Honors

In June 2003, WARDA received the 'Grand Prix du Président de la République pour les Sciences' – Senegal's highest award for Science and Technology – for the adaptation and dissemination of the ASI thresher cleaner, the most widely used rice thresher in Senegal. The award was presented personally by President

Abdoulaye Wade to the WARDA team (led by Dr Kouamé Miézan) based in Senegal and its partners.

ASI's popularity has grown so rapidly that it has now spread to other countries in the region, and WARDA has been collaborating with partners in Mali, Mauritania, Ghana and Côte d'Ivoire to develop appropriate prototypes.

In July 2003, Dr Miézan was honored by the Government of Côte d'Ivoire for his long service to rice research and development through his work at WARDA since 1983. He was conferred the title of Commander of the National Order of Merit in Education.

On the occasion of the 2003 World Food Day, the Center received special recognition from the Government of Côte d'Ivoire "for its effective contribution in the fight against hunger in Côte d'Ivoire."

The announcement of the 2004 World Food Prize is not the only recognition of WARDA's efforts in the recent past. A new evaluation exercise of the CGIAR Centers by the World Bank and the CGIAR, which used our Performance Indicators report as a base, placed the "performance of WARDA as being superior, taking into account the unusual challenges in 2003."

We are indeed proud of all these splendid recognitions for outstanding rice research and development efforts of the Center's scientists and their partners.

The Africa Rice Center: Expansion into Central, Eastern and Southern Africa

The Council of Ministers at its 24th Ordinary Session endorsed the adoption of the name *the Africa Rice Center (WARDA)*. Apart from the traditional member countries, the Center's coverage now extends to five countries in Eastern Africa (Uganda, Ethiopia, Tanzania, Kenya and Madagascar), four countries in Central Africa (Gabon, Congo Brazzaville, Democratic Republic of Congo, and Burundi) and Mozambique in Southern Africa.

In Eastern Africa, Uganda is the Center's entry point by virtue of the comprehensive planning work we have engaged in with the Ministry of Agriculture, the National Agricultural Research Organization (NARO), the International NGO, Sasakawa-Global 2000, private seed companies and the sub-regional organization, ASARECA, based in Entebbe.

WARDA's partnerships in these countries extend beyond the usual NARS. We are also working with Regional Economic Commissions, as is the case with the Common Market for Eastern and Southern Africa (COMESA). A draft MoU

has been developed with COMESA for cooperation in rice production and is likely to be signed in the near future.

A MoU was recently signed with ASARECA, an organization regrouping the National Agricultural Research Institutes of 10 countries (Burundi, D. R. Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda). WARDA will provide technical backstopping for ASARECA's rice R&D activities and support the ASARECA Rice Research Network. The Coordination Office of the Rice Network will be based in Tanzania and headed by a WARDA staff member recruited from the region.

The move towards the other sub-regions will however, not compromise WARDA's activities in West Africa. WARDA is launching a new and long-term strategy for Nigeria beginning with technical strengthening of staff at the IITA Office in Ibadan. Recently we made arrangements to boost the activities carried out by our scientists in Nigeria with the transfer of a Liaison Scientist/Entomologist to our research station in the country.

A significant milestone in the Center's strategy towards a greater presence in Africa is the recent signing of a MoU between NEPAD and the CG Centers represented by the WARDA DG as the Chair of the Center Directors Committee. This omnibus document provides political recognition for all CG Centers with which NEPAD can collaborate to work towards achieving the Millennium Development Goals. The signing of this MoU will facilitate the implementation of Resolution #14 of the 24th Ordinary Session of the Council of Ministers, which calls for WARDA's admission in the framework of NEPAD as a specialized institution of the African Union.

The Center was justifiably proud that despite the continuing crisis and uncertainty, we could develop and publish by 2003 the new Strategic Plan (2003-2012). It is the fruit of several years of brainstorming done in consultation with staff, NARS partners, and the Center's stakeholders. A bold new programmatic structure has also been developed. In brief, under the Assistant Director General for Research and Development, there are two Assistant Directors who will head two programs: Integrated Production Systems and Rice Policy and Development

Implications of the Ivorian Crisis on Research Activities

When the political upheaval shook the country on 19 September 2002, forcing WARDA to evacuate its staff from M'bé /Bouaké, the Center's very survival was at stake. Despite pressures to relocate its headquarters or spread its staff in different locations, which would have led to its disintegration, the Management decided to temporarily relocate the Center's headquarters to Abidjan.

By doing this, a strong signal was sent out to its stakeholders that the Center would not abandon its headquarters, in which donors have invested over \$30 million to set up world-class research facilities.

The heroic efforts of a few local staff to save some of the 2002 experiments were invaluable for continuing with the 2003 research work. The temporary relocation of the bulk of research staff to Bamako in January 2003 enabled WARDA's research momentum to be maintained. The Center is grateful for the whole-hearted support of the Government of Mali and the *Institut d'Economie Rurale* (IER), and ICRISAT for this.

High priority was given to store in a safe place the duplicate sets of our valuable germplasm collection and data from the Campus. The activities in WARDA's regional research stations in Senegal and Nigeria as well as those of the networks coordinated by the Center have remained unaffected by the Ivorian crisis. However, the Center lost many valuable opportunities during this crisis period, and is still playing catch up in terms of participation in the first generation of Challenge Programs; there has been a long delay in implementation of some activities, especially in support of NERICA dissemination across Africa.

WARDA investments in Bouaké and M'bé fortunately remain safe and continue to be protected and maintained by staff and Security personnel. The facilities are well-kept thanks to the 70 WARDA staff deployed there last year to carry out maintenance and field work. Several WARDA researchers have also been making regular visits to the Campus from Bamako in connection with their research activities.

The beginning of the peace process in late 2003 gave encouraging signs. The removal of several checkpoints en route to Bouaké, the announcement to re-open schools, the return of restaurants, shops and normal life to Bouaké pointed clearly towards a final resolution of the conflict. WARDA senior management has made several trips to Bouaké, in addition to regular fortnightly visits by staff since August 2003. In April 2004, prior to the Board Meeting, the Board Chair and Vice-Chair, accompanied by our Host Country Board member also visited Bouaké and the Campus and were quite impressed with the overall condition of the Campus, the dedication of the staff who are working there and the discussions they had with the quadripartite security forces stationed there.

WARDA was so convinced that the return to normalcy was on the horizon that a pre-test team of two WARDA scientists was sent to Bouaké in March 2004 for three weeks with specific terms of reference to report back on the possibilities of a phased return of some WARDA scientists for the 2004 cropping season. The

team recommended the placement of a core team of scientists to work out of Bouaké in the immediate term followed by a gradual and phased return in the long term. Their comments have been taken into consideration in the revised return plan.

The most profound and long lasting impact of the crisis on WARDA, apart from the displacement of staff across locations, the continuing uncertainty and long term planning, is that on staff recruitment, retention and the quality of appointments. Since September 2002, 10 internationally recruited staff have resigned from WARDA, the departure of seven of them being directly linked to the Ivorian crisis.

Rapid loss of staff has implications on staff morale, quality of work produced, loss of institutional memory and financial costs and staff time associated with replacement processes. Staff national/regional diversity has also been affected.

To stem this brain drain and provide crisis-related counseling, the Center organized a comprehensive team-building workshop for IRS and senior General Support Staff as recommended by the Board. The exercise has been well appreciated by the staff and the final report will be presented at a concluding workshop in mid-July.

The effect of the crisis on the Center's finances has been overwhelming (i.e., repatriation of staff families, relocation of scientists to Bamako and management to decent offices in Abidjan, purchase of new computers, vehicles and other equipment, meeting added crisis-related personnel costs, the cost of maintaining three campuses). Fortunately, the generous financial and moral backing of many donors and friends of WARDA during the ongoing crisis, principal among which has been the World Bank, has buoyed up the Center.

Other donors have also been very supportive: Norway increased its funding by 40% in 2003, Japan by 20%, the EU provided Core-attributed support for the first time ever in 2003 and Canada more than doubled its funding in 2003. However, restricted projects have been on the decline in recent years.

In April 2003, the WARDA Board of Trustees endorsed WARDA Management's updated Return Plan to Bouaké and M'bé. An advance team composed of IRS volunteers and their current complement of staff will move to Bouaké and M'bé within the next few weeks. With the full deployment of UN peacekeeping forces in Bouaké and the environs, other staff will be advised of the date of return to Bouaké accordingly. This is expected to occur in batches.

Today, the Africa Rice Center is on the verge of exciting opportunities opened up by several factors:

- the worldwide recognition of its research products
- the strong political support for NERICA's dissemination from African leaders
- the remarkable dedication and resilience of its staff, which has been highly acclaimed by our partners and donors
- the recruitment of a new breed of dynamic researchers and support staff with new ideas and capacities
- the successful expansion of the Center into Central and Eastern Africa,
- the new research directions, such as a strong focus on lowland rice breeding where we are getting to see extremely promising results, integrated rice-vegetable and rice-fish farming, and above all
- the continuing support of the Council and the NARS experts for the Center's work

We should not lose any time in seizing this tremendous momentum. All this leads me to strongly believe that we are on the right path to several more breakthroughs like the NERICAs, which will contribute to the fulfillment of the vision of NEPAD and the Millennium Development Goals.

Appendix B

Moving forward with programmatic changes

In line with the vision outlined in the 2003-2012 Strategic Plan, the Africa Rice Center Board of Trustees has agreed a reorganization of the Center's core research areas to focus on the two major challenges highlighted in the Strategic Plan:

1. Integrated Rice Production Systems
2. Rice Policy and Development

This represents a move away from the three research programs, with 14 projects, that operated until the end of 2004 to two programs, with a total of eight highly-focused projects. Each of the two programs will be headed by an Assistant Director under the supervision of the Assistant Director General, Research and Development. Scientists will work in both disciplinary and multi-discipline teams. This will allow better collaboration within programs and between scientists, as well as providing the opportunity for WARDA to better interact with its partners.

1. Integrated Rice Production Systems

Activities under this program will seek to:

- Improve resource use efficiency for more productive, profitable, and socio-economically viable rice production systems in sub-Saharan Africa (SSA)
- Develop stress-tolerant rice varieties and agronomic practices that best fit or better optimize existing production systems in SSA and are acceptable to both producers and consumers

The four projects included in this program are:

1. Enhancing productivity and stability of upland rice-based systems
2. Sustainable intensification of lowland rice-based systems for enhanced livelihoods
3. Enhancing the performance of irrigated rice-based systems in Africa
4. Integrated management of drought in rainfed rice ecosystems in Africa

2. Rice Policy and Development

The thrust of this program is to:

- Build strategies for competitive rice sector development in SSA through a better understanding of rice policy and market dynamics and a systematic assessment of impacts of technical and institutional changes within the rice sector

- Enhance the institutional capacity of national agricultural research and extension systems (NARES) by extending the highly successful network model to other rice-producing areas of Africa
- Mitigate the effects of environmental disasters and pandemic diseases on rice-based livelihoods by providing information, technology, and support

The four projects included in this program are:

5. Rice policy and technology impact on food security and poverty reduction
6. Mitigating human and environmental effects on rice-based livelihoods
7. The consortium for the sustainable development of inland valley agro-ecosystems in sub-Saharan Africa (IVC)
8. Partnership through networks

As part of its new research agenda, the Center will reach out beyond its traditional partners to ensure that its knowledge and technologies are relevant and accessible to a broader range of actors interested in rice development in Africa; ranging from international development banks and bilateral agencies, through government and research institutions to local NGOs and the private sector.

Principal activities in 2003

The small amount of genetic material retrieved from M'bé in 2002 was multiplied in Mali during 2003. For lowland rice, this meant the re-initiation of 2002 crosses to develop lines with multiple stress resistance to rice yellow mottle virus (RYMV), African rice gall midge (AFRGM) and iron (Fe) toxicity. For upland rice, crossing was initiated between elite *Oryza sativa* lines/interspecific lines and *Oryza glaberrima* accessions identified as drought resistant by IER, Mali.

Breeding material under test in Nigeria and at sites in southern Côte d'Ivoire were unaffected by the Ivorian crisis. Breeders' lines for rainfed upland, rainfed lowland and irrigated lowland rice were evaluated in Nigeria, and gall midge studies were also carried out there. Participatory variety selection (PVS) trials were carried out there for NERICAs and for elite lowland rice varieties. Seed multiplication in preparation for PVS-extension was carried out at six sites in Nigeria.

In biotechnology, WARDA developed a mapping population of 148 lines between *O. glaberrima* × *O. sativa*, which has been phenotyped for useful traits such as early vigor, panicle length, tiller number, plant height and number of grains per panicle. Seventy NERICA lines have been characterized with molecular markers, and 10 promising NERICAs selected to develop near-isogenic lines.

Further work was carried out on the identification of new strains and hosts for RYMV, while rice blast ‘hot spots’ were identified for further screening work for durable resistance. Blast isolates were collected in several countries.

The response of lowland rice varieties to Mali rock phosphate (P) was investigated, as was the use of rock phosphate to minimize iron toxicity effects on rice production. Work was carried out on the stabilization of upland rice systems under shortened fallow, and the response of upland rice cultivars to rock P was investigated in the humid forest zone of Côte d’Ivoire. Characterization of soil nutrients deficiency was carried out in upland and lowland ecologies in Mali.

Collaboration between WARDA and the Asian Vegetable Research and Development Center (AVDRC) began with a planning workshop at which eight countries were represented. The species of regional priority were agreed to be tomato, onion, red pepper, okra and cabbage, and multilocation trials are being held in nine countries with at least two of the priority crops in each country.

Under the former Program 2, breeding for high rice grain quality was undertaken in Senegal, and WARDA collaborated with Sasakawa-Global 2000 on assessment of protein and amino acid contents in NERICAs grown in Guinea. Further research at WARDA’s Sahel Station identified significant scope for improving the performance of irrigated rice production through better water management and control, and more efficient use of urea, herbicides and labor.

The ASI mobile thresher-cleaner was introduced and developed in 2003 in further countries, including Côte d’Ivoire, Mali and Mauritania. Training has been given to Burkina Faso and Ghana where similar threshers are now being developed.

In Program 3, impact assessments were made for the diffusion and adoption rates of NERICAs in Côte d’Ivoire and Guinea. The adoption rate in Guinea has been much the higher, and it is estimated that 58,000 ha of NERICAs were planted there in 2003. Studies were made of the impact of trade liberalization on the rice sector in Côte d’Ivoire, and in Nigeria on consumer criteria for selecting rice.

Phase 1 of the PADS (Participatory Adaptation and Diffusion of Technologies for Rice-based Systems) project was completed and Phase 2 is being implemented in Côte d’Ivoire, Guinea, Gambia and Ghana, focusing on inland valley production systems. The inland valley consortium also tested the PLAR-ICM (participatory learning and action research for integrated crop management) from PADS Phase 2 in Benin, Burkina Faso, Côte d’Ivoire, Ghana, Guinea, Mali, Nigeria and Togo.

Demand for breeders’/foundation seed remained high, with supplies sent to eight countries, and requests made from a further five in eastern and southern Africa.

Appendix C

CGIAR reform in sub-Saharan Africa

Statement by Africa Rice Center DG

Attaining the complex goals of the CGIAR system will only be possible if Centers collaborate more, and more effectively. The real world challenges driving the Centers closer together are those of achieving poverty alleviation and rural development, and a sober analysis of deficiencies in the existing collaborative relationships which must be addressed if viable, ongoing dynamic cooperation is to be achieved. Centers are also very mindful of the need to meet donor requirements for economy and system-wide response on a variety of issues.

As the key research and delivery mechanisms of the CGIAR system, Centers have evolved beyond successes with specific crops to encompass a range of profound and complex development and technological issues, including poverty alleviation, food security, environmental protection and biodiversity. These cannot be achieved by a single Center and require complex partnerships with each other and with an increasingly large and diverse range of partners.

This global discussion on the future and reorganization of the CGIAR is also focusing on sub-Saharan Africa. The Challenge Program for SSA is subtitled ‘Building sustainable livelihoods through integrated agricultural research for development: Securing the future for Africa’s children,’ and is unusual in being led by FARA (Forum for Agricultural Research in Africa).

Recognizing the value of integration, the CGIAR has appointed two task forces to consider different elements of potential reorganization of CGIAR activities in SSA. One task force will consider program alignment and the second will assess structural options and organizational alignment.

Programmatically, the urgency is in Africa. New collective actions are beginning immediately with pilot consolidated sub-regional efforts in Eastern Africa with ASARECA (Association for Strengthening Agricultural Research in Eastern and Central Africa), followed by other sub-regions. The pilots will align Centers’ representation, partnerships, programs and operational support at the sub-regional level. It will be a collaboration between ASARECA, FARA, national research systems, civil society, regional, sub-regional bodies and international bodies and investors as appropriate. A strategy process will be launched in 2005 for developing a coordinated sub-Saharan Africa, capacity-building plan for national agricultural research and extension system partners, largely implemented at sub-regional

organization level in sub-Saharan Africa. Working with the two System Task Forces, solutions will be found to the current managerial burdens at the national level.

WARDA's relocation to Abidjan and Bamako because of the Ivorian crisis posed a number of questions about the Center's continued existence if it did not return to its designated headquarters' site at M'bé in the near future. The return plan that has now been approved by the Board of Trustees and is being put into action is the only viable option for WARDA, which might otherwise risk becoming a program within the structure of another CGIAR Center.

Appendix D

Actions taken after COM 2003

The 24th ordinary session of the Council of Ministers was held in Cotonou, Benin, on 19 September 2003 and adopted a number of resolutions for implementation by the Africa Rice Center (WARDA) and by Member States. These were:

- five resolutions of support, gratitude or congratulations to:
 - Africa Rice Center Board of Trustees, the Director General and staff
 - The COM 2003 host, the Government of Benin
 - World Bank for its support of WARDA
 - Côte d'Ivoire as host country for the Center
 - WARDA Director General
- six resolutions since acted upon by WARDA
 - change of designation to Africa Rice Center (WARDA)
 - decision to maintain WARDA headquarters in Côte d'Ivoire
 - finalization of the Strategic Plan 2003-2012
 - change of designation for ARI and ROCARIZ management committees to be known henceforth as 'steering committees'
 - creation of a WARDA strategy for assisting Member States on emerging issues, including biotechnology and biosafety, and on intellectual property rights (IPR) in the sub-region
 - increasing the value of WARDA's achievements within the framework of NEPAD
- four resolutions for action by Member States
 - harmonization of activities carried out in the framework of initiatives on rice
 - promotion of the use of local rice, and steps to improve its productivity and quality
 - ensure the availability and accessibility of quality seeds
 - payment of contributions to WARDA by Member States
- one statutory resolution
 - the Minister of Secondary and Higher Education and Scientific Research of Burkina Faso to assume the Chairmanship of the Council of Ministers and to host its next session; the appointment of Ghana and Mauritania as Rapporteurs

With reference to the resolutions, the Africa Rice Center (WARDA) will be fully operational once again from its headquarters at M'bé near Bouaké from

1 January 2005. The Strategic Plan 2003-2012 was finalized in December 2003, and the management committees of both ROCARIZ and ARI have now been reconstituted as steering committees for these networks. The Africa Rice Center is developing NARS capacity in biosafety and in undertaking biotechnology research, as well as on issues of intellectual property rights.

The Director General has consulted with the Chairman of the NEC to put together a dossier showing how WARDA could be recognized as a specialized institution by the African Union, and is working with the NEPAD Secretariat on a concept note to support the dissemination of NERICA throughout sub-Saharan Africa.

Three Member States paid their dues in 2003 and one in 2004. These were Benin, The Gambia, Mali and Nigeria.

Appendix E

Biotechnology and Rice

As well as being a major food crop of worldwide importance, rice is a model plant for genomic research, having a relatively small and well-mapped genome and a low level of repetitive sequences. The African cultivated rice species *Oryza glaberrima* has a number of advantages that can be exploited for the African environment through the use of biotechnology techniques. These advantages include a natural resistance to pests and diseases such as African rice gall midge (AfRGM), nematodes and rice yellow mottle virus (RYMV). It is adapted to poor soil environments and has tolerance to drought and other stresses, including iron and other toxicities. Conversely, *O. glaberrima* is low yielding and prone to lodging.

WARDA's aim, through its biotechnology research, is to improve yields of *O. glaberrima* in all rice-growing ecologies through introducing sustainable resistances to biotic stresses in all ecologies and better tolerance to drought under rainfed conditions, while overcoming the high sterility in F_1 crosses of *O. glaberrima* with *Oryza sativa*. A number of ways of exploiting the genetic potential of *O. glaberrima* are being used, including embryo rescue, anther culture and other genetic engineering techniques.

Anther culture and embryo rescue has overcome the reproductive barrier between cultivated interspecific crosses to gain access to valuable traits and allow the creation of doubled haploid (DH) lines. The DH populations allow the use of all the genetic polymorphism.

WARDA has identified genetic markers that show the location of valuable resistances so they can be used to develop improved varieties more quickly than was previously possible. A mapping population of 148 interspecific lines between *O. glaberrima* \times *O. sativa* has been developed and phenotyped for useful traits such as early vigor, panicle length, tiller number, plant height and number of grains per panicle. The population has been genotyped using DNA markers for QTL identification.

Introgression of *O. glaberrima* in NERICA lines is also being monitored. This shows *O. sativa* alleles around 86%, with *O. glaberrima* alleles at 12%, and the level of heterozygotes to be around 1.5%. The level of *O. glaberrima* introgress segments is just 15cM and work continues to identify genes, particularly for early vigor, associated with these introgress segments. Near-isogenic lines, each with one introgressed segment, are being developed for NERICAs using backcross assisted markers, and F_1 hybrids and BC_1F_1 seed have been obtained. Ten promising

NERICAs from 70 have been selected for plant height, early vigor, tiller number, panicle length, non-parental allele and *O. glaberrima* allele, and used to develop near-isogenic lines.

Collaboration between WARDA and the John Innes Centre in the UK has produced transgenic rice plants with resistance to rice yellow mottle virus and to nematodes. WARDA's internal safety committee is developing internal regulations to ensure that the products of research conducted are not harmful to health or the environment, and meet international biosafety standards. For instance, a number of precautions will ensure the security of the planned transgenic greenhouse, including the use of microbiological filters designed to prevent the entry of pests or diseases, and prevent the escape of pollen from transgenic plants. All incoming supplies and materials will be sterilized, and staff access to the room limited and requiring the use of specific clothing as well as strict observation of hygiene.

The Center will not, however, introduce transgenic rice plants into any country that has not legislated to produce a biosafety protocol. WARDA will continue to work with NARS to enable them to introduce biosafety regulations. The NARS are being trained on molecular and anther culture and it is anticipated that a Biotechnology Network will be established. Breeding activities to develop new genetic material will be supported by continued investment in capacity and facilities for the conservation and management of genetic resources, as well as the continued use of a range of biotechnology tools, including tissue culture, gene mapping and marker-assisted selection.

Appendix F

Agenda and Program of Work

24 June 2004

Plenary Session: Opening

14h00-14h30	Arrival and Registration
14h30-14h40	Welcome Address by Kanayo F. Nwanze, DG, WARDA
14h40-14h50	Welcome Address by Hamidou Boly, Director, INERA and Chairman of the Experts Committee
14h50-15h00	Opening Address by the Minister of Scientific Research
15h00-15h05	Group Photo

Session I Overview

15h05-15h10	Introduction of New Directors General
15h10-15h20	Adoption of the Agenda and Work Schedule, and Election of Chairs and Rapporteurs
15h20-15h35	The 24 th Council of Ministers: Conclusions and Recommendations
15h35-15h55	Director General's Report (2002-2004)
15h55-16h25	Discussion
16h25-16h50	Coffee break

Session II WARDA Research and Development Programs

16h50-17h10	New Programmatic Structure and Progress since the Last Meeting (Shelleemiah Keya, Asst. Director General, Research and Development)
17h10-17h30	Highlights from the Strategic Plan, 2003-2012 (Kouamé Miézan, Coordinator, Sahel Station)
17h30-17h50	Medium Term Plan, 2005-2007 (Ousmane Youm, Assistant Director, Research and Development)
17h50-18h15	Discussion
18h15	End of Day 1
20h00	Official Cocktail/Dinner

25 June 2004

The Rice Day Celebration

07h30 – 10h30 Field visit by NARS Participants

Inauguration

10h30-11h00 Parade by Rice Farmers

11h00-11h10 Welcome Address by the Mayor of Yamoussoukro

11h10-11h20 Address by the Governor of the District of Yamoussoukro

11h20-11h30 Welcome Address by the WARDA Director General/Board Member

11h30-11h40 Address by the Japanese Ambassador to Côte d'Ivoire

11h40-11h50 Opening Address by the Minister for Agriculture

First Part of the Celebration

11h50-12h30 Visit of the Exhibits

12h30-13h00 Refreshments

13h00 End of the First Part of the Celebration

13h00-14h30 Lunch on Invitation

Second Part of the Celebration

14h30-16h30 Round Table on Rice Policy in Africa, preceded by short presentations

- International Year of Rice (Gouantoueu Guei, Head of Genetic Resources)
- Putting NERICA on the Market: Policy Issues (Patrick Kormawa, Policy Economist)

16h30-17h30 NERICA Cooking Contest - Selection and Prize Distribution

17h30 End of The Rice Day Celebration

26 June 2004

Session I WARDA-NARS Partnership

08h00-08h15 WARDA-NARS Partnership – Facts and Figures (Samuel Bruce-Oliver, Executive Officer)

08h15-09h15 Reports from Networks

- INGER-Africa (Gouantoueu Guei, Coordinator and Head of Genetic Resources Unit)
- ARI (Inoussa Akintayo, Coordinator)
- IVC (Philippe Morant, Coordinator and Paul Kiepe, Scientific Coordinator)
- ROCARIZ (Sidi Sanyang, Coordinator)

09h15-09h45 Discussion

09h45-10h15 Coffee Break

Session II Presentation on Strategic Issues

10h15-10h45 CGIAR Reform in sub-Saharan Africa: Implications of the Ivorian crisis (Kanayo F. Nwanze, Director General)

10h45-11h00 Rice Research and Development in Eastern and Southern Africa: Strategy and Outlook (Sasakawa-Global 2000)

11h00-11h15 Rice Biotechnology and GMOs (Marie-Noelle Ndjiondjop, Molecular Biologist)

11h15-12h00 Discussion

12h00 Lunch Break

Closing Session

15h00-15h30 Presentation of Synthesis Report

15h30-16h00 Closing Remarks

16h00 Departure

Appendix G

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Appendix H

Acronyms and abbreviations

AfDB	African Development Bank
AfRGM	African Rice Gall Midge
ANADER	<i>Agence Nationale d'Appui au Développement Rural</i>
ARI	African Rice Initiative
ASARECA	Association for Strengthening Agricultural Research in Eastern & Central Africa
ASI	ADRAO/SAED/ISRA Thresher-Cleaner
AVRDC	Asian Vegetable Research and Development Center
CGIAR	Consultative Group on International Agricultural Research
COM	Council of Ministers
DONATA	Dissemination of New Agricultural Technologies in Africa
ECARRN	East and Central Africa Rice Research Network
EU	European Union
FAO	Food and Agriculture Organization
FARA	Forum for Agricultural Research in Africa
GRU	Genetic Resources Unit
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICM	Integrated Crop Management
IER	<i>Institut d'Economie Rurale</i>
IFAD	International Fund for Agricultural Development
IITA	International Institute of Tropical Agriculture
INERA	<i>Institut de l'Environnement et des Recherches Agricoles</i>
INGER	International Network for Genetic Evaluation of Rice
IVC	Inland Valley Consortium
MTP	Medium Term Plan
NARES	National Agricultural Research and Extension Systems
NARS	National Agricultural Research Systems
NEPAD	New Partnership for Africa's Development
NERICA	New Rice for Africa
NGOs	Non-Governmental Organizations
PADS	Participatory Adaptive Research and Dissemination of Rice Technologies in West Africa
PLAR	Participatory Learning and Action Research
PVS	Participatory Varietal Selection
PVS-E	Extension-led Participatory Variety Selection
R & D	Research and Development
ROCARIZ	<i>Réseau Ouest et Centre Africain du Riz</i>
RYMV	Rice Yellow Mottle Virus
TILS	Training, Information and Library Services
UNDP	United Nations Development Programme
WARDA	West Africa Rice Development Association
WECARD/CORAF	West & Central African Council for Agricultural Research and Development / <i>Conseil Ouest et Centre Africain pour la Recherche et le Développement</i>

About the Consultative Group on International Agricultural Research (CGIAR)

The Consultative Group on International Agricultural Research (CGIAR) was founded in 1971 as a global endeavor of cooperation and goodwill. The CGIAR's mission is to contribute to food security and poverty eradication in developing countries through research, partnership, capacity building and policy support, promoting sustainable agricultural development based on the environmentally sound management of natural resources. The CGIAR works to help ensure food security for the twenty-first century through its network of 15 international and autonomous research Centers, including WARDA. Together, the centers conduct research on crops, livestock, fisheries and forests, develop policy initiatives, strengthen national agricultural organizations, and promote sustainable resource management practices that help provide people world-wide with better livelihoods.

Membership of the CGIAR is open to international organizations, governments, and private foundations that support the mission of the CGIAR, participate in policy making, and provide support for the conduct of research at the 15 international Centers.

The CGIAR partnership includes 24 developing and 22 industrialized countries, 4 private foundations, and 13 regional and international organizations that provide financing, technical support, and strategic direction. The Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), the United Nations Development Programme (UNDP), and the World Bank serve as co-sponsors. CGIAR members contributed approximately US \$381 million in 2003. Individual members make voluntary contributions to the Centers and programs of their choice, allowing funds to be targeted to areas of research and regions that align with development priorities. Independent studies consistently demonstrate that CGIAR research earns handsome returns.

CGIAR Centers

CIAT	<i>Centro Internacional de Agricultura Tropical</i> (Cali, Colombia)
CIFOR	Center for International Forestry Research (Bogor, Indonesia)
CIMMYT	<i>Centro Internacional de Mejoramiento de Maiz y Trigo</i> (Mexico)
CIP	<i>Centro Internacional de la Papa</i> (Lima, Peru)
ICARDA	International Center for Agricultural Research in the Dry Areas (Aleppo, Syria)
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics (Patancheru, India)
IFPRI	International Food Policy Research Institute (Washington, DC, USA)
IITA	International Institute of Tropical Agriculture (Ibadan, Nigeria)
ILRI	International Livestock Research Institute (Nairobi, Kenya)
IPGRI	International Plant Genetic Resources Institute (Rome, Italy)
IRRI	International Rice Research Institute (Los Baños, Philippines)
IWMI	International Water Management Institute (Colombo, Sri Lanka)
WARDA	Africa Rice Center (Cotonou, Benin)
WORLD FISH	International Center for Living Aquatic Resources Management (Penang, Malaysia)
WORLD AGROFORESTRY CENTRE	International Centre for Research in Agroforestry (Nairobi, Kenya)



Africa Rice Center
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