

# GRAIN *Briefing*

## Nerica

### another trap for small farmers in Africa

**Nerica rice varieties, a cross between African and Asian rice, are being hailed as a “miracle crop” that can bring Africa its long-promised green revolution in rice. A powerful coalition of governments, research institutes, private seed companies and donors are leading a major effort to spread Nerica seeds to all the continent’s rice fields. They claim that Nerica can boost yields and make Africa self-sufficient in rice production. But outside the laboratories, Nerica is not living up to the hype. Since the first Nerica varieties were introduced in 1996, experience has been mixed among farmers, with reports of a wide range of problems. Perhaps the most serious concern with Nerica is that it is being promoted within a larger drive to expand agribusiness in Africa, which threatens to wipe out the real basis for African food sovereignty— Africa’s small farmers and their local seed systems.**



Local rice, Benin

Photo: GRAIN

**R**ice has a long and varied history in Africa. African farmers probably domesticated this grain at the same time as Asian farmers – about 3,000 years ago. African farmers developed the species *Oryza glaberrima*, while Asian farmers developed *Oryza sativa*. *Oryza sativa* was introduced to Africa about 500 years ago, however, and peasants there have adapted it to their rice production systems, developing many local varieties of the Asian species and turning Africa into an important secondary source of diversity.

Although rice quickly became the most important subsistence crop in much of Asia, production in sub-Saharan Africa was for a long time limited to certain regions. Even in these regions, the geography of rice was fragmented. In West Africa, for example, although rice has long been one of the main subsistence crops in Sierra Leone, Gambia and Guinea, it has been of only secondary importance in Benin and Nigeria, and only in recent decades. In Côte d’Ivoire, rice has always been a staple food for the Bété of Gagnoa but not for Ivoirians in Bonoua and Ferkéssédougou, for example.

Rice is now, however, one of the most important subsistence crops in Africa. Since colonial times, African governments have consistently promoted rice as a staple food for their increasing urban populations. Domestic rice production has risen, but not enough to keep pace with demand. Production rose at an annual rate of 3.2 per cent between 1961 and 2005 in sub-Saharan Africa, while consumption rose by 4.5 per cent. According to the Africa Rice Centre (WARDA<sup>1</sup>), sub-Saharan Africa has gone from producing more rice than it needed (112 per cent of domestic

1 The Africa Rice Centre was formerly the West Africa Rice Development Association, and has retained the abbreviation WARDA.

consumption) in 1961 to importing 39 per cent of its consumption in 2006.<sup>2</sup> Today annual rice imports cost almost US\$2 billion.

Farmers' organisations have been criticising this situation for years. They point out that the structural adjustment policies imposed on African countries by the international financial institutions in the 1980s undermined state support for agriculture and removed measures to prevent the dumping of cheap imported rice. They warned that, by turning their backs on local rice production and depending on imported food aid, governments were destroying the livelihoods of local rice farmers, enriching a small number of importers and leaving their populations vulnerable to swings in world prices. The current food crisis, in which the price of rice has practically doubled since 2002, has led African governments to reassess their dependence on imported rice and other staples. Nowadays everyone, including farmers, politicians and donors, seems to agree that something must be done to change the situation.

Some say that the rice crisis in Africa can be solved by boosting local production by increasing yields. They are convinced that the problem is essentially technical rather than political. In their eyes, traditional rice farming is inefficient and suffers from a lack of infrastructure, chemical inputs and, above all, high-yielding seeds, such as those that transformed rice production in Asia during the Green Revolution in the 1960s and 1970s. If previous attempts to transform rice growing in Africa along these lines failed, for them this was not because of the model or the choice of technologies, but because of a lack of high-yielding varieties adapted to African conditions. They believe they have now found the solution in the form of New Rice for Africa – acronym Nerica.

The Nerica varieties are currently receiving a great deal of attention, and heavy investments have been made to distribute them across Africa. Despite the publicity, however, there has so far been very little practical discussion about the consequences that such rapid and massive distribution might have on the continent, especially for small farmers. The experiences so far indicate that Nerica is not fulfilling its promise and raise significant concerns about both its performance and its long-term effects. Nerica is being promoted in a “top-down” manner that jeopardises the survival of local rice varieties and other traditional subsistence crops. Moreover, the spread of Nerica is associated with the explosion of private investment in African rice production, which threatens to displace Africa's small-farm rice systems with plantation-style rice production managed by big agribusiness.

## Nerica and Africa's cradle of rice

Nerica is described by its promoters as a “scientific breakthrough”. Its claim to “miracle” status stems from the fact that it was developed using complex embryo rescue techniques to cross the Asian *Oryza sativa* rice with the African *Oryza glaberrima* rice. The first Nerica variety was developed in 1994 by researchers at WARDA,<sup>3</sup> using an *Oryza sativa japonica* variety (WAB 56-104) and an African *Oryza glaberrima* variety (CG 14). WARDA researchers developed several other hybrids, working with Japanese researchers on the Inter-specific Hybridisation Project (IHP) financed by the Japanese government, the US Rockefeller Foundation and the United Nations Development Programme (UNDP). These inter-specific hybrids were supposed to combine the high yield of their Asian parent with the adaptability to local conditions of their African parent.

Most Nerica varieties introduced by WARDA are for use in upland agriculture, which accounts for some 40 per cent of West Africa's rice-growing area. Peasants in the uplands do not usually have access to irrigation, and farm in highly variable conditions. Local rice yields are relatively low in these systems, with an average output of around one tonne per hectare, but the local biodiversity that farmers preserve is extremely rich, despite the constant threats of poverty, war, land evictions and agricultural extension programmes that encourage the use of modern varieties.

2 WARDA Brief, “Rice trends in Africa: Overview of recent developments in the sub-Saharan rice sector”, 2007. <http://tinyurl.com/5uuvsj>

3 WARDA, a member of the Consultative Group on International Agricultural Research (CGIAR), has 22 members: Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Egypt, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Uganda, Senegal, Sierra Leone, Central African Republic, Republic of Congo, Democratic Republic of Congo and Togo. In January 2005, the Centre moved its offices from Bouaké, Côte d'Ivoire to Cotonou, Benin, because of the civil war in Côte d'Ivoire. It has regional research stations near St Louis in Senegal and at the International Institute of Tropical Agriculture (IITA) at Ibadan in Nigeria. <http://tinyurl.com/5msnj>



### Box 1: Nerica, hybrids and GMOs

Inter-specific crosses between *Oryza sativa* and *Oryza glaberrima* typically fail because they tend to result in sterile offspring. In order to prevent this from happening, Nerica researchers took the offspring of the first crosses and backcrossed them with their *Oryza sativa* parent to restore fertility and, subsequently, to build up a seed stock.

Nerica is thus considered an inter-specific hybrid, but not a hybrid of the kind that is normally referred to as “hybrid seeds”. Such hybrid seeds are produced through a complicated technique that basically involves the crossing of two highly inbred parents to produce seeds that are uniform and that deteriorate significantly after the first year. Farmers who purchase hybrid seeds have to purchase new seeds every season.

Nerica is not a GMO either, since it does not involve any genetic modification, even though techniques of biotechnology, such as embryo rescue, have been used in the process.

A study of 98 households in the Mogbuama district of Sierra Leone conducted in 1983, for example, found that they planted 59 different varieties of rice. The study also showed that they carried out mixed farming, typically cultivating a dozen crops on a one-hectare plot, with a total yield of around four tonnes.<sup>4</sup>

At first, the Nerica researchers insisted that they did not intend Nerica to replace this diversity. Dr Monty Jones, head of the Nerica project at WARDA, said: “We do not want to replace local varieties, but rather to encourage farmers to integrate Nericas, and other new varieties, into their existing portfolio of varieties.”<sup>5</sup> Indeed, the incorporation of new seeds is nothing new for African farmers. They integrated *Oryza sativa* when it arrived on the continent 500 years ago, and they have integrated several modern varieties developed by national research programmes in recent decades. New varieties are often mixed with old and become part of the selection process, contributing to the local genetic heritage.<sup>6</sup> The rice seed systems of African farmers are so diverse and complex that they in effect developed their own inter-specific rice hybrid from *Oryza sativa* and *Oryza glaberrima* well before the Nerica researchers started to do so.<sup>7</sup>

The Nerica project researchers could have used these peasant seed systems as the point of departure for their programme. Instead, they chose to stay in their laboratories and work with hybrids from the CGIAR’s gene bank. It was only after developing the Nerica hybrids that the researchers sought out the farmers.

The project team feared that the formal seed systems of the national research programmes would be too slow. So they decided to follow a strategy of “participatory variety selection” in a “community-based seed production system”, in cooperation with certain NGOs and government extension programmes. This involved the creation of demonstration sites across the country, where farmers could evaluate the different varieties. It was then left to them to choose which varieties to grow in their fields, compare them with their own local varieties and then buy the Nerica seeds of their choice for the following year.<sup>8</sup>

Guinea was the location for one of the main pilot schemes for this project. In 1996–97, the Japanese NGO SG 2000 launched a Nerica project with WARDA and the government’s extension services. By 2000, around 2,000 Nerica demonstration sites had been established throughout the country, and, according to the Japanese Minister of Foreign Affairs, more than US\$12.5m was invested in the development and promotion of Nerica.<sup>9</sup> However, while Guinea has quickly become the biggest producer of Nerica seeds, only about half of the farmers involved in the programme adopted these varieties. In 2003, only 50,000 ha were planted with

4 Billie Lee Turner and Stephen Brush (eds), *Comparative Farming Systems*, New York, Guilford Press, 1987.

5 WARDA, Annual Report 2001–2, Features.

6 Edwin Nuijten, “Farmer management of gene flow: The impact of gender and breeding system on genetic diversity and crop improvement in The Gambia”, thesis, University of Wageningen, 30 November 2005.

7 Malcolm Jusu, “Management of genetic variability in rice (*Oryza sativa* L and *O. glaberrima* Steud.) by breeders and farmers in Sierra Leone,” doctoral thesis, University of Wageningen, 21 December 1999; M. B. Barry *et al.*, “Genetic diversity of the two cultivated rice species (*O. sativa* & *O. glaberrima*) in Maritime Guinea: Evidence for interspecific recombination”, *Euphytica* (2007) 154: 127–37.

8 H.E. Gridley *et al.*, “Development of New Rice for Africa (Nerica) and participatory varietal selection”, Conference Paper, 2002. <http://tinyurl.com/6dzjov>

9 Ministry of Foreign Affairs (Japan), “Nations Promoting Dissemination of Nerica”, July 2006: <http://tinyurl.com/5f245g>



Nerica varieties, less than 10 per cent of the country's rice-growing area.<sup>10</sup> Guinean farmers, it seemed, preferred to plant their own varieties. A 2003 survey of 1,700 plots in 79 villages in Guinea showed that more than 80 per cent of the varieties grown on these farms were traditional local varieties.<sup>11</sup>

Similar results were obtained in Côte d'Ivoire, where Nerica varieties were introduced in 1996. A WARDA survey published in 2006, covering 1,500 farmers in 50 villages, showed that, on average, each village cultivated 25 varieties of rice, including 21 traditional varieties and four modern varieties, only one of which was developed by WARDA. The study also showed that each farmer used, on average, 14 varieties of rice (12 traditional and two modern) and grew four varieties every season (three traditional and one modern). Only 28 per cent of farmers interviewed by WARDA had a WARDA variety, while 75 per cent had at least one modern variety.<sup>12</sup>

In the light of these initial experiences in Guinea and Côte d'Ivoire, Nerica could have been considered a limited success, just one more interesting variety of rice in the "portfolio" of African rice farmers. However, far away from the fields, others were talking of Nerica in different terms and preparing the political terrain for turning it into a much bigger success on the scale of the Green Revolution.

## The Nerica crusade

In 2002, after several years of lobbying in the corridors of power, WARDA and the Rockefeller Foundation held a meeting with seven West African countries to set up the Africa Rice Initiative (ARI) and its executive body, the Nerica Consortium for Food Security in sub-Saharan Africa. The group's declared objective is to "multiply and promote the rapid spread and distribution of Nerica rice varieties to poor farmers in sub-Saharan Africa."<sup>13</sup>

ARI has created a secretariat and drawn up a project implementation plan. In 2003 the African Development Bank (ADB) promised funding of US\$35m, including US\$27m in loans, for distributing Nerica in the seven target countries (see Table 1). The loans were made available in 2005, after the countries had agreed to the ADB conditions. Supplementary funds were provided by the Japan International Cooperation Agency (JICA), the World Bank, USAID and, more recently, the Alliance for a Green Revolution in Africa (AGRA), which is funded by the Bill & Melinda Gates Foundation. The Japanese government has also signed bilateral agreements to support the Nerica projects managed by the US Food and Agriculture Organisation (FAO): US\$900,000 each for Sierra Leone and Ghana, US\$1.37m for Burkina Faso and more than US\$2.7m for Uganda.

What ARI did not publicly mention was that it was formed mainly to address a "seed quality crisis" affecting the distribution of Nerica.<sup>14</sup> Under the Nerica seed system, multiplication of seeds happens mostly on the farm, and some within the Nerica project were concerned that this was leading to "contamination" of seed stocks and undermining the purity of Nerica.<sup>15</sup> Yet such "contamination" is an integral part of innovation in peasant seed systems, especially in Africa; farmers

10 See "Module 14" of: E.A. Somado, R.G. Guei and S.O. Keya (eds), "Nerica: the New Rice for Africa – a Compendium: 2008 edition", WARDA, 2008.

11 M.B. Barry *et al.*, "Recent changes in varietal diversity of rice in Guinea", in *Plant Genetic Resources: Characterization and Utilization*, 2 September 2008.

12 E.A. Somado, R.G. Guei and S.O. Keya (eds), "Nerica: the New Rice for Africa – a Compendium: 2008 edition," WARDA, 2008.

13 See <http://tinyurl.com/66oche> and <http://www.warda.org/ari/>

14 CGIAR Science Council, "Report of the Fifth External Program and Management Review of the Africa Rice Center", January 2008.

15 A. Babatunde Obilana and Bernard N. Okumu, "Interspecific Hybridisation between African and Asian Rice Species: Evaluation Study Report", UNDP, SU/SSC and WARDA, October 2005, p. 16.

**Table 1. ADB allocations for the international Nerica rice project (2003)**

Country	Amount (US\$ millions)
Benin	2.0
Gambia	2.16
Ghana	3.67
Guinea	4.15
Mali	4.04
Nigeria	7.70
Sierra Leone	3.94



develop their local seeds in a permanent process in which seeds are mixed, selected, experimented with and shared.<sup>16</sup> The Nerica team's concern for "purity" suggests that the decision to adopt a community-based seed system had more to do with ensuring the widest possible distribution of Nerica seeds in the shortest possible time than it did with generating a meaningful integration with existing seed systems.

ARI's action plan to increase seed production and to deal with the "seed quality" issue has not helped in this regard. It has set up a more centralised system, with WARDA in charge of plant breeding and the production of foundation seeds. These are then sent to national research centres which, with assistance from WARDA, produce basic seed that is in turn sent to so-called community-based seed production systems for multiplication and distribution. But the evidence to date shows that the ARI's plan is stopping there, with little uptake by actual farmers' seed systems. For reasons unexplained by the Nerica team, farmers are not saving Nerica seeds or exchanging them among themselves, as they customarily do with local seeds.<sup>17</sup> Moreover, the Nerica community-based seed system is regularly bypassing the actual work in the communities, with seeds being dispatched to farmers as part of government relief operations or distributed by NGOs.<sup>18</sup> In many cases, seeds are simply produced through contract production arrangements between NGOs or government agencies and farmers' organisations. With some national Nerica programmes, seed production is almost entirely in the hands of a few seed companies or individuals with political connections and access to large areas of land.

In Mali, a single seed producer supplies the bulk of Nerica seeds, which are subsidised as part of the national rice initiative. Bakary Togola, former President of the Permanent Assembly of the Mali Chambers of Agriculture and one of the main supporters of this initiative when he held that position, said he earned US\$124,000 in 2007 from the sale of Nerica seeds and announced that he was going to double the area of his land used for seed production to 160 ha in 2008.<sup>19</sup> In Gambia, similarly, the seed producer Suleyman Mboob said that he had received more than US\$26,000 from the sale of Nerica seeds produced on his 25 ha. According to the UN, the FAO paid Kamtech, a rice-importing company in Guinea, more than US\$600,000 for rice seeds allocated as part of its relief operations in Sierra Leone and Guinea. In Uganda, where millions of dollars were advanced to pay for supplies of Nerica seeds, two seed companies have been granted exclusive rights to produce and sell the two most recent Nerica varieties introduced into the country.<sup>20</sup> The promoters of Nerica defend these actions as measures to ensure seed quality, but that has not prevented the sale of fake and poor quality Nerica seeds.<sup>21</sup>

The seed laws recently introduced in most of the countries targeted by the Nerica project will only strengthen this trend. These laws require new varieties to be registered, and impose restrictions and even bans on the sale and exchange of non-certified seeds.<sup>22</sup> Mali, for example, blocked the import of Nerica seeds from Guinea, because they were not produced in accordance with Malian law.<sup>23</sup> The promoters of Nerica, however, are demanding the harmonisation of these laws throughout Africa and greater adherence to them.

In fact, it is increasingly clear that the Nerica project sees the private sector as the main engine for an increase in the production of "quality" seeds. "The constraint we face in sub-Saharan Africa regarding the distribution of Nerica is lack of seeds. We are now trying to mitigate these constraints by inviting the private sector to invest in seed production", explained Dr Akintayo Innoussa, ARI Coordinator.<sup>24</sup>

In May 2008, JICA, the New Partnership for African Development (NEPAD) and AGRA launched a Coalition for the Development of Rice in Africa (CARD), presented as the new main platform for Nerica. In its founding declaration, CARD criticised traditional African agricultural practices for their low productivity, and declared its intention to double rice production in sub-Saharan Africa by

16 Malcolm Jusu, "Management of genetic variability in rice (*Oryza sativa* L and *O. glaberrima* Steud.) by breeders and farmers in Sierra Leone", doctoral thesis, University of Wageningen, 21 December 1999.

17 CGIAR Science Council, "Report of the Fifth External Program and Management Review of the Africa Rice Center", January 2008.

18 WARDA, "Nerica Contributes to Record Rice Harvest in Africa", 3 May 2007. <http://tinyurl.com/6d6ojb>

19 Mariétou Konaté, "Initiative Riz: Les propositions de Bakary Togola", *Soir de Bamako*, 23 April 2008; Y. Coulibaly, "Initiative Riz ou Initiative Famine", *Inter* (Bamako), 4 August 2008; Government of Mali, "Initiative riz dans la region de Sikasso: La campagne agricole 2008-2009 se porte bien", 14 July 2008. <http://tinyurl.com/6j9bcm>

20 FICA Seeds obtained the right to Nerica-1 and Naseco the right to Nerica-10. ASARECA – Technology Uptake and Up-scaling Support Initiative, "Three commercial upland rice varieties (Nerica-1, Nerica-10 and Nerica-4) for uptake by farmers". <http://tinyurl.com/5h4gu7>

21 See the report by Self Help Development International – Uganda Annual Report 2005: <http://tinyurl.com/5zfkx4> see also the report by Africa Vert, 30 September 2008, on the situation in Mali. <http://tinyurl.com/6d3egr>

22 GRAIN, "Lois sur les semences in Africa: Un tapis rouge pour les sociétés privées", *Seedling*, July 2005. <http://www.grain.org/seedling/?id=402>

23 A. Babatunde Obilana and Bernard N. Okumu, "Interspecific Hybridisation between African and Asian Rice Species: Evaluation Study Report", UNDP, SU/SSC and WARDA, October 2005.

24 Ibid.



distributing more Nerica seeds and chemical inputs to farmers through the private sector. CARD gave only vague assurances that it would “study the applicability” of the community-based seed production system, and began to support private companies and “contract farmers” to produce certified and registered varieties of Nerica. CARD urged participating countries to “expedite the procedure of variety registration” in order to speed up implementation.<sup>25</sup> In the same spirit, during the 26th session of the WARDA Council of Ministers in September 2007, WARDA’s Director General, Dr Papa Abdoulaye Seck, told African governments: “seed legislation should encourage the involvement of the private sector in seed supply and trade.”<sup>26</sup>

WARDA itself is behaving increasingly like a private company. In 2002, it registered Nerica as a trademark in the United States, thereby obtaining exclusive rights to use the name. More alarmingly, WARDA’s international strategic plan for 2003–12 includes a proposal for the creation of a company, “WARDA Inc.,” to work directly with agribusiness! The creation of WARDA Inc. is still under discussion.<sup>27</sup>

## Nerica, agribusiness and the rush to Africa

External agendas rather than demand from farmers are driving the distribution of Nerica to Africa’s rice fields. Whether deliberately or not, Nerica has become part of a wave of private investment that is rushing into African agriculture. Take the case of Uganda, one of the few countries to have already had a long and intense experience with Nerica.

The history of Nerica in Uganda goes back to 1996, when Tilda, a subsidiary of the British company United Rice Land, one of the biggest producers and traders of Indian basmati rice, took over the operations of the Kibimba rice field, about 140 km east of Kampala. The Kibimba rice project was established with the help of a Chinese cooperation programme in the 1970s and was farmed by local people until it was privatised and sold to Tilda. With a loan of US\$2.4m, and a US\$3.5m World Bank guarantee, Tilda undertook a vast programme to rehabilitate and expand the projects, including an increase in the capacity of the local mill to around 36,000 tonnes of rice per year. The company evicted farmers from the area and began to bombard the rice fields (and the surrounding communities) with pesticides applied from the air.<sup>28</sup> Tilda rapidly became the biggest rice producer in Uganda and an important exporter to neighbouring countries.

One of the early challenges for Tilda was to identify a variety of rice that could produce high yields without being devastated by local pests and diseases. In 1999, the company recruited a WARDA plant breeder, who brought with him 30 WARDA varieties. While one of these had good results in Tilda’s irrigated rice fields, other WARDA varieties were well adapted to the upland farming practised in the surrounding area. Tilda immediately sensed a good business opportunity: it could get local farmers to supply rice under contract, enabling it to run its mill to full capacity.

So Tilda then contracted the NGO SG 2000 and another NGO funded by USAID, Investment in Developing Export Agriculture (IDEA), and the three together launched a vast Nerica programme involving the establishment of demonstration sites throughout the country. In 2002, two varieties of Nerica for upland agriculture were introduced. The private Nalweyo Seed Company (Naseco), owned by a Belgian entrepreneur, was contracted as the main seed supplier, and FICA, a Ugandan inputs merchant belonging to the Afro-Kai company, was put in charge of supplying herbicides.<sup>29</sup> The Tilda programme is essentially a contract production system in which the company supplies the seeds and inputs to farmers on credit and the farmers are obliged to sell their harvest to Tilda. After the country’s vice-president launched a Japanese-funded rice initiative in 2004, other companies have embarked on the same kind of contract rice production programme using Nerica seeds.

25 JICA/AGRA, “Coalition for African Rice Development (CARD)”, 29 May 2008.  
<http://tinyurl.com/64wcyo>

26 Papa Abdoulaye Seck, “Rice Crisis: Myth or Reality”, 28 September 2007.  
<http://tinyurl.com/5easxm>  
A French version entitled “Crise alimentaire, la solution in Africa” is available at  
<http://tinyurl.com/5kderx>

27 CGIAR Science Council, “Report of the Fifth External Program and Management Review of the Africa Rice Center”, January 2008.

28 Government of Uganda, “Uganda Participatory Poverty Assessment PPA II: Bugiri District Draft Report”, July 2002.

29 “Uganda IDEA: Building Foundations for Agribusiness”, Final Report, 2004.  
<http://tinyurl.com/5g6s4k>  
WARDA, “The Africa Rice Center – Recognizing WARDA’s Role in sub-Saharan Africa”.  
<http://tinyurl.com/5p4c6r>



What has the large-scale introduction of Nerica meant for Uganda? Farmers have grown Nerica as a cash crop, which has turned Uganda into a rice exporter. This, in turn, has displaced the cultivation of subsistence crops and drawn farmers into precarious contractual arrangements with much more powerful companies. According to a survey conducted in 2007 by the Ugandan government among rice farmers in the area where the Tilda operation is located, two-thirds thought it was disadvantageous to produce rice under contract to Tilda. The main problems they identified were the strict contractual requirements and the low prices paid by Tilda (about US\$0.30/kg for dry rice). In addition, some farmers under contract to Tilda complained about the quality of the seeds supplied by the company!<sup>30</sup>

A similar story is unfolding in Benin. The Tunde Group, a company controlled by Razaki Babatunde Ollofindji, a businessman close to the country's current President, is involved in a national campaign to promote the production of Nerica seeds. With the support of a presidential rice initiative, Babatunde Ollofindji envisages the creation of a vertically integrated rice operation, from seed production to trade. Tunde's Nerica rice will supply the mills that the company intends to build in the interior of the country, with a view to exporting rice to Nigeria.<sup>31</sup>

Nerica is not the only type of rice seed that agribusiness is using in this drive to take control of African rice production. This year, the Liberian government has granted a concession of 15,000 ha to a Libyan–Swiss company for the production of hybrid rice (see Table 2).<sup>32</sup> The government has also negotiated a 2,000-ha concession of land for rice production with one private company and another area of 300 ha with a Chinese company.<sup>33</sup> At the same time, the World Bank is going to supply Liberia with US\$40m in loans over the next four years through its emergency fund for the food crisis. This loan will mainly be used to supply “improved” seeds and fertilisers, to convert land to large-scale rice production and to eliminate taxes on the import of rice.<sup>34</sup> Table 2 lists recent private sector rice projects in Africa.

The boundary between philanthropy and business is often blurred in these private investments. In Sierra Leone, for example, the Vedico Group, a German–Vietnamese joint venture, has established a rice demonstration and training site on a 110-ha plot near the town of Mange Bureh. The company has brought farmers and seeds from Vietnam, and is now training agricultural workers. It is preparing to create vast rice farms through a programme called “Rice for Africa”, which is offering shares in the project at US\$2,500 per hectare. The company now wants to extend the project to Ghana and Nigeria.<sup>35</sup>

Investment in agriculture is not in itself a bad thing. A lot more clearly needs to be done to increase rice production in Africa and to reduce dependence on imports. The problem, however, is that the investment currently flowing into the continent is going straight into industrial agriculture, either in large-scale production projects or contract production programmes. To take another example: in 2004 the president of Nigeria launched a national initiative to promote domestic rice production. It included several measures to encourage leading rice importers to start producing rice locally. One of the companies that responded is Olam, a subsidiary of Kewalram Chanrai Group of Singapore, and one of the biggest global traders in agricultural commodities. In Nigeria, Olam has a pesticides and chemical fertilisers manufacturing plant as well as a rice operation spread over seven states, involving 6,000 contract farmers. With the support of USAID (which will supply rice varieties and extension services), several Nigerian state governments, the federal government and First Bank (which is going to lend millions of dollars to the farmers contracted by Olam), the company is in the process of extending its rice operations. In the state of Bénoué, Olam has already contracted 250 large producers to grow rice on 10,000 ha.<sup>36</sup>

It is clear from these examples that the Nerica project is building the foundations of a seed system that will respond to the needs of agribusiness by developing adapted varieties and networks of seed producers and by integrating African small farmers

30 Ministry of Trade, Tourism & Industry of Uganda, “Contract Farming, Smallholders and the Commercialization of Agriculture in Uganda: The Case of Sorghum, Sunflower, Rice, and Poultry Contract Schemes”, study commissioned by the Uganda Programme for Trade Opportunities and Policy, 2007. <http://tinyurl.com/5rroxs>

31 Website of Tunde Agro Business: <http://tinyurl.com/6lqls9>

32 Melissa Chea-Annan, “GOL, ADA Sign Agreement to Increase Rice Production”, *The Inquirer* (Monrovia), 9 April 2008. ADA's website is <http://adalap.com/>

33 “Govt's Response To Global Commodity Price Increase”, *The Analyst* (Monrovia), 30 June 2008.

34 See <http://tinyurl.com/5eqbz5>

35 See <http://tinyurl.com/6qpqyr>

36 “Firm Gets Certificate Over Parboiled Rice”, *Daily Trust* (Abuja), 6 March 2008. <http://www.chanrai.com/africagroup>  
Simeon Nwakaudu, “Obasanjo wants greater private sector investment in agric.”, 2 May 2008; Sulaiman Adenekan, “Firm to invest \$1.5m on rice processing plant”. <http://tinyurl.com/6obz4g>  
John Akpodovhan, “Nigeria's First bank partners Benue State to increase rice production”, *The Tide*, 7 August 2008. <http://tinyurl.com/6db692>  
Peter Duru, “First Bank, Olam, Farmers Cooperatives sign N500m MOU”, 10 June 2008.



## Table 2. Some private sector rice projects in Africa

### Benin

The Tundé Group, owned by Razaki Babatunde Olofinjidi, is promoting Nerica rice as part of a larger agro-industrial operation that he has established in Benin. This operation includes a range of activities, from seeds to trade and the distribution of chemical inputs and flour milling.

### Cameroon

In May 2008, the French television channel TF1 broadcast an investigative programme on an initiative by a Chinese businessman, Jianjun Wang, to take control of 10,000 ha of land in the Cameroon for local rice production. Workers recruited on the farm are convinced that the rice will be exported to China.

### Guinea

In 1996, Guinea set up a joint venture with Bernas Company of Malaysia to produce irrigated rice on 3,000 ha of land, under the name of SOBERGUI. In 1997, it did the same with China on 1,800 ha under the name of SIGUICODA. SOBERGUI was recently sold to a Guinean businessman and rice importer, El Hadj Alsény Barry, who runs the Société Africaine pour l'industrie et le commerce (SAFRICOM).

### Liberia

In December 2007, the Libyan African Investment Portfolio, a Libyan finance company based in Switzerland, invested US\$30m in an enormous rice project in Liberia through an agreement with a local NGO, the Foundation for African Development Aid. The Liberian government granted the joint venture ADA/LAP Inc. a land concession of more than 17,000 ha for rice production for local and international markets, certainly including Libya itself.

A Chinese company recently acquired a 300 ha property in Cameroon for rice production. With the support of the Chinese government, the Longping High-Tech Agriculture Company established the Centre for Demonstration of Agricultural Technologies in Liberia, where it is involved in training the local population to produce a hybrid rice variety, LP121. The same company runs another hybrid rice project in Sierra Leone.

### Mozambique

According to a study conducted by the son of Ramos Horta, the president of East Timor, since 2006, the Chinese government has invested in an infrastructure development project, political reform, research, publicity and training with a view to increasing rice production in Mozambique for export to China. Eximbank has already granted a loan of US\$2 billion and promised a further US\$800m for these activities. About 10,000 Chinese migrants are employed on these projects. The contracts between the two governments and the land agreements are still being negotiated.

### Nigeria

VeeTee Rice, a rice trading company based in England, is mounting a rice production project in Ogun, which employs 25,000–30 000 Nigerian peasants. VeeTee will supply "high-yield" seeds and inputs on credit.

The Stallion Group, based in Dubai, has begun a regional rice production project worth US\$1.2 billion in partnership with the Nigerian Ministry of Agriculture and Water Resources. The company's annual production target is 2.25m tonnes of rice in Nigeria and another 500,000 tonnes in Ghana. It is investing in the supply of agricultural machinery, an increase in milling capacity and a factory that will produce 700,000 tonnes of fertilisers per year.

Olam, a subsidiary of the Singapore group Kewalram Chanrai, has increased the size of its contract farming rice production project in Nigeria. The project currently involves 6,000 farmers in seven states. It will extend to cover 250 large supplementary producers over 10,000 ha in Benue state thanks to a programme of credits worth several million dollars managed by the federal government and the Nigerian First Bank.

### Uganda

The Tilda Company, based in England, manages a 600-ha irrigated rice plantation where 600 farmers produce rice under contract. It aims to extend the project area by 50% in the near future.

### Rwanda

The Australian agro-industrial company ICM has just taken over management of two rice projects covering a total of 2,000 ha in Rwanda. These projects were acquired under a privatisation programme in which the farmers are themselves shareholders. ICM plans to develop large industrial farms that use new technologies.

### Sierra Leone

A German–Vietnamese joint venture, the Vedico Agricultural Group, has established an extension and training farm on 110 ha near Mange Bureh. The company has imported seeds and peasants from Vietnam and is currently training local peasants. It will soon begin to establish large rice-growing farms and, through a programme called Rice for Africa, it will offer shares in the project at a cost of US\$2,500 per ha. Vedico intends to establish similar operations in Ghana and Nigeria.

### Tanzania

In 2008, Chongqing Seed Corp, a Chinese company, announced that it had chosen 300 ha for the production of its hybrid rice in Tanzania, starting in 2009. The company will contract local farmers to produce rice for export to China. Chongqing set up a similar project in Nigeria a few years ago.



into networks managed by big companies. More than anything else, this could be the lasting contribution of the Nerica green revolution.

## The reality of the Nerica experience

The other key element of the Nerica programme, above and beyond setting up the infrastructure for seed production, is propaganda. Nerica is lauded as the seed of the new green revolution in Africa, and its qualities are praised. But the reality in the fields does not justify the media hype around Nerica, which is mainly generated by WARDA and donors such as AGRA and JICA.

Its promoters claim that Nerica's chief qualities are high yields, early maturity, resistance to local stresses and high protein content. A panel of the CGIAR's Science Council contests some of these claims. In a July 2008 report on WARDA, the panel stated that "questions still remain about whether these traits are fully realised in the Nerica varieties and whether the conclusions reached thus far are supported by agro-physiological evidence."

On Nerica's performance so far, the panel had this to say:

- The effect on farmers' yields is heterogeneous, with some farmers experiencing no increase.
- Despite high expectations, experimental evidence for drought tolerance of Nerica varieties is still limited.
- Very little information is available for the heat tolerance of Nericas.
- Early maturity can lead to massive bird damage if only a few farmers grow in a locality; bird damage to Nericas is often given as a major constraint.
- Short straw implies that the women harvesting rice with a sickle have to bend further; this is more painful and difficult than for long-straw rice. Short straw is a disadvantage if straw is used as animal feed or for other purposes such as roofing.

The panel found "limited evidence that WARDA really draws the appropriate lessons from these constraints". It also warned that "without a balanced and robust research strategy to substantiate claims and understand the fundamentals behind them, WARDA's scientific credibility may be at risk". The panel did not mince words:

*"For institutions that rely only on donor funds to survive, the temptation is strong to oversell potential products and breakthroughs to donors. Breakthroughs are by definition one-time shots and it is difficult to maintain the level of interest of donors over a long period. Overselling research activities has immediate benefits in terms of donors' support that reward success stories, but it has a long term cost, which can be the loss of trust of the scientific community if research results do not back up the initial claims ... The Panel thinks that WARDA too needs to be cautious with the Nerica story and the way it is sometimes reported, probably by excess enthusiasm."*<sup>37</sup>

In Benin, for example, a vast campaign is directed at farmers, claiming that Nerica will give them unprecedented yields. But where is the evidence? The most recent field trials into four Nerica varieties, conducted during the 2007 rainy season by INRAB and Japanese scientists in five locations, were plagued by problems: rodents devoured one field; another field was over-fertilised with chemical fertiliser; another location had very little rainfall; and another was flooded. The researchers say that they were able to make only an "adequate evaluation" at one of these locations because of all these problems, even though these are the kind of problems that farmers face all the time. Another study into the selection by farmers of Nerica varieties undertaken by WARDA in Benin (Dassa and Glazoué) and in Nigeria (Kogi, Ogun and Ebonyi) showed that preferences for rice varieties

37 CGIAR Science Council, "Report of the Fifth External Program and Management Review of the Africa Rice Center", January 2008.





*Té Adjarra, a farmer from Kolokondé, Benin*

## Box 2: Towards genuine food sovereignty\*

In all African countries, we think we need quickly to organise emergency programmes and rice initiatives, and to put in place local rice development programmes. This demands the following actions from us:

- to evaluate the national rice programmes in Africa by the end of 2008 and to learn lessons for implementing long-term programmes for developing rice fields;
- to create immediately a grain sector worthy of the name, involving the organisation of national production and the processing and marketing of grains in a systematic and systemic way, with special attention given to rice;
- to provide for regional autonomy in the sector;
- to secure a good price for producers;
- to regulate imports of rice, in a sovereign way, so that gradually, year by year, locally produced rice replaces imported rice.<sup>1</sup>

1 JINUKUN, Synergie Paysanne and GRAIN, "Resisting transnationals – the experience of farming families in south-west Benin", *Seedling*, October 2008. <http://www.grain.org/seedling/?id=566>

\* Synergie Paysanne (SYNPA) and JINUKUN (National Network for Sustainable Development of Genetic Resources) – the focal points in Benin for COPAGEN (Coalition for the Protection of African Genetic Heritage) – made these proposals at a press conference on the food crisis on 10 June 2008.

varied a lot and that Nerica and other modern varieties did not demonstrate a "strong technological advantage" over the local variety included in the study.<sup>38</sup>

Field observations and investigations by the JINUKUN network and GRAIN in Benin also exposed several failures with Nerica crops. In some villages, Nerica was devastated by rats and birds, while several farmers said that it compounded labour problems. In the Glazoué region, in the centre of the country, where a Ministry of Agriculture project to distribute Nerica began more than three years ago, Nerica 1, 2 and 4 have had yields of three tonnes per hectare compared to the seven tonnes promised.

In general, Nerica is a demanding variety in comparison with local varieties; it needs more labour, more care and, very importantly, more fertilisers.<sup>39</sup> To achieve the results announced by Nerica's promoters, the farmers must have good access to inputs and extension services. In some cases, Nerica seeds are supplied free with a package of fertilisers and pesticides. In most cases, however, the farmers receive only the seeds, and in the cases when they do receive fertilisers there is no guarantee that the subsidies that make them affordable will continue. In fact, management of soil fertility has already been identified as one of the main problems that farmers face with Nerica in Uganda and Guinea.<sup>40</sup> The promoters of Nerica would do well to listen to the advice of Té Adjarra, a farmer from the village of Kolokondé (Djougou Commune) in Benin, who said, when referring to the local experience with Nerica: "Each rice seed has its own soil."

During the Green Revolution in Asia, there was always an enormous difference between the yields that researchers achieved with varieties in their experimental stations and the yields achieved by farmers. This gap has never been bridged and Nerica is following the same path. A study of farmers' experiences with Nerica in the two countries that have been cultivating Nerica the longest (Guinea and Côte d'Ivoire), conducted by WARDA itself in 2003–4, noted that Nerica had no

38 J. Daniela Horna, Melinda Smale and Matthias von Oppen, "Farmer Willingness to Pay for Seed-Related Information: Rice Varieties in Nigeria and Benin", EPT Discussion Paper 142, September 2005.

39 See, for example, WARDA, "Nerica Rice Crop Management". <http://tinyurl.com/68q1hy>

40 Yoko Kijima, Keijiro Otsuka and Dick Sserunkuuma, "Assessing the Impact of a Nerica on Income and Poverty in Central and Western Uganda", FASID Discussion Paper Series on International Development Strategies, August 2007; A. Babatunde Obilana and Bernard N. Okumu, "Interspecific Hybridisation between African and Asian Rice Species: Evaluation Study Report", UNDP, SU/SSC and WARDA, October 2005.



significant impact on yields. This may explain why Nerica was adopted by only 53 per cent of farmers who were exposed to it in Guinea and only 38 per cent in Côte d'Ivoire.<sup>41</sup> It also helps to explain why farmers stop using Nerica seeds when they do not receive them free or very cheaply.<sup>42</sup>

## Conclusion

African rice was created by Africa's farmers and belongs to all of them. Despite this historical fact, WARDA, with the support of governments in all continents, especially in Africa and Asia, asserts that Nerica is its property and has registered a trademark to this effect. The contribution of Africa's farmers goes unnoticed. For years now, farmers' organisations in Africa have struggled to obtain some simple respect for their local knowledge and seeds, and for a seat at the table in the development of national and regional agricultural policies. The attention lavished on Nerica speaks volumes about the way agricultural policy is defined in Africa and how farmers are ignored by those in power.

The political and financial support for Nerica given by all the ministries of agriculture and the national and international agricultural research institutes in Africa makes it clear, if there were still any doubt, that governments and scientists are interested only in "modern" varieties, and care little for traditional varieties that farmers have adapted to local conditions. African farmers' rice seed systems have existed for thousands of years and have ensured the survival of the people of Guinea, Mali, Liberia, Côte d'Ivoire and many other countries. These systems are just as relevant to the survival of Africans today. If Africa is to move towards food sovereignty – that is, to produce what it consumes and consume what it produces – then it needs to value the centuries-long work of African rice farmers. As a Benin proverb says, "it is to the end of the old piece of rope that we need to attach the new piece". Africa's local seed systems are the necessary basis for its food sovereignty.

Part of the problem is that Africa's food cultures have been profoundly damaged by colonialism and urbanisation. Food habits cannot be changed overnight. The food crisis has, however, prompted Africans to ask themselves questions about their food and their very identities. The time is ripe for a major transformation, but if meaningful change is to happen, agricultural research on rice must be restructured so that rice farmers are at the centre of the system rather than being used as mere "testers" for modern varieties like Nerica, which merely roll out a red carpet for agribusiness. It is in this spirit that farmers' organisations and NGOs in Benin recently joined together to table a proposal as to how to get out of the food crisis (see Box 2). This is just one instance of a grassroots movement for food sovereignty taking shape across the continent that is challenging Nerica and the larger push for agribusiness's "green revolution" in Africa. 

41 See "Module 14" of E.A. Somado, R.G. Guei and S.O. Keya (eds), "Nerica: the New Rice for Africa – a Compendium: 2008 edition," WARDA, 2008.

42 CGIAR Science Council, "Report of the Fifth External Program and Management Review of the Africa Rice Center", January 2008; D. Spencer *et al.*, "Evaluation of adoption of Nerica and other improved upland rice varieties following varietal promotion activities in Nigeria: A study for the Gatsby and Rockefeller Foundations. Final report", 2006.

## Going further

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GRAIN *Briefing*, "Seized: The 2008 land grab for food and financial security", October 2008. <http://www.grain.org/briefings/?id=212>

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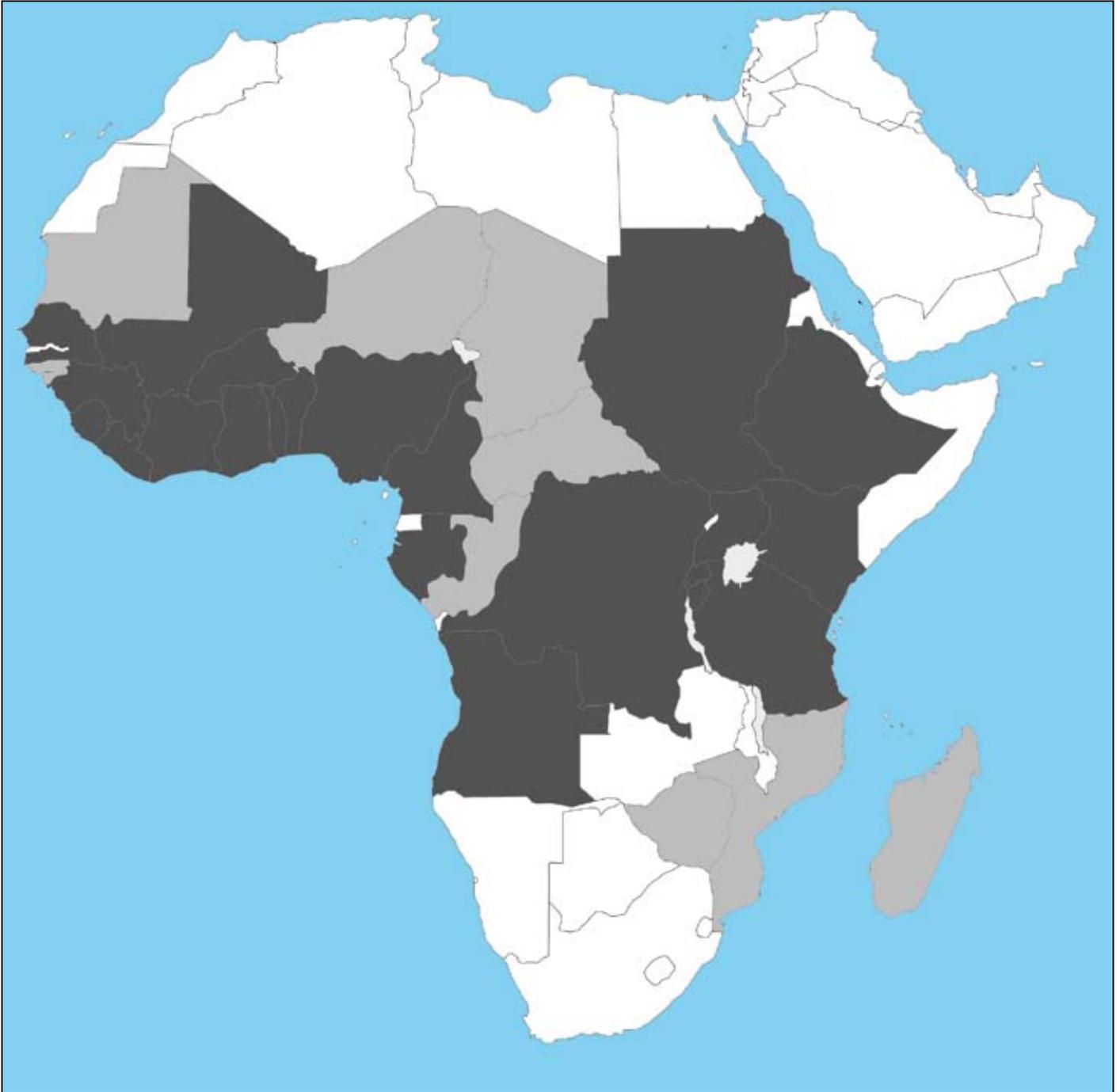
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# Countries where Nerica seeds are being tested or supplied to farmers

■ Nerica seeds supplied to farmers      ■ Nerica rice at testing stage



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