

## Long-haul Congo on the way back

The Democratic Republic of the Congo (DRC) is the third largest country in Africa and that poses special challenges for Africa Rice Center scientists helping revive the production of rice in several widely-scattered communities. Conflict, which claimed an estimated three million lives in the DRC, only ceased in 2004, leaving a legacy of declining agricultural production, with cereals alone showing a 20% fall in pre-conflict production, and a weakened infrastructure.

Less than 10% of the land in the DRC is presently developed for agriculture and of that barely 13,500 ha are irrigated. Against this background, NERICA and other improved rice varieties have been enthusiastically tried out in NARES trials and demonstrated to farmers as a rapid means to helping the country restore some of its lost farming potential.

Both upland and lowland NERICAs show strong ability to improve yields in different parts of the DRC. “However, it takes three full weeks to visit the four research centers and stations developing NERICAs, as well as the regional offices of our supervising partners,” explains soil physicist Dr Sitapha Diatta, who has become more than a little familiar with the joys of river travel in a massive country with relatively few roads.

Dr Diatta explains how the NERICA test zone in Eastern Province puts the Congo DRC into perspective. Created in 1935, the national agricultural research center at Yangambi may well be the biggest research center in sub-Saharan Africa, with a surface area of 250 000 ha. It is only 100 km from Kisangani, a provincial capital, but access today is only possible via the river Congo.

Africa Rice Center is working with the National Institute for Agronomic Study and Research (*Institut National pour l’Etude et la Recherche Agronomiques – INERA*), the DRC’s Center for Integral Development (*Centre pour le Développement Intégral – CDI*) in Equator Province and with the Kinshasa-based National Rice Program (*Programme National Riz – PNR*) through its regional offices. INERA has selected several sites at which NERICA varieties are tested thanks to funding from IFAD (International Fund for Agricultural Development). INGER-AFRICA and WARDA’s genetic resources unit has sent more than 2000 WARDA upland and lowland rice varieties to the PNR since 1994, but IFAD has supported the recent supply and testing of seven NERICAs by INERA in Eastern Province and Equator province, as well as by the PNR.

*The Congo River is a major thoroughfare for produce and people, including visiting WARDA scientists who must use it to reach Yangambi Research Center.*



Technical support from WARDA is vital to the project implementation, says Dr Diatta. As well as providing the seed, WARDA is training technicians from INERA, PNR and CDI in establishing PVS research (PVS-R) and PVS extension trials (PVS-E), and in seed production (CBSS). Four technicians (2 from INERA and one each from PNR and CDI) were trained in rice seed production in July 2004 in Yamoussoukro, Côte d'Ivoire. In October 2004, these technicians also visited Guinea to inspect the farms of farmers who have adopted NERICA varieties.

Echoing the revelatory success of NERICAs elsewhere in Africa, first results from testing the seven NERICAs showed that NERICA4, NERICA6 and NERICA7 all performed better than the local check variety, Lioto. In Equator Province, NERICA7 yielded 4.2 t/ha on a more fertile site in the absence of fertilizers, against 2.8 t/ha for the local check PNR1 (Table 4). NERICA3, NERICA4, NERICA6 and NERICA7 gave the best yields in Bandundu province.

In 2005, farmers have already given their preliminary judgement on the first NERICA varieties in PVS-E trials being carried out in Eastern and Equator provinces. The farmers' first choice (85%) at Yangambi was NERICA4, which gave the highest yield, averaging 2.250 t/ha with or without fertilizers. However, 33% of farmers preferred the vigorous tillering of NERICA6, which averaged 1.68 t/ha, and 26% liked NERICA7 (1.45 t/ha). NERICA4 was also the most selected by farmers on two other sites for PVS-E, mainly because of its earliness. The main local variety has a long 180-day growing cycle instead of 100 days from planting to harvest for NERICA4.

However, in Equator Province, the farmers' order of preference was reversed with NERICA7 being most often picked in mid-season as the farmers' first choice, followed by NERICAs 6 and 4. Dr Diatta points out that these farmer preferences will undoubtedly be confirmed or altered when the final yield results are available after the 2005 harvest.

The increase in production in Yangambi varied from 33%–83% in plots without fertilizers on a very degraded soil (infected with *Striga*). The tall height of these three varieties is an asset for their adoption by farmers. NERICA1, NERICA2, NERICA3 and NERICA5 also have a better yield than the local check but are short, which may be a handicap during manual harvesting.

In addition to the seven NERICAs provided by WARDA in 2004 to launch the project, 34 NERICAs for the upland ecology and 72 varieties, including 62 NERICAs for lowland ecology, were introduced in 2005 for evaluation by INERA under upland and lowland conditions at Yangambi Research Center. Despite drought conditions, these new NERICA generations looked promising at the booting and grain filling stages. The lowland NERICAs also showed signs of promise at Yangambi, with the majority showing tolerance to iron toxicity.

Evaluation of the latest generation of upland and lowland types will continue through PVS-R trials next year at INERA research centers and stations at Yangambi, Boketa, Mvuazi and Kiyaka.

**Table 4:** NERICA trials at INERA research center in Boketa (Equator Province)

Tested varieties	Yield t ha <sup>-1</sup>
NERICA2	2.817
NERICA3	3.733
NERICA4	3.116
NERICA6	3.090
NERICA7	4.170
PNR1 (Local check)	2.850