

## Soybean breeding in Southern Africa makes great strides

IITA's soybean breeding work in Southern Africa is still at its infancy but according to Soybean Breeder Hailu Tefera, it has made significant progress in a short time with the release of one high-yielding promiscuous variety in Malawi in January this year.

The breeding work which started in 2007 has had a leap by adapting elite material already developed in Nigeria.

"This enabled us to make quick progress," says Tefera.

The work on soybean aims at providing farmers, both commercial and subsistence, varieties with their preferred attributes to increase yield and income.

These include high yield, resistance to deadly diseases, such as soybean rust, and insect pests, early maturity, good seed quality, and resistance to other stresses such as drought and soil acidity.

"We are working to develop varieties for two main uses--those that produce a high amount of grains in a relatively short time with minimal biomass accumulation and 'dual-purpose' cultivars that produce a high amount of aboveground biomass and grain yield," he explained.

For the benefit of small-scale farmers, the project is fast-tracking the testing of a large number of promiscuous varieties and elite lines in the region. The varieties are called promiscuous because they form a mutually beneficial relationship with a wide range of nitrogen-fixing bacteria, *Rhizobium/Bradyrhizobium*. In parallel, scientists are also developing adaptable, high-yielding, 'non-promiscuous'



Archive: Farmer works on improved soybean field in Katsina, Nigeria

varieties that only nodulate with specific strains of *Bradyrhizobium*, which if not present, have to be introduced.

Since 2009, a total of 25 IITA-developed varieties have been released by the national programs in sub-Saharan Africa. Of these, only one was released in Malawi, TGx 1740-2F, which farmers call *Tikolore*, meaning 'let us harvest'. It was released in January by the Malawi Agricultural Technology Clearing Committee (ATCC) as a high-yielding early maturing promiscuous variety.

It outperformed the popular local grain variety Nasoko and the widely grown promiscuous variety Magoye under both on-station trials and on-farm

participatory variety selection in various locations in the country. Farmers like it because it gives more pods per plant, performs well under poor and erratic rainfall, and has better lodging resistance --it stands upright during growth and maturity to facilitate harvesting and avoid seed loss when they fall to the ground.

Looking ahead, Tefera and his team are now producing soybean foundation seeds to disseminate to a larger number of farmers.

"In the next coming years we hope the variety will be in the hands of many farmers in central Malawi where much of the soybean production takes place," he says.

## Bioscience Center at IITA launched



Gedil Melaku holds ribbon while Paula Bramel cuts the ribbon, marking the launch of the IITA Bioscience Center in Ibadan on Thursday. Far right: Lakshmi Menon. Far left: Sarah Hearne. The full story will be published next week.

### Help conserve electricity!

Before leaving the workplace at day's end, make sure that you have:

- (1) Powered off all unnecessary electrical office/lab equipment;
- (2) Turned off air conditioners; and
- (3) Switched off all lights.

# R4D Review focuses on plant health matters



One-third of the global food production is lost due to attack by pests, diseases, and weeds. Containing these losses is far more important in Africa to double or triple the existing food production capacity to feed over 200 million undernourished people. However, the current approach of expanding agriculture area to improve food production is unsustainable and results in significant ecological

damage. This realization worldwide is driving the search for newer options to intensify agriculture within the existing area.

At least 50% of losses could be averted using simple and affordable technologies and practices that prevent diseases and pests from affecting plants and produce. Ensuring plant health, therefore, is one of the most important R4D strategies of IITA to improve agriculture productivity and food security, and reduce poverty.

The latest issue of R4D Review highlights some of the technologies and strategies developed and promoted by IITA and its partners for plant health protection. Features include the production of high-quality planting material, the need for quality standards, new technologies for rapid and high ratio micropropagation techniques, production of aflatoxin-safe crops, phytosanitary practices to prevent the spread of pests with planting material, and biotech solutions to halt the raging bacterial wilt of banana. Future challenges to plant health due to the effects of climate change and the importance of forests for conserving biodiversity and agriculture are also discussed. IITA's

scientists and collaborators have provided view points on biodiversity conservation and the importance of plant health and phytosanitary standards to safeguard agriculture and improve trade. To access the full issue visit <http://r4dreview.org/>.

"True national defense is a huge offensive force against biological threats to food systems," said Hartmann. The value of plant health management cannot be underestimated given the precarious nature of agricultural systems in Africa with the evolution, establishment, and quick spread of pests and diseases.

Although plant health protection measures are relatively easy to adopt, they require considerable training, awareness creation, and financial support for skills and infrastructure to be improved in national agricultural research systems to foster the technology transfer to farms where plant health matters.

The six-monthly magazine is intended to help IITA and its research and development partners, investors, collaborators, and beneficiaries discuss and develop the best new ideas to create, lead, and transform tropical agriculture.

## Biological control offers benefits to Africa

Biological control programs by IITA on cassava green mite have brought benefits worth more than \$1.7 billion to Nigeria, Benin, and Ghana in the last 18 years, a new study has revealed.

The study, authored by Ousmane Coulibaly, IITA Agricultural Economist, described the figure as "a conservative estimate."

"The figure represents the amount those countries would have spent over the years on other methods such as chemical control and or yield losses if they never adopted biological control," says Coulibaly during his R4D seminar in Ibadan.

The cassava green mite is a pest that caused between 30% and 50% yield loss of cassava in Africa, until a natural enemy of the pest helped contain the devastation.

In 1993, scientists from IITA and partners identified *Typhlodromalus aripo* as one of the most efficient enemies against cassava green mite. Its introduction reduced pest populations by as much as 90% in the dry season when



Biological control of cassava green mite (right) with predatory mite (left)

these are usually high; in the wet season, pest attacks are not as severe.

*T. aripo* was first released on cassava farms in Benin after it had been transported from Brazil and, subsequently, in 11 countries. It is now firmly established in all of them, except Zambia. *T. aripo* has also spread into Togo and Côte d'Ivoire from neighboring countries. It spreads at about 12 km in

the first year, and as much as 200 km in the second year. Today, the cassava green mite predator has been established on more than 400,000 m<sup>2</sup> of Africa's cassava-growing areas.

Coulibaly notes that since the release of *T. aripo*, benefits in Nigeria have been estimated at \$1.367 billion, followed by Ghana \$305 million, and Benin \$54 million.