ICRISAT
Happenings
Newsletter
29 January 2016
No. 1712


*Kenyan farmers double their income through improved groundnut varieties and market links.*

***Improved varieties and market linkages are the key***

# It pays to grow groundnut! Kenyan farmers show the way

Farmers in Kenya growing improved varieties of groundnut are getting more than double the price for their produce. Having attracted a big buyer through their quality produce, the farmers now have an assured market and are getting better prices.

## Bringing improved varieties from Malawi to Kenya

With its developed market for confectionery, peanut butter and other products, Kenya has been dependent largely on imports of groundnut from countries such as Malawi and Zambia. This in spite of many regions of the country having the potential to produce more groundnut.

Low productivity of local varieties (seed of improved varieties are inaccessible due to policy issues), growing varieties that are susceptible to disease, poor agronomic practices and low prices due to poor marketing channels have hampered increasing the area under groundnut. For instance, farmers in Elgeyo, Marakwet and Baringo counties (Rift Valley Province) in Kenya have been growing local varieties, popularly known as *Cheplambus* local. These varieties are late maturing, small seeded, low yielding and susceptible to disease. The production has therefore been low with yield of about 700 kg per ha compared to potential yields of 2,000-3,000 kg per ha.

"The main challenge is use of poor management practices. If farmers use suitable varieties, fertilizers, plant at the right time, and protect their crops from weeds, pests and diseases, they will get optimum yields," said Ms Lillian Jeptanui, Agronomist, Egerton University.

To close this yield gap, researchers from Egerton University and ICRISAT are working together in this region to promote improved varieties that meet end user demand. A number

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*Staff at the groundnut processing unit.*

of varieties that were developed by the ICRISAT breeding program in Malawi were sent to Kenya for evaluation. These were evaluated by Egerton University through a collaborative research process and about four to five varieties were selected and evaluated on farmers' fields. Three varieties were further selected by farmers and officially released, as they met the farmer requirements.

"We introduced CG 7 which farmers call 'Zambia' and other popular improved varieties such as the large seeded ICGV 90704 and ICGV 83708," said Dr Paul Kimurto, Professor, Egerton University. "We are also planning to conduct herbicide weed control trials, fertilizer microdosing, manure trials and drought screening trials so that we can give farmers the best technologies for improved productivity," he adds.

Different groundnut varieties are preferred for different uses. Large seeded groundnut is used for oil extraction while the small seeded nut is used for roasting and making peanut butter. Large seeded nuts fetch up to US$1.20 per kg as compared to US$0.50 per kg for the smaller seeded nuts.

## The challenges

There were three major challenges that farmers and researchers still faced - accessibility of seed, markets and the cost associated with shelling, which farmers felt was very high. To address these issues, an innovation platform was set up to train farmers on seed production and grain production for the market.

The Chair of the farmers group, Mr David Kiptoo referred to groundnut as the most stable crop in the regions. He said the challenges with the traditional varieties were that they were small seeded, low yielding and required more labor. In addition, the poor road deterred them from accessing urban markets. Brokers exploited them in the local markets.

After the new varieties were introduced, groundnut production in the area improved significantly. "With the new varieties the prices improved. The farmers and buyers loved it because it is big seeded, requires less labor during harvesting and shelling and yields more," he said.

## Linking producers to markets

According to Dr Kimurto, the biggest challenge farmers faced was lack of access to markets and low prices. "The road network is bad hence linkage to markets is poor. There is only one market day in a week and brokers collude to reduce prices from US$0.90 to US$0.50 per kg. Farmers are compelled to sell in order to buy maize which is the staple food," he says.

To ensure sustainability of groundnut production, the project identified and brought in a buyer – The Greenforest Foods Company. "This is a win-win situation as the company buys unshelled groundnut to reduce aflatoxin contamination and for increasing shelf life. Shelling of groundnut is laborious, leads to sore thumbs, and farmers experience losses of 4-6 bags per ha in the process," says Dr Kimurto. Last year, the company bought groundnut worth approximately US$12,000, and asked farmers for at least 1,000 bags more. Subsequently, the area under groundnut is now on the rise in Rift Valley.

At a recent meeting with the Feed the Future Kenya Accelerated Value Chain Development Program leadership team, the CEO of Greenforest Foods Limited, Mr Athanas Matheka, said they were planning to sign contracts with the farmers and pledged to purchase at least 100 tons a month from the farmers. "The market is there. All we need is to support farmers to produce more," he said.

Recently a delegation visited the company that included Dr Romano Kiome, AVCD Program Manager (Chief of Party) International Livestock Research Institute; ICRISAT staff Dr Moses Siambi, Director - Eastern and Southern Africa, and Principal Investigator of the project; and Dr NVPR Ganga Rao, Senior Scientist - Breeding, Grain Legumes.

Greenforest Foods is an organic and natural food manufacturer and distributor based in Nairobi, Kenya, that produces and distributes five natural food products including roasted groundnut to major retail stores across Kenya. ■

**Project:** Feed the Future Kenya Accelerated Value Chain Development Program

**Investor:** Feed the Future

**CGIAR Research Program:** Grain Legumes

**Partners:** International Livestock Research Institute (ILRI), International Potato Center (CIP), Kenya Agricultural and Livestock Research Organization (KALRO), Egerton University, Ministry of Agriculture, Livestock and Fisheries, ICRISAT

# New publications

**A Reliable Method for Phytophthora cajani Isolation, Sporangia, Zoospore Production and in Planta Infection of Pigeonpea**

**Authors:** Sharma M and Ghosh R

**Published:** 2016. Bio-protocol 6(2): e1706.

**Abstract:** Phytophthora blight caused by *Phytophthora cajani* (*P. cajani*) is a potential threat to pigeonpea production, affecting the crop irrespective of cropping system, cultivar grown and soil types. The primary mode of infection of *P. cajani* is sporangium and zoospore. Here we present a protocol for isolation of *P. cajani* from infected plants, sporangia and zoospore production and in planta infection technique of pigeonpea seedlings. These methods will be important tools to devise a platform for rapid and reliable screening against Phytophthora blight disease of pigeonpea as well as for host x pathogen x environment interaction studies.

http://www.bio-protocol.org/e1706

**Crop–Livestock Intensification in the Face of Climate Change: Exploring Opportunities to Reduce Risk and Increase Resilience in Southern Africa by Using an Integrated Multi-modeling Approach**

**Author:** Masikati P, Tui SHK, Descheemaeker K, Crespo O, Walker S, Lennard CJ, Claessens L, Gama AC, Famba S, van Rooyen AF and Valdivia RO

**Published:** 2015. In: Handbook of Climate Change and Agroecosystems: The Agricultural Model Intercomparison and Improvement Project Integrated Crop and Economic Assessments. ICP Series on Climate Change Impacts, Adaptation, and Mitigation, Part 2 (Vol 3). Imperial College Press, London, pp. 159-198. ISBN 9781783265633

Abstract: The climate of southern Africa is highly variable at most time-scales and follows a pronounced gradient with arid conditions in the west and humid conditions in the east. Over the last 100 years, temperatures have increased by about 0.5°C in the region and downward trends in rainfall have occurred. There has been an increase in drought events in the region between 1988 and 1992 and the frequency and intensity of El Niño episodes have increased. These have contributed to stagnant or decreasing agricultural production and worsening food insecurity in the region. Unfavorable climatic conditions and projected climate change are among the major obstacles to achieving food security in the region and also have dire consequences for macro-economic performance.

http://oar.icrisat.org/9215/

**Sustainable use of natural resources for crop intensification and better livelihoods in the rainfed semi-arid tropics of Central India**

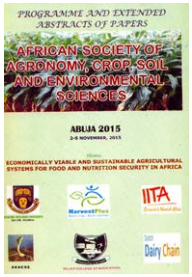
**Authors:** Wani SP, Chander Girish, Sahrawat KL, Pal DK, Pathak P, Pardhasaradhi G and Kamadi PJ

**Published:** 2016. Elsevier BV on behalf of Royal Netherlands Society for Agricultural Sciences.

**Abstract:** Soil fertility related degradation due to deficiencies of secondary and micronutrients mainly sulfur, boron and zinc in addition to macronutrients is mainly responsible for poor crop productivity, and the poor hydraulic properties of vertisols is responsible for about 2 million ha rainy season fallows. This study thus found that soil test based fertilization and landform management are the twin technologies for sustainable crop intensification in black soils of central India.

http://www.sciencedirect.com/science/article/pii/S1573521415300099

**Adoption of agricultural intensification options for increasing productivity of farmers in semiarid West Africa.**




**Authors:** Ajeigbe HA, Angarawai II, Motagi BN, Tabo R, Whitbread A, Kunihya A and Kamara AY

**Published:** 2015. In: 1st Annual Conference Proceedings of the African Society of Agronomy, Crop, Soil and Environmental Sciences (ASACSES), 2-5 November 2015, Abuja, Nigeria.

**Abstract:** To ensure sustainable increase in agricultural productivities of smallholder farmers in West Africa, agricultural scientists have developed varieties of component crops and research institutes are collaborating with various stakeholders to disseminate these technologies to farmers and provide market and financial linkages. On-farm grain and fodder yield advantage of 20-50% were recorded by farmers. Phosphorous fertilizer application on legumes increased yields by 26-62%. Increase in plant hill population led to corresponding increase in millet yield by 48%. Cultivation of improved varieties coupled with fertilizer application and appropriate plant hill population will increase productivities of smallholder farmers in semi-arid West Africa.

http://oar.icrisat.org/9217/

# Modern data management tools for precision breeding

To equip breeders to efficiently manage their data, a training course on modern integrated breeding tools using Breeding Management System (BMS) of the Integrated Breeding Platform was organized.

Creation of multi-location evaluation trials, single, multi-trials, quantitative trait loci analysis and database software such as Molecular Breeding Design Tool and Genotypic Data Management System were explained to the participants.

The Indian Institute of Rice Research (IIRR), Hyderabad, in collaboration with Breeding Informatics Unit, ICRISAT, organized the training from 18-27 January 2016 at IIRR, Telangana. This is the first course organized by any institute of the Indian Council for Agricultural Research (ICAR) exclusively on BMS.

The course, specially designed for ICAR was attended by 24 scientists (18 men and 6 women). From IIRR, Dr P Revathi and Dr T Ram were the Course Directors and from ICRISAT, Dr Abhishek Rathore, Mr Anil Kumar, Mr Praveen Reddy, Ms Roma Rani Das and Dr Sarita Pandey were the resource persons. The participants visited ICRISAT on 22 January to see and discuss BMS implementation. ■

## Farewell

**Dr Eva W Rattunde**, Principal Scientist (Sorghum Breeding & Genetic Resources), Dryland Cereals, Mali, concludes her assignment with ICRISAT effective 31 January after over 25 years of valuable and dedicated service to ICRISAT.

**Dr Henry FW Rattunde**, Principal Scientist (Sorghum Breeding & Genetic Resources), Dryland Cereals, Mali, concludes his assignment with ICRISAT effective 31 January after over 25 years of valuable and dedicated service to ICRISAT.

We wish them all success in their future endeavors.

**Dr George E Okwach**, Assistant Director - West and Central Africa (WCA) and Project Manager, HOPE project for Sorghum and Millets, Dryland Cereals, Bamako, Mali, concludes his assignment with ICRISAT effective 31 January after over five years of valuable and dedicated service to ICRISAT.

**Dr CN Reddy**, Head, Medical Services, Field Medical Unit, India, concludes his assignment with ICRISAT effective 31 Jan after over 17 years of valuable and dedicated service to ICRISAT.

## Readers' comments

The articles show a deepening and shared partnership with the host countries and regions where ICRISAT is performing its role as an agent of change with inputs of technology, expertise and capacity building. This is very heartening to see, local extension agencies and agencies now have ownership of projects and presumably are sharing in overall planning and budget settings as equal but complementary partners with ICRISAT. The combining of bottom-up with top-down strategies aiming to build resilient agricultural and value-chain systems can help provide the much needed local prosperity, to enable subsistence farmers to achieve surplus incomes and greater economic independence.

Congratulations to ICRISAT, and to the newsletter team. These changes speak for themselves.

***Dr Robert John Redden**, Plant Breeding and Genetics, RJR Agriculture Consultants, Australia*

The "climate resilient agricultural sector in Mali" impressed me. If the scientists succeed, it would be significant contribution to Mali's agriculture.

***Dr YL Nene**, Chairman Emeritus, Asian Agri-History Foundation, Telangana, India*