

# Highlights

## CIAT in Africa

No. 35  
June 2006

The Highlights series summarises research results and policy implications from the work of CIAT and its partners in Africa

### Soybean: a new role in western Kenya

**S**oybean (*Glycine max*) is an annual legume crop grown in Kenya. It was introduced from Uganda as early as 1904 and although it has been promoted by various national and international organisations over the years, it still remains a minor crop in farming systems throughout the country. This initiative, recently catalysed by TSBF-CIAT, aims to broaden the exposure of rural households to soybean in ways that enable them to participate in the crop's development in western Kenya. This was a response to the need for a high-value cash crop that could be grown and marketed by large numbers of small farmers and which could drive their investment in improved soil fertility. Project partners are the Kenya Agricultural Research Institute, Kenyatta University, the Lake Basin Development Authority, the Kenya Forestry Research Institute, the International Maize and Wheat Improvement Centre (CIMMYT), and the International Institute for Tropical Agriculture (IITA). The new initiative aims to: (i) capture and hold the interest of farmers in soybean through an information campaign (to dispel unfounded myths and emphasise its benefits), and (ii) create a desire amongst farmers to process and consume soybean in different forms through training in processing. Underlying this approach is the need to promote and encourage sustainability in the soybean industry in the region through encouraging community-based seed production, improving links with the private seed sector, and providing training in seed storage and marketing.



Farmers at the Riana (Kisii district) location making observations in order to rank different soybean varieties using their own criteria.

#### Countering the unfounded myths

These myths include, but are not limited to the following: (i) soybean is not delicious, (ii) soybean food should be targeted at children<sup>1</sup>, (iii) soybean is not easy to cook, (iv) the method of processing soybean is complicated, and (v) soybean is unlikely to become a crop that is marketable in bulk at the commercial market in the foreseeable future. If these wrong impressions are not countered with research evidence and practical demonstration at farm household and community levels, they are capable of undermining all efforts geared towards promoting the adoption of soybean in this and other areas of East Africa.

#### Creation of awareness

Creating awareness is an important step in soybean market development in western Kenya and serves two main purposes. The first is to correct the

unfounded myths that have contributed to making soybean a minor crop in the farming systems of western Kenya despite its great potential and the past efforts aimed at promoting the crop. The second is to bring to the attention of farmers some of the key recent findings about soybean to further encourage them to invest in this crop.

### **The unfounded myths**

Available evidence from Nigeria and South Africa and from Argentina, Brazil, China, Japan, and the USA indicates that these myths are mere impressions and should not be taken seriously. Experience from *Chitsva* and *Matope* villages in Zimbabwe shows that local farmers can process soybean into as many as 18 different products (such as *maputi*, soy bread, soymilk, and scrambled soy). There is also evidence to show that everyone (not just children) can benefit from consuming soybean since it provides high quality inexpensive protein, vitamins, minerals, and fibre with no cholesterol or saturated fat.<sup>2</sup>

### **Soybean's benefits**

Soybean contains a unique compound called genistein, which has been demonstrated in many studies to possess remarkable powers of healing and disease prevention. Eating small amounts of soybean protein daily can prevent or lower the risk of heart diseases,<sup>2</sup> breast, colon and prostate cancer. Soybean is also good for people with lactose intolerance and it is known to ease the symptoms of menopause. People who suffer from digestive problems or diabetes also stand to benefit from soybean-based food.

### **Training is key**

Appropriate training enables farmers to take advantage of the benefits of growing and processing soybean. Rural households are being trained in various methods of soybean processing that lead to different end products. This provides households with a range of new processing options to choose from, depending on which end product they prefer.

### **Attributes of soybean**

Soybean has the capacity to contribute to poverty alleviation, strengthen family nutrition, and improve the sustainability of both small- and large-scale agricultural production units.

- Soybean improves soil fertility by adding nitrogen to the soil.
- The seed of soybean contains up to 20 percent oil which can be

extracted and used for cooking, making margarine, and other industrial uses.

- Soybean has high protein content (up to 40 percent).
- Soybean is a cash crop that can provide farmers with cash income to purchase essential farm inputs such as fertiliser and meet other family needs.

### **Impact on farmers' behaviour**

The level of interest shown by both men and women farmers during evaluation of 12 soybean varieties at 5 locations was high. In these trials, 11 improved soybean varieties (provided by IITA and Makerere University, Uganda) were compared with the local variety, Nyala. The farmers generated their own criteria for evaluation of the soybean varieties, such as number of and size of pods (grain yield), plant height and size of leaves (biomass), ability to grow in soils of low fertility and in areas of low rainfall (environmental adaptability) and cooking time (farmers' perceptions). Across the five locations, a total of 116 male and female farmers participated in the soybean variety evaluation in the long cropping season of 2005.

Across gender and location, the most important criteria used in evaluating the improved soybean varieties were number of pods and the maturity period. Male farmers prefer soybean varieties with large-sized grains for marketability and high market prices, while female farmers prefer them because of their perception that such varieties cook faster. Some varieties were acceptable in certain locations. In order to avoid the risk of low adoption, a blanket recommendation of soybean varieties that are accepted only in selected locations must be avoided. From this analysis, TGX1740-2F is the only variety that can be recommended across locations and that is clearly better than the existing farmers' own variety, Nyala.

In future, the evaluation will be extended to cooking and eating of the soybean varieties to further verify issues related to allergy to soy protein, as well as to estimate the influence of variety on taste. Further questions to identify those farmers with most knowledge of the crop will be included in the evaluation. Other stakeholders such as traders and local processors of soybean will also be included in future evaluations. Present efforts are underway to link soybean producers to large-scale oil and food processing industries in Kenya.



For more information contact:  
Jonas N. Chianu  
[j.chianu@cgiar.org](mailto:j.chianu@cgiar.org)  
or  
Bernard Vanlauwe  
[b.vanlauwe@cgiar.org](mailto:b.vanlauwe@cgiar.org)

CIAT  
Africa Coordination  
Kawanda Agricultural  
Research Institute  
P.O. Box 6247  
Kampala, Uganda

Phone:  
+256(41)567670

Fax:  
+256(41)567635

Email:  
[ciat-uganda@cgiar.org](mailto:ciat-uganda@cgiar.org)

Internet:  
[www.ciat.cgiar.org](http://www.ciat.cgiar.org)

*We gratefully acknowledge donor support from the Rockefeller Foundation.*

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