

A model for promoting a versatile but yet minor crop: Soybean in the farming systems of Kenya



Tropical Soil Biology and Fertility (TSBF) Institute of the International Centre for Tropical Agriculture (CIAT)



Agronomy: Soybean intercropped with maize



Community training on soybean processing



Soybean marketing



Soybean grains and processed products

Take-Away Message

Benefits of soybean	CIAT's mission	CIAT Product Line	Contributions to MDGs
<p>Livelihoods: Important food, feed, oil, cash crop, raw material & bio-energy</p> <p>Soil fertility: Fixes 40-120 kg N from atmosphere.</p> <p>Savings: On investment in fertilizers.</p> <p>Nutrition and health: Has 40% protein, 20% oil, no cholest terol, and omega 3 fatty acids that reduces the risk of chronic diseases (e.g. HIV).</p>	<p>Contributes to:</p> <ul style="list-style-type: none"> Hunger reduction (esp. through tier 1) Poverty reduction (esp. tiers 2 and 3) Quality collaboration (see the Strategic Alliance) Improved natural resource management (e.g., N-fixation) Capacity building and training of key stakeholders 	<ul style="list-style-type: none"> Fits in product line 4 [Innovations of ISFM] Links to product line: <ol style="list-style-type: none"> [Maximizing benefits for the poor] [Vehicle for rural development] [Improving livelihoods of small farmers] [Value addition] <p>So includes both CIAT's RDC's</p>	<ul style="list-style-type: none"> Eradication of extreme poverty & hunger (Goal 1) Empowerment of women (Goal 3) Improvement of child nutrition (Goal 4) Improvement of cleanliness, sanitation, health, mothers nutrition (Goal 5) Improvement of health & nutrition, increase in income & reduction in susceptibility to HIV (Goal 6)

Pillars for the three-tier-approach

Strategic alliance (Partners)

Members of the alliance are partners playing specific roles in the resource-to-consumption chain and include: input dealers • researchers • credit providers • information organizers and disseminators • NGOs • social workers • government ministries • community banks • quality controllers • large scale and cottage industries • processors and traders.

Awareness creation

This is with respect to agronomy, post harvest activities, marketing, nutrition, health, competitiveness, profitability, natural resource management and cost savings. This pillar acts to properly motivate the farmers and other rural dwellers to get tactically involved in different soybean enterprises



Diagrammatic representation of the three tier approach

Capacity building and training

This is carried out to ensure sustainability of the concept and approaches in all the tiers.

Successes in sub-Saharan Africa

The Nigeria case:

- Double yields: from 340 kg ha⁻¹ to 740 kg ha⁻¹.
- 170% increase in production.
- 228% increase in number of farmers.
- 150% increase in soybean products available for sales and consumption.
- 900% increase in processing companies.

The Zimbabwe case:

- From 55 participating smallholder farmers in 1996 to 50,000 in 2006.
- Widespread processing and consumption of soymilk, soy yogurt, and other soy products.
- Use of SoyCow (soymilk making machine) by groups of small farmers to generate incomes.

Reasons for the successes

A combination of methods including: collective action, processing and development of cottage industries, value addition, product branding, marketing, information exchange, good agronomy, community involvement, trade and credit facilities

Failures in sub-Saharan Africa

Failures in Kenya in the past were contributed to by lack of awareness on processing, utilization, low yield, lack of market, weak policy support, and low prices.

Learning from the past: a reflection of soybean failure in Kenya

- There is need for understanding the reasons for successes in Nigeria and Zimbabwe and the failure of earlier soybean development in Kenya.
- Using the understanding to create a model 'three-tier-approach' for sustainable soybean promotion in Kenya, supported by a Strategic Alliance of Stakeholders and extensive training, capacity building and awareness creation.

Objective

Maximize the use and benefits of soybean through improved agronomy, marketing, processing, value addition, nutrition, training, outreach and income generation in Kenya.

Materials and Methods

The use of a three-tier-approach for soybean market development supported by three pillars: strategic alliance of all stakeholders, extensive training and capacity building, and awareness creation on all the benefits of soybean at all levels. The target groups and development stakeholders are fully involved in all the tiers. For sustainability, the use of locally available resources was emphasized.

The three-tier-approach

This model is about intervening at household level, community level, and linking soybean producers with large-scale feed and food industries that use soybean for manufacturing but presently import large quantities of soybean used for manufacturing.

The first tier focuses on the household-level production and aims at training household members on ways of processing and consuming soybean.

soy bread, cakes, biscuits, etc. This prevents produce glut at household-level that could become a disincentive to further production, capable of stalling the whole process. Tier 2 also creates new tastes and new demand through the creation of new products [e.g., soymilk, soy yogurt, meat analogues] from soybean

The second tier focuses on the community level. Surpluses of soybean production at household-level are absorbed here and processed into: soymilk, yogurt,

The third tier, also known as industrial level soybean market development involves linking farmers to large-scale feed and food processing companies and industries for import substitution and to clear the market at prices determined in the Strategic Alliance meetings for different product qualities.

Key Next Steps

1. Scale out/up to all east and central Africa region.
2. Increase participation of micro-finance agencies.
3. Increase the involvement of the youth.
4. Increase awareness on the high potential benefits to the poor.
5. Adapt model to other farm enterprises.

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Results and outcome so far

- The model has increased the confidence of Kenyan farmers to produce soybean (over 4000 individual farmers).
- Thousands of farmers' groups (over 300 farmer networks) and individual farmers are presently benefiting from this approach and are beginning to take advantage of all the benefits (food, feed, oil, cash crop, soil fertility improvements, etc.) of soybean.
- The organization of stakeholders in a strategic alliance to strengthen the model is yielding numerous benefits (e.g., increase in income, availability of credit for farm inputs, availability of farm inputs, assurance of market at mutually agreed prices, ready availability of market information, public-private partnership).
- Interest of large-scale feed/food processing companies rekindled (e.g. BIDCO, NUTRO, SOYAFRIC, FARMERS CHOICE).
- 572 farmer/patient groups trained on food fortification, incorporation, stand-alone-ready-to-eat products, nutrition, hygiene and sanitation, and business management.
- Employment generation.
- Farmers' bulking of produce is generating tangible results with some farmers already delivering grains with market-preferred traits to companies at agreed market clearing prices.
- Many poor farmers testified to increased ability to pay children's school fees and purchase of farm inputs.
- Some farmers are beginning to remove sugarcane (currently low-cash yielding) from their lands, replacing them with soybean.
- Small producers have attained profits of as high as KShs 42,685 ha⁻¹ from improved cultivars.
- A farmer's testimony: "Soybean consumption has relieved my high blood pressure and diabetes".
- New knowledge of varieties that perform well under different soil, climate and geographic niches in Kenya.
- Soybean value addition is highly profitable, increasing net returns four to 14 times (Table 1).

Table 1: Economics of value-addition for soymilk under two price scenarios

Budget item	Scenario	
	Pessimistic	Optimistic
5760 liters of soymilk @ KShs 40/liter (2/3 of price of dairy milk)	230 400	-
5760 liters of soymilk @ KShs 107/liter (Supermarket price)	-	614 592
Total revenue/month	230 400	614 592
960 kg soybean grains @ KShs 40/kg	38 400	38 400
11520 packaging units @ KSh1.05 each & electricity @ KShs 7.500/month	19 586	19 586
Salary of Operator @ KSh11 250/month & of Packer @ KShs 7 500/month	18 750	18 750
Miscellaneous expenses @ 10% of all the above costs	7 675	7 675
Total variable cost/month	84 421	84 421
Net benefit/month	145 979	530 171

All values are in Kenya Shillings (KShs.); KShs. 75 = US\$1

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