

Soybean processing and utilization: The way to good health

Introduction

Tropical soil Biology and fertility is an institute of International Center for Tropical Agriculture. Its main activities include research on the role of biological and organic resources in tropical soil biology and fertility and its relationship to the natural and social environment in order to provide farmers with improved soil management practices to sustainably improve their livelihoods.

TSBF-CIAT strategy of improving livelihoods through science led research has been linked to health (nutrition), food consumption, and markets and it addresses the real needs of the poor; interacting between the components of soil fertility, production yields, markets, processing, nutrition and health. Successful resource management and sustainable agricultural productivity need to be pro poor i.e. it must touch the realms of soil fertility, markets, income generations, food/nutrition security, nutrition and health

In above context, a project aiming at using soybean processing and utilization as an entry point to solving nutrition and health problems of rural and urban households, affected by HIV/AIDS in targeted areas in Kenya, is being implemented by TSBF-CIAT in collaboration with Academic Model for Prevention And Treatment of HIV/AIDS (AMPATH). Soybeans deliver high quality nutrition in small doses, which is important. Furthermore soybean proteins and calories can help prevent the "body wasting" associated with HIV/AIDS.

The Project is "Soybean processing and utilization for improving the health and nutrition of rural livelihoods in HIV affected areas of Kenya".

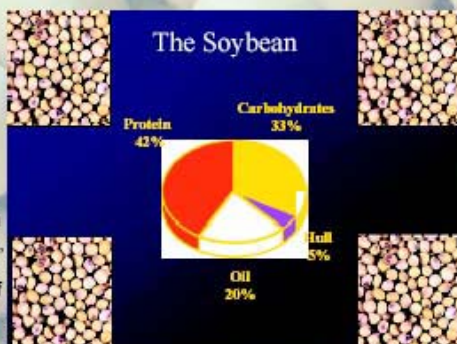
Soybean processing and utilization is being used as an entry point

Why Soy Beans?

Nutritional benefits

Proper nutrition keeps the body fortified to support the best possible immune function, prevent nutrition-related immune deficits, and help to ward off opportunistic infections. Therefore:

- Soybean plays a role in nutritional maintenance, an essential feature of optimal effectiveness of medicine while helping to minimize nutrition-related side effects.
- Soybean delivers high quality nutrition in small volumes, which is especially important because inadequate food is common.
- Soybean owes its importance to the health sector because of its high level of protein (40%) and oil (20%).
- Soybeans are one of the non-fish sources of essential omega three fatty acids which may help reduce the risk of coronary heart disease. Compared to other beans like navy beans, soybeans have a higher fat content, but this fat contains these heart healthy omega threes.
- Protein quality is good with no cholesterol and lactose (i.e. can lower blood cholesterol), thus improving heart function
- Fat contains linolenic acid that is essential for absorption of nutrients and is a precursor of hormones that regulate growth of healthy cells
- Protein contains isoflavones and genistein for effective health improvement (*reduced osteoporosis through increased bone density*).
- Protein contains protease inhibitors (universal anti-carcinogen) and phytic acids capable of blocking action of cancer-causing enzymes and tumors respectively
- Contains adequate amounts of B vitamins and iron
- When properly processed, soybeans can be incorporated into traditional dishes without altering the taste or texture



Soil Conservation

Being a leguminous plant, the dual-purpose soybean has the ability to fix significant amount of atmospheric nitrogen to soil through the formation of nodules on roots. Also a result of the strong and fairly deep root system and dense foliage, this crop has excellent ability to reduce soil erosion.

Cash Income

Soybean is a tradable commodity and can be processed to produce Soymilk and other products which can be sold to generate income thereby improving economic status of individuals



Goal

- To improve rural livelihoods in Kenya through Improved nutrition, enhanced access to income, and sustainable agricultural production by increasing soybean production and linking production with available markets

Food and Nutrition Training Strategies:-Training is done at three levels. They are:

Household level processing

- Training of clients/patients at AMPATH using one-day training at a time and spread over several months
- Training of Farmers at Butere/Mumias using two day

Community level processing and

Large scale level processing

Using mainly fortification, incorporation into traditional dishes and product development methods.

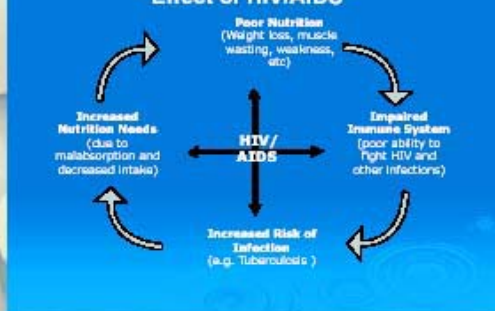
Training Sessions

- The training of Trainers is done in English while training of farmers is done in Swahili or local vernacular depending on where the training is done.
- During these trainings, other topics other than soybean processing and utilization are covered. Such topics include:
 - Food Hygiene and sanitation
 - Small business management
 - Nutrition education
 - Other nutrient dense traditional foods in the area and
 - HIV/AIDS in relation to nutrition and food



Some of the processed products from soy beans that can be used for generation of income

Effect of HIV/AIDS



Potential Bioactive Constituents in Soy

Genistein

Glycetein

Daidzein

Equol

Phytic Acid

Glycocolins

Saponins



Protease Inhibitors

Lanasin

Lecithin

Amino Acids

Peptides

Protein

N-3 fatty acids

Fiber

Globulins



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