

# **An Overview of the Use of Soy in Tanzania**

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## **Presentation structure**

- History of Soybean in Tanzania
- The Soybean Project by SUA and outcomes
- Conclusions, recommendations and way forward in promoting soy in the country

# Introduction

## History of soy in Tanzania:

- First introduction: Amani (Tanga) by Germans 1907
- During World War II British tried (but failed).
- 1955: breeding work started and was successful by 1960s to reach a steady production of 3,000 tons by 1970s.
- Strong interest in expanding use in human foods arose.
- Soybeans bought by National Milling Corporation (NMC) and 1973 tests were run in 3 villages to make whole soy flour
- By 1974 maize flour was fortified with soy flour (3:1) for porridges and 9:1 for wheat flour for breads.

## History of soy in Tanzania contd...

- Village projects had been established showing bright future for soy
- Hand operated equipment used by villagers to process soybeans into whole soy flour, soymilk and tofu, But excessive labour requirement hampered the project (Moshia, 1976).
- 1976 Tanzania Government established a weaning food plant at NMC (assistance from Colorado State University).
- Intention: To produce 700-800 tons by the Low Cost Extrusion Cooker (LEC) in first year. Cooker started work in 1978.

## History of soy in Tanzania contd...

- By 1978: NMC was using low-cost extrusion cookers to make whole soy flour and cereal-soy blends (Wilson, 1979).
- 1978 lisha (corn-soy-milk product) produced (572 tons) to feed malnourished children in health clinics.
- 1979 Second International Workshop on Low-Cost Extrusion Cookers (much attention given to cereal-soy blends) was held in Tanzania

(<http://www.thesoydailyclud.com/SFC/history&s18b.asp>)

## History of soy in Tanzania contd...

**Production:** *Does Tanzania grow soy? Yes,*

All places where beans can grow or where maize can be cultivated. Needs about 3 months of rainfall.

It was reported in Cabinet last year that Tanzania produced about 6,000 tons while the demand by the feed industry alone was 150,000 tons. Deficit met by imports from other countries.

- Currently, soybean is cultivated in Ruvuma region (Songea), Morogoro (Kilosa, Mvomero and Morogoro Rural districts), Kagera region, some parts of Iringa and Mbeya, Rukwa, Arusha, Lindi region (Nachingwea districts) plus others.

## History of soy in Tanzania contd...

- Little if any is exported for use in neighbouring countries
- It has only been difficult to grow soy as there has not been a well established market for the crop and probably lack of seed.
- At present there is a big awareness of the potential of this crop and demand as gathered from market traders seem to increase greatly but there is still ignorance on how to process and use it as family food.

## Health aspects

- *Are consumers becoming more health conscious?*
  1. Yes, malnutrition and HIVAIDS have made people be concerned with the health of their children and also of the sick. This is both in cities and even in the rural areas.
  2. Even those who are not sick are nowadays aware of excessive weight gains as this threatens their lives, particularly in cities and towns, where obesity is nowadays seen as a threat.

## Government of Tanzania (GOT)

- *Does the GOT have particular knowledge about soy?*

Yes, the GOT is very much aware of soy and its potential for the country in relation to improving health, reducing poverty as well as improving soil fertility in places where soil fertility is a problem and fertilizers are not available or unaffordable.

- In November 2005, the Ministry of Agriculture and Food Security organized a stakeholders workshop to review the status of this crop in the country and chart out strategies to promote production and utilization of soybean in Tanzania. The proceedings of this workshop are in press and will soon be out (if they have not been out by this moment).
- The GOT is fully aware of the health benefits of soybean

## **Then, why hasn't soybean picked up?**

In Tanzania, it was introduced in 1907. It has failed to excel as food crop for the following reasons:

- (a) Limited knowledge on its **potential** as food and non-food
- (b) Low **production** (production constraints)
- (c) Difficulties in **processing** (knowledge and technology)
- (d) Limited knowledge on **utilization** options
- (e) Difficulties in **marketing** the crop

## *Agronomic potential*

- Increases soil fertility (soil nitrogen)
- Has fewer pests and diseases compared to other common legumes, e.g., cowpeas and pigeon peas.
- Stores better than other legumes

## *Health benefits of soybeans*

- Contains all three macronutrients required for good nutrient (i.e., proteins (40-45%), lipids (18-20) and carbohydrates (30%).
- Ash (4.9%),
- Vitamin B (CGIAR, 2001)
- Complete protein comparable to meat, milk and egg protein
- Provides all the essential amino acids in amounts needed for human health.
- Good cow milk substitute for lactose intolerants
- No cholesterol

## *Health benefits of soybeans contd...*

- Good food for people living with HIV/AIDS ([http://www.heartlandfields.com/soy\\_health/hiv.htm](http://www.heartlandfields.com/soy_health/hiv.htm))
- Contains isoflavones (anticancer compounds)
- Low in saturated fat (soy lower blood cholesterol levels as well as lipoproteins, both known as risk factors for heart disease)
- Reduced risk of osteoporosis
- Protection against various cancers (breast, colon, prostate and skin)

## *Utilization options*

- Weaning food (Annan and Plahar, 2003)
- Roasted soybeans (ingredients in traditional confectionery products and snacks)
- Immature whole green soybeans (as vegetable).
- Germinated soybean and soybean sprouts (as vegetable).
- Dehulled whole beans full fat flour (bakery and dietetic food)
- Very finely ground full fat flour (as spray-dried milk alternative)
- Oil source (shortening, margarine, cooking oil and salad dressing, paint, varnishes, printing inks, lecithin) (Gibson and Benson (2002), oil highly digestible (CGIAR, 2001).
- Soy meal for animals (soybean cake)

## *Utilization options in Tanzania*

### **1. As human food**

- Porridges (*uji, ugali*, weaning food)
- Soymilk
- Drink (Coffee-like)
- Added to vegetables (ground/paste)
- Bread, buns, *chapatti, cake, biscuits*
- Snack (like groundnuts)
- Oil source??

## *Utilization options contd...*

### **2. As source of cooking oil**

(good quality, highly digestible polyunsaturated, no cholesterol)

### **3. As animal feed**

- Poultry
- Pigs
- Dairy animals
- Beef animals

## **Soybean Study by SUA**

To promote soybean production, processing, utilization and marketing for poverty alleviation and improvement of health in Morogoro region.

# Methodology

- Implemented by SUA since 2002.
- Location of Project: Msimba, Kwadoli and Fulwe villages in Kilosa, Mvomero and Morogoro districts, respectively.
- Activities: Household surveys, soybean production, processing, utilization and marketing studies.

# Results

## *1. Household survey:*

- Showed very low livestock keeping and very little consumption of legumes, mostly beans purchased from local markets.
- Other legumes were cowpeas and pigeon peas
- Low protein consumption was believed to be the root cause of poor nutrition and malnutrition in households in the study area.
- *Soybean could help in reducing this problem.*

## ***2. Soybean production:***

- Very well accepted by all villages
- Land preparation (deep tillage) proved to be a problem in the study area
- Except when there was a drought, soybean performed well, yielding up to 500 kg/acre in fertile places.
- Total production was 7 and 8.4 tonnes for years 2004 and 2005, respectively. This was greatly affected by premature ending of the rainy season.
- There were no serious pests but crickets destroyed the seedlings at time of emergence.
- Seed viability was noted in year 2003 as a problem.

### *3. Soybean processing*

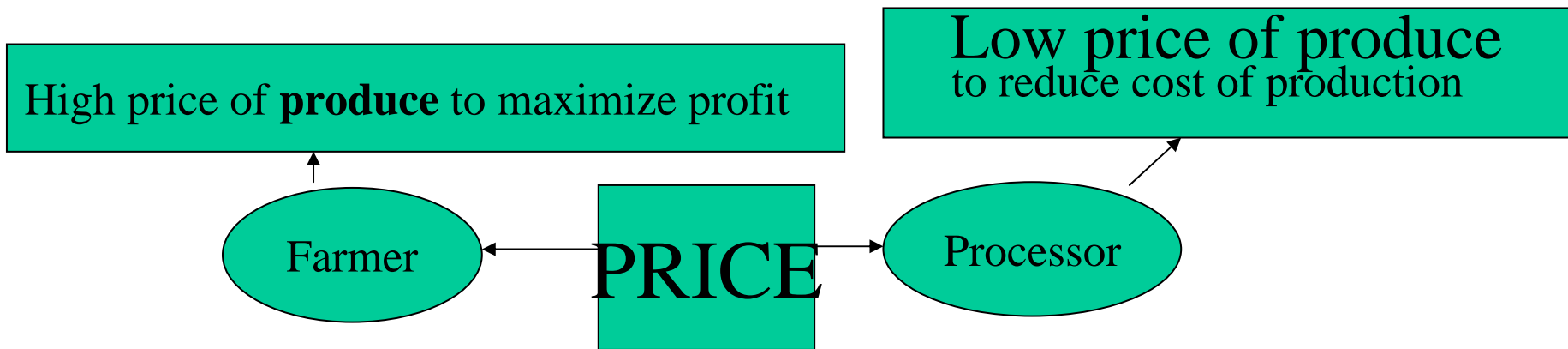
- Training was well received and practised
- Manual removal of hulls was a very tedious and time consuming operation.
- Purpose of dehulling (to remove indigestible sugars:raffinose and stachyose and protease inhibitors has been explained.
- Work was initiated and a hand operated dehuller has been fabricated and is time saving and carries wet dehulling of soybean at village level.
- Efforts are also underway to produce another motor-operated machine working on the same principle for use by medium scale processors.
- To attain drying within the shortest time possible is also a problem being addressed to minimize deterioration of the wet-dehulled soybeans.

## ***4. Soybean utilization***

- Villagers have been exposed and are currently practising different ways of consuming soybean, mainly as porridges (thin and thick), deep fried products (buns); *chapatti*, *roasted soybeans*, *coffee-like soy drink*, *soymilk* (See the Project Booklet on “*Soya Kwa Lishe Bora*”).
- Soybean is currently incorporated in weaning food formulations in Turiani Hospital (TOTOMIX Unit), in the nutrition rehabilitation ward.
- Soybean education and usage has also been extended to Mgolole Orphanage centre, Morogoro.

## 5. Soybean marketing

- This has so far been observed as the biggest bottleneck undermining soybean promotion in the region and probably in the country.
- There is a tag of war between **farmers** and **processors/traders** regarding price of soybean



Who should start this war? farmer or processor??????????????

## Marketing contd....

- Farmers want **high selling prices** to maximize returns from sales while processors want **low buying prices** of this raw material
- Government intervention is definitely needed here to assist the farmers to have assured market so that surplus soybean is produced for the processing industries and for sale outside the country.
- If successful nutritional problems will be reduced and so will be poverty.

# Conclusions

- Soybean is a very promising crop whose potential has not yet been realized by many in Tanzania. It can be depended on as food, animal feed, medicine.
- It is an inexpensive protein and oil source, that could offer a sustainable way of dealing with malnutrition problem (PEM, Anaemia, Vitamin A deficiency) and deficiency of other micronutrients in this country. It is cheaper than meat, fish and eggs and virtually every household can grow. It could also assist the people living with HIV/AIDS through offering better nutrition.
- It can also be traded on as an income earner and thus reduce poverty in the country
- If exploited, it could benefit the nation in bringing to an end the never decreasing malnutrition.

## Recommendations

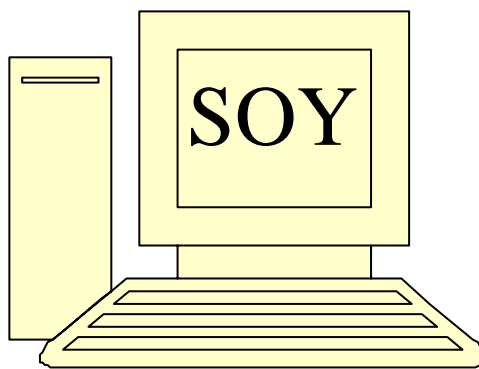
- All stakeholders in the production, processing, utilization and marketing and other relevant fields need to work together as a team in order to see this crop picking up in the country.
- This move will be beneficial both for income generation and improvement of health of ALL Tanzanians.

# **Acknowledgement**

The presenter is very grateful to WISHH for invitation into this meeting and for future collaboration.

Thank you for being touched with soybean

**SOYA**



**BEAN**

Let us help the nation in promoting soybean