

# **3rd INTERNATIONAL SUNFLOWER SYMPOSIUM FOR DEVELOPING COUNTRIES**

Imperial Resort Beach Hotel, Entebbe, Uganda

December 9-13, 2007

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## **SUMMARY OF DISCUSSIONS**

### **1.0 INTRODUCTION**

#### **1.1 Background**

The 3rd sunflower symposium for the developing countries under the main theme “Sunflower for Development” took place in Entebbe Uganda from 9th – 13th December 2007. The symposium was organized under the auspices of the International Sunflower Association (ISA) in conjunction with the Ministry of Agriculture Animal Industry and Fisheries (MAAIF), through National Agricultural Research Organization (NARO) in collaboration with the private sector, development partners and universities involved in sunflower research and development. These included Mukwano Group of Companies, BIDCO, Uganda Oil Seed Producers and Processors Association (UOSPA), Agricultural Productivity Enhancement Project (APEP) and Makerere University. The venue was Resort Beach hotel Entebbe.

The objectives of the symposium were in line with the objectives of ISA. Broadly it is to improve international cooperation and exchange information on the promotion of research, agronomy, processing techniques and nutrition associated with the entire value chain of production, marketing, processing and use of sunflower.

In the symposium a total of 88 participants were drawn from 11 countries where sunflower is among the important crops. The participants were from public research institutes, government ministries, universities, private sector, non governmental organizations, community based organizations and farming community from mainly developing and not excluding developed countries (Uganda, Kenya, South Africa, Sudan, Senegal, India, Romania, Iran, Australia, Italy and France).

The symposium embraced a group of related activities including paper presentation and field trips. A total of 19 oral and 3 poster scientific papers were presented. The papers covered three themes namely: (1) sunflower improvement, (2) sunflower production and management, and (3) economics and marketing of sunflower. The field trips covered sunflower variety trials at Mukono Zonal Agricultural Research and Development Institute (MuZARDI), Mukwano factory and their sunflower production fields in Masindi. There was also a visit to BIDCO private sector company at Jinja in which the participants interacted with all stakeholders involved in vegetable oil production.

## 1.2 Opening speeches

### Opening speech 1:

ADDRESS BY HIS EXCELLENCY PROF. GILBERT B. BUKENYA VICE PRESIDENT OF THE REPUBLIC OF UGANDA

Secretary General International Sunflower Association Andre Pouzet

PS MAAIF

DG NARO

Development partners

All participants

Ladies and Gentlemen

I welcome you all to the 3rd Sunflower Symposium for Developing countries, which is the first high profile post CHOGM meeting taking place in Uganda. I commend the organisers for choosing Uganda to host this important symposium, but least of all, because Uganda is predominantly an agricultural country. Sunflower itself has lately assumed centre stage as a key crop which is highly positioned in the transformation drive of our rural people's lives, to fast track their development.

Today agricultural experts, community leaders, politicians and individuals are engaged in a momentous task of improving this sector:

- i. to commercialise it
- ii. to make it sustainable

Part of your reason for holding this symposium is therefore to suggest practical ways and means of achieving these two cardinal objectives. This symposium will be deemed successful if better knowledge and information on sunflower is laid down before us. Among other things we look forward to receive information on sunflower seed technology, higher quality sunflower seeds, value addition methods and marketing techniques.

#### UGANDA'S SUNFLOWER INDUSTRY

I am aware that sunflower is a global oil seed crop of economic importance next to soybeans and groundnuts. In Uganda, it has become the most important oil seed with a total acreage of 255,600 hectares whose yield amounts to 306,720 metric tonnes. Processed this translates into 76,680 metric tonnes of sunflower oil worth Shs. 138 billion (US\$75 million) ; 236,000 tonnes of cake worth Shs. 34.5 billion (US\$ 19 million). Lately, the number of sunflower mills placed in the sunflower growing zones has greatly boosted employment opportunities in the rural areas.

The type grown in Uganda, Sunfola, yields about 2500 Kg/ha and has an oil content of between 25-40%. This type is highly appreciated by consumers as a source of protein and livestock feed.

On the medical side, sunflower oil is an additive in the manufacture of hydrogenated oil. It is also a source of linoleic acid, which washes cholesterol disposition in the coronary arteries of the heart.

Many of our local industries too, such as Mukwano are using sunflower oil in manufacturing soaps and cosmetics. In line with the theme of this symposium 'sunflower for development', our government has for a long time recognised sunflower as one of the crops, which will form the bedrock of commercialising agriculture in this country. It is categorised among those activities, which can generate periodic income under our Prosperity for All, (PFA) program.

In those areas where it is predominantly grown i.e. the North and North East, the government intervened to encourage its growing basing on the following considerations:

- Suitability of the agro-ecological environment.
- Profitability (returns to investment).
- Market potential.
- Potential for value addition (in form of infrastructure and skills for value addition).
- Land size and tenure system (an issue that affects the scale of its production).

In support of this crop in given those areas my office has already secured and given motorised processing sunflower units to the Northern districts of Lira, Apac, and the North Eastern districts of Kumi, Kaberamaidao and Sironko. I hope the WFP will continue to assist my office to empower other areas with this technology in support of sunflower growing.

#### Challenges

I am not only a sunflower grower myself but as a scientist and politician, I have noted various challenges facing this industry, which need urgent attention.

- i. Over all, in Uganda, sunflower seeds are not readily available.
- ii. The seeds, which are available, have lost potency – their productivity has gone down.
- iii. To extract higher performance, a lot of expensive fertilisers have to be applied; which is not cost effective.
- iv. Serere Agricultural research Centre has not taken up the responsibility to improve existing sunflower seed varieties for better yields and endurance.
- v. There are few if any rural based sunflower stockists, which affects seed distribution and availability.
- vi. There are still very few sunflower-processing units in the sunflower growing zones. There is need to provide more of these units to our growers because in the value chain, the highest value is at the processing level.

#### WAY FORWARD

In the case of Uganda, as it may be the case in other sunflower growing countries, I invite this symposium to find practical ways and means of:

- Promoting extension services to target sunflower growers.
- Providing training materials in local languages to our farmers.
- Providing and distributing seeds, herbicides, pesticides, farm tools and affordable fertilisers.
- Creation of collection centres for the produce and establishment of small scale processing facilities.
- Installation of small scale irrigation systems and provision of knowledge on harvesting methods to enable growing of 2-3 crops annually.
- Provision of market and market information.

- Provision of post-harvest technologies e.g. solar dryers plus proper storage facilities.

May I once again thank the International Sunflower Association (ISA) for choosing Uganda to host this important symposium. In a special way I wish to commend the organisers, headed by the Permanent Secretary Ministry of Agriculture, Animal Industry and Fisheries for a job well done.

In between and after serious discussions, I invite all local and foreign participants to take off time to visit some of our glorious natural beauties. The experience will spice your fond memories of the 3rd Sunflower symposium held in Uganda: The Pearl of Africa.

I wish you fruitful deliberations.

For God and My country.

Prof. Gilbert B. Bukenya  
Vice President of the Republic of Uganda (Represented)

## Opening speech 2

SPEECH BY HON. ENG. HILARY ONEK MINISTER OF AGRICULTURE ANIMAL INDUSTRY AND FISHERIES  
(Represented)

Your Excellency, The Vice President of the Republic of Uganda , Hon. Ministers, Honourable Members of Parliament , Members of the Diplomatic Community, The Secretary General, International Sunflower Association , Symposium Delegates, participants , Ladies and Gentlemen;

It is with pleasure that I welcome Your Excellence, and thank you for gracing this international conference. Finally here we are hosting the THIRD SUNFLOWER SYMPOSIUM FOR DEVELOPING COUNTRIES after nearly seven months of preparation. My singular happiness is to welcome international delegates to Uganda; and to Entebbe in particular. As Minister of AAIF, I am privileged to host a conference that has attracted participants from developing and middle income countries. I am also happily that our own Prof. Gilbert Bukenya, the Vice President of the Republic of Uganda, and a leading champion of farmers, accepted to come to officiate at the opening ceremony. I hope that Your Excellence will be able to attend part of the symposium.

My ministry is charged with provision of guidelines to farmers, researchers, extension workers, non-governmental organizations, agro-based industrialists and civic leaders that will ensure increased and sustainable agricultural production, productivity and development. This is ably achieved by having in place a Plan for Modernisation of Agriculture (PMA) which falls within the country's overall framework of the Poverty Eradication Action Plan (PEAP).

The Government of Uganda formulated the Poverty Eradication Action Plan (PEAP) as a Comprehensive development framework. The PEAP has guided formulation of government policy since its inception in 1997. Agriculture is central to the process of transformation in our country because it generates incomes to the majority of the population, which in turn generates effective demand for industrial products. Agriculture thus drives industrialization. In addition agriculture in Uganda employs over 80% of the population.

Ladies and Gentlemen:

You will probably already know that agriculture is the backbone of our economy contributing 32% to Uganda's Gross Domestic Product (GDP). The majority of our people live in rural areas and depend on agricultural and related activities for their livelihoods. Most farmers are small scale producers.

To mitigate the poverty in the country side (rural areas) Government designed the Plan for Modernization of Agriculture (PMA). The strategy seeks to increase rural households, income, both through the expansion in the production and productivity of the key agricultural commodities and by facilitating their processing and marketing. We therefore see the development of sunflower as an opportunity to address rural poverty in Uganda. My ministry (MAAIF) has also put in place a Development Strategy and Investment Plan (DSIP) for the agricultural sector. The latter aims to operationalise programmes developed through the PMA; and in fulfilment of the poverty Eradication Action Plan (PEAP). This strategy addresses the following:

- Institutional development for the agricultural sector institutions and local government to be able to accelerate production of oil crops.
- Agricultural planning and Policy: we have started the bottom up planning where farmers participate in the planning process.
- Capacity building for the production of improved seeds, planting materials and animal breeding stock. Some of the lead players in this effort are companies like Monsanto who are members of the International Sunflower Association (ISA). We thank members of the International Sunflower Association who are collaborating with our local seed companies in distribution of improved seeds to our farmers.
- Plant pest and disease control, regulation and certification. We have a plant quarantine unit which ensures that seeds such as sunflower that come into, and leave the country, are of high quality.
- Processing and marketing of crops, livestock and fish. MAAIF is working hard to ensure that the issue of marketing is addressed. There can be no sustainable agriculture if marketing is not addressed sustainably. We have a wide range of small scale producers who require support to be organised into strong associations with strong negotiation abilities.
- Agricultural research and technology development. Government is committed to strengthening research and technology development. Under the National Agricultural Research Organisation (NARO), six National Agricultural Research Institutes, and seven Zonal Agricultural Research and Development Institutes have been created.
- Agricultural Advisory Services. Government is running the National Agricultural Advisory Services to transfer new technologies development to the farmers.

Since 1989 the Government of Uganda has deliberately and consistently revived the edible oil industry, including its sunflower component. Tremendous progress has been registered through the intervention of government and private sector. The USAID through its ACDI/VOCA program, APEP, Mukwano Industries and BIDCO have contributed heavily in this process. Government through support of IFAD has supported the Vegetable Oil Project (VODP) since 2000 which has enabled farmers and farmers groups to participate in sunflower production. NGO's like the Uganda Oil Seed Producers Association (UOSPA) and AT Uganda have seen the production of Sunflower by farmers increase rapidly especially in the East and Northern parts of Uganda.

I should mention that Agricultural research through NARO and the private sector has generated improved sunflower varieties. Over the last decade or so, sunflower production has increased from 1,219 tons in 2000 to 40,000 tons in 2006. This figure is expected to reach 150,000 tons by year 2010. The vegetable oil imports have reduced from 500,000 tons in 1998 to 48,000 tons as of 2004. the domestic demand is expected to rise from the current 85,000 tons to about 150,000 tons by 2013 partly due to the increasing population and rising incomes.

In conclusion, I should inform you that Government has put in place a conducive and stable enabling environment for investors in agriculture. It is my no wonder therefore that the International Sunflower Association (ISA) has identified with our efforts by holding this your 3rd Symposium here. I am grateful to the International Sunflower Industry for having considered Uganda as the best venue for this symposium.

Let me use this opportunity to call on all Ugandans and friends to embrace sunflower production as a business. Use the right varieties in the right areas at the right time and follow recommendations that will lead to increased production. There may be some bottlenecks but government is ready to continue to provide guidance for the growth of the sunflower industry.

those coming to Uganda for the first time, I welcome you most heartily. Feel at home with us. To all participants, I say, please take time off and discover what the “Pearl of Africa” provides in terms of its culture, biodiversity and entertainment. UGANDA IS GIFTED BY NATURE.

It is my pleasure, at this juncture, To request the Chief Guest H.E the Vice President of the Republic of Uganda; to address the conference and officially open the symposium.

FOR GOD AND MY COUNTRY

## **2.0 SYNTHESIS OF ISSUES EMANATING FROM PAPERS PRESENTED**

### **2.1 Keynote presentations**

“Challenges of the sunflower industry in Uganda” by Dr. Denis T. Kyetere, Director General NARO, presentation

Dr. Denis T. Kyetere first gave a global perspective of sunflower industry. He said the consumption of vegetable oil in African was still low at 18 kg of fat per year. He further indicated that other than South Africa and Senegal sunflower production in other African countries was still low. He mentioned that Uganda was one of the 40 African countries that produce sunflower to supplicat their domestic vegetable oil demands. Sunflower had become more important considering that the previous source of vegetable oil that was cotton had declined.

Challenges of the sunflower industry in Uganda

-Dr. Denis T. Kyetere

The major constraints to sunflower production, the Director General said were:

- High cost of input
- Lack of attractive credit
- Low level of technology use

- Low yields
- Loss of crop residue
- Poor road network
- Poor post harvest management
- Low power for processing
- μ- High incidence of pests and diseases

He outlined the following as the major threats and opportunities to the industry in Uganda

- Drought was a problem and there was need to develop drought tolerant varieties
- Uganda has bi-modal rainfall that could be exploited for increased annual production
- Bird damage caused considerable losses and therefore there was need to control
- Diseases especially a new virus problem thought to be leaf mottle disease and/ leaf speckle virus
- Low soil fertility and need for research on organic manure as alternatives and supplements to the inorganic fertilizers.
- Low germplasm base

He proposed the following as some of the issues to be considered for the way forward.

- Apiary and sunflower integration
- Capacity building and infrastructural development
- Greater collaboration among the partners/stakeholder
- More germplasm exchange
- More research in all aspects of sunflower

### **“The future of Sunflower Oil in World Oilseed Scenario and How to manage this Potential”**

by Dr. Alan Scott

He gave general crops dynamics indicating that it was changing so much due to crop competitiveness. The major chain drivers in oil quality were health and finance. He gave an example of use of Nutrisan as high steric/high oleic sunflower as alternative to unhealthy fats in the edible oil. With the current main focus on high breeds, he indicated that the world wide yields from 600 – 2,000kg/ha. The 2010 future target therefore seemed to be more on Bio-technology traits.

In discussing the above presentation the following issues came up

Question 1: The seeds that are been developed are very expensive especially for the developing countries like Uganda who are still behind in seed breeding program. How can we ensure that the smallholder farmers from developing countries will benefit from the expensive high quality sunflower seeds, yet developed countries are heavily subsidizing their farmers?

Response: As initial step the proven experimental seed should be tested/evaluated under local conditions of the recipient developing countries. There are then two options to reduce on seed costs. First option is to import the planting seed of the proven variety, farmers then multiply the seed themselves and pay Royalties to the parent seed breeding institution/company. The second option is to hire a trusted company from countries whose labor costs are relatively low to multiply and market the seeds. However it is usually difficult to get trusted company. The first option looks more applicable. Through these approaches, the seed costs can significantly be reduced to smallholder farmers in developing countries.

Question 2: The new sunflower varieties are been bred using a lot of GMO principles. The European Union has stringent quality regulations on quality especially GMO products. How can the good benefits of these varieties be reconciled with such stringent EU market regulations?

Response: We have invested a lot of money on GMO-technology, we therefore expect a lot of good financial returns. [part of the response was missed]

## 2.2 Theme 1: Sunflower improvement

Theme 1 session involved a keynote paper and five other papers. The keynote paper entitled

**“Achievements and Future Directions of Sunflower Breeding worldwide”** was presented by Prof Dragan Skoric, Institute of Field and Vegetable Crops Serbia and Montenegro. Other papers presented were :

a) Progress and Challenges in Developing Sunflower Hybrids in Uganda by Walter Anyanga et.al, National Semi-arid Agricultural Research Institute, Uganda.

b) Romanian Sunflower Hybrids, Possible Genotypes to be Cultivated in Developing Countries. By Dr. Maria Pacureanu Joita Romania

c) Status of Sunflower Breeding at Agricultural Research Corporation (ARC). By Prof. Mohamed Younis Mohamed, Sudan

d) Past, Present and Future sunflower improvement in South Africa: A public sector perspective based on yield strengths. By Godfree Chigeza, South Africa.

e) Potential Romanian Sunflower Resources to be exchanged in Developing Countries. By Dr. Maria Pacureanu Joita Romania

From the above presentations the following issues arose.

Question 1: How do we make smallholder farmers who are the majority with only 2-3 acres have access to and control over high quality sunflower seed and knowledge?

Response: Local farmers access seed by buying it from seed companies. Production high quality seed involves isolation which is difficult for farmers. But for local seed varieties farmers may have some control over the seed. This could be done through supervising and controlling the local seed companies that will multiply and market the seeds.

Question 2: What are the terms and conditions of receiving new germplasm from Romania?

Response: There are no very serious conditions. Initially the varieties should be evaluated in the recipient country. Once proven the process, terms and conditions of promoting the variety can be discussed.

Question 3 When will farmers receive the newly released sunflower varieties?

Response: The process of identifying the right company to import the required seeds has not been completed. For the recently released hybrids Monsanto is looking for a local seed company to do



importation. Once this process is completed, time for the seeds to reach farmers is likely to be short. Even if it is a locally bred variety, seed companies have to be identified for production and marketing.

## 2.3 Sunflower production and management

Theme 2 session consisted of a keynote paper and five other papers. The keynote paper entitled **“Sunflower Research and Development in India an over view”** was presented by Dr. D. M. Hedge India.

Other papers presented were:

- a) Effects of Nitrogen and Phosphorous fertilizers on performance of four sunflower varieties. By P. Elobu et al. National Semi Arid Crops Resources Institute.
- b) Effect of limited irrigation on different growth and development stages of sunflower cultivars at Iranian semi-arid environment. By Prof. Hamid Madani, Iran
- c) Integration of Sunflower and apiculture production: farmers’ perspectives from eastern Uganda. By H. Oloka et.al, Makerere University
- d) Participatory sunflower production, technology dissemination and value addition in south western Kenya. By Mepu
- e) Sunflower in Senegal: Achievement and Prospects. By Goule Gueye

The issues that arose from the above presentations are:

Question 1: How is stem height related to yield of sunflower?

Response: Concrete results have not been obtained. The current results indicate that the taller the plant the lower the yield, partially because of increased logging. Height, however, is also used as a measure of the crop’s ability to up-take nutrients but does not answer the aspect of nutrient distribution to the different things.

Question 2: Are there no beehives that are suitable for women?

Response: There are several beehives available, for example at Kigumba, some are suitable for women

Question 3: What is the recommended height for placing beehives?

Response: No definite answer was provided

Question 4: What other IPM packages are been researched upon in India?

Response: Currently they are emphasizing on non pesticide control methods example planting in September. In addition farmers are advised to plant resistant varieties.

Question 5: In the Iranian scenario what type of irrigation was used? And what are the results of the cost benefit analysis.

Response: For Iran it is a must to irrigate because of very low precipitation. The method used is furrow irrigation system.

Question 6: There are many developed local private seed companies in Kenya. Which varieties are the farmers lacking?

Answer 5: There are over 40 registered seed companies in Kenya including Kenya Agricultural Research Institute. But there is no demand for seed from farmers mainly due to inadequate market for sunflower products.

Question 7: How are the results from participatory research in Kenya used in variety released?

Response: In Kenya varieties are released by a Board that comprises Seed inspectorate, Kenyan Bureau of Standards and Kenya Agricultural Research Institute. This board decides on what seed should be released for multiplication and promotion.

Question 8: The results presented for “Participatory sunflower production, technology dissemination and value addition in south western Kenya” were only for sunflower. What went wrong with the rest of the data? If so it defeats the purpose of the research.

Response: There are many crops that compete for the little resource especially land the farmers are having. Farmers therefore do not accept to give land for the crops that are less competitive and sunflower is one such crop. The sunflower was intercropped with a crop that had good competition. Since the focus was on sunflower, the research team was interested in sunflower data only.

Question 9: What is Kenyan government doing to enable the small-scale processors to compete favorably with the big companies?

Response: The Kenyan government is currently promoting public-private sector partnerships. Private-sector is the buyer and processor of the farmers’ sunflower. Farmers are encouraged to collect their sunflower produce at central locations and market collectively. Once big volumes are collected, the private sector is then informed to come to buy the produce from these centers. Through this approach the small scale processors are able to obtain reasonable quantities and at relatively reduced transport costs.

Question 10 How are the rural farmers in India involved in research? How do they get seed?

Response: In the open market seed costs US \$ 8 – 10 per kilogram. The government therefore provides subsidy to the rural farmers to acquire seed.

Question 11: What is the cost benefit of using fertilizer in sunflower production in Uganda?

Response: Cost benefit analysis was not done and is going to be included in the next stage of research with farmers.

## **General observations and comments**

1. Availability of cheap good quality sunflower seed has become a big problem. This issue should be taken seriously to enable rural small scale farmers afford the seed.
2. There is a lot of indigenous knowledge on value addition, technology and dissemination with farmers. We should include such useful information into our sunflower work.

## **2.4 Economics and marketing of sunflower.**

Theme 3 sessions comprised a keynote paper and five other papers.

The keynote paper entitled :

“Bio-diesel from high oleic sunflower: one extraordinary opportunity for the rural development” was presented by Gian Paolo Vannozzi, Italy.

Other papers presented were:

- a) Addressing competitive pressures, instabilities and uncertainties in Uganda oil sector: Perspectives for a multi-stakeholder platform strategy. By Sietze Vellema et al.
- b) Activities carried out to promote the consumption of sunflower oil in 5 districts of Lira, Kumi, Apac, Soroti and Wakiso 2006-07. by Abby Norah Kalule
- c) Transforming the lives of the marginalized: The case of USAID APEP-A.K. Oils and Fats (U) Ltd. Partnership in sunflower production in northern Uganda. By APEP and Mukwano
- d) The need for quality control during sunflower processing: A case for aflatoxin contamination. By Archileo N. Kaaya.
- e) Economic and Social Benefits to smallholder farmer from partnering with Mukwano. By Praba Kumathe
- f) Sunflower for development: A case of the vegetable oil development project in Uganda with particular emphasis to sunflower production. By Zakayo Muyaka.

These were the issues that arose from this theme

Question 1: What kind of help has the government put in place to help small-scale processors to access the National Standards from Uganda Bureau of Standards (UNBS)?

Response Vegetable oil development project (VODP) has supplied modern laboratory equipment of oil for UNBS to analyze the quality of oil processed by the various sunflower oil mills. UNBS is now sensitizing and training oil millers on standards. UNBS is also going to analyze the quality of these mills. Priority will be given those who have requested for certification of their products.

Question 2: Why is Mukwano saying that sunfola is a poor variety yet by 2002 Mukwano could not buy all the seed from farmers?

Response: Mukwano is not saying that sunfola is a poor variety. The presenter argued that research is necessary to improve quality. Also most countries are going for hybrid due to the variety's consistence in performance.

The session chair person observed that sunfola was generating sensitivity during the discussion but added that open pollinated varieties generally have lower potentials.

Question 3: Mukwano has praised itself and has not recognized the effort made by other stakeholders. Please can you support your claims through data of: (1) Production and yield by 1999 and (2) Production and yields by 2003 when you joined the program.

Response: Vegetable oil development project (VODP) works in 24 districts as informed earlier, Mukwano is only recent entrant, and works in only four districts at present. We were only giving some development impact like the program had. The presenter never praised Mukwano only. Without the farmer partner and local government, Mukwano can not work. For production data please access information from Uganda Bureau of Statistics.

Question 4: You showed "Starting the Engine" with production technologies, production inputs and marketing as the main components responsible for increasing farm income. Have you also had an opportunity to analyze the effects on the farmers' incomes in cases where farmers with cottage industry do partial processing (ram presses) and sell crude oil and keep or sell the cake as feed? How do you compare the profit margin to those who sell sunflower seed to Mukwano? Question was to "Transforming the lives of the marginalized: The case of USAID APEP-A.K. Oils and Fats (U) Ltd. Partnership in sunflower production in northern Uganda"

Response USAID/APEP acts as a catalyst between producers and the market. Our work involves the identification of a market with which we work towards development for a sustainable producer-to-market alliance. We have not yet engaged in markets for crude oil.

Question 5: Since aflatoxin contamination in the sunflower oil is a serious problem, do the standards set on the quality of sunflower oils by the Uganda Bureau of Standards (UNBS) include the aspects of aflatoxin?

Response: Yes it has been covered under safety issues.

Question 6: Aflatoxin stems from post harvest handling and beyond. Have you had an opportunity of assessing whether storage facilities at major manufacturing firms do not also add to the problem in the bulk storage before processing? Other than feed cakes can aflatoxin also be found in sunflower oil?

Response: Any storage system that does not control moisture migration or have poor moisture migration system can result into mould growth and hence aflatoxin contamination. Once the sunflower seed is contaminated with aflatoxin, it is very difficult to eliminate it from the processed products. If the sunflower was contaminated, the sunflower oil is definitely has aflatoxin.

Question 7: You are not operating in eastern Uganda where sunfola is predominantly grown and sold between 400 – 450 shillings per kilogram. In the north where you are operating the price is 350

shillings per kilogram and this hybrid (PANNAR). Are you doing service to these people or exploiting them?

Response: USAID-APEP is a catalyst for the reaction between farmers and ultimate market, we do not buy.

### **3 PLENARY SESSION**

#### **3.1 What is New that we want to make known**

Following are the new issues learnt under sunflower improvement

- Ø Use of wild sunflower: exploiting novel genes and other traits e.g disease resistance
- Ø Narrow genetic base of sunflower in Developing countries.
- Ø There is need for breeding for oil qualities and stability (for food and industries): tocopherols, oleic acid.
- Ø Performance of new varieties not known to farmers (Vs old ones, landraces)
- Ø Hybrid sunflower production.
- Ø No international centre for sunflower unlike other crops (Groundnuts, rice).
- Ø Deployment of Biotechnology in breeding (MAS).
- Ø Potential for genetic resources of sunflower from Romania.

Following are the new issues learnt under sunflower production and management

- Ø Competitiveness for farmers can be enhanced by application of agro-inputs.
- Ø Planting appropriate seed improves productivity.
- Ø Introduction of improved varieties.
- Ø Different ecologies relate differently in sunflower production.
- Ø Incorporation of mechanization at different stages of sunflower production and for different farm sizes.

#### **3.2 Priorities for Research and Development**

Priorities for research and development under sunflower improvement are:

- Ø Accessing germplasm from various international centres like USDA,
- Ø Information sharing on varieties, regional releases with all research centres
- Ø Germplasm exchange e.g. from Argentina, Russia
- Ø Lack of seeds of improved varieties
- Ø Link between public research stations and private sectors (Seed companies)
- Ø Germplasm maintenance (gene banks)
- Ø Suggesting International Sunflower center for developing countries
- Ø Intellectual Property rights and variety protection laws
- Ø Capacity building in Biotechnology: Human and physical
- Ø Biotechnology related policies: Need for enabling laws (including bio-safety regulation)
- Ø Advanced training of sunflower scientists
- Ø Focus on developing appropriate ideotypes for various farming systems e.g. intercropping

Priorities for research and development for sunflower production and management are:

- Ø Ensuring efficient coordination between farmers and research systems
- Ø Understanding variability in the different ecological/production systems
- Ø Supportive government policies i.e. levying taxes on import for oil
- Ø Building critical capacity to develop sunflower industry
- Ø Access to information by farmers
- Ø Proper coordination among various stakeholders
- Ø Infrastructure improvement
- Ø Efficient market coordination
- Ø Sustainable access to farm inputs by farmers
- Ø Sunflower integrated farming system involving use of apiary
- Ø Research on Integrating Organic and Inorganic inputs
- Ø Diversification of productivity to increase farm yield in sunflower farming system
- Ø Research on small-scale rain water harvesting
- Ø Monitoring of ecosystems management for sustainability of sunflower production

The priority areas for research and development in economics and marketing of sunflower are:

- Ø Safety baseline
  - o What are hazard and critical control points
  - o What are incentives to improve
- Ø Quality and market strategies in markets with low-income buyers
- Ø Institutional mechanisms for coordination in markets and value chains for
  - o Win win partnerships
  - o Ensuring safety
- Ø Alternative usages and decision support for choosing crops and applications

### **3.3 Lessons for the next symposium**

Lessons for the next symposium in sunflower improvement are:

The following should be included as themes:

- Ø Seed production and supply system to reach intended users
- Ø Genetic resources
- Ø Screening methods for biotic and abiotic stresses
- Ø Methods of seed propagation and partnership (OPV and hybrids)
- Ø Understand more about the impacts of tried practices on development

In addition the following should be seriously observed:

- Ø Full papers to be submitted to the organizers in time.
- Ø Publicity about the event should be made wider and earlier

### **3.4 Ideas for regional Sunflower network**

It was unanimously agreed that regional sunflower network for Africa (with likely support from FAO) was necessary. It should a network with clear functions. The network would be addressing among

others issues of partnerships for introducing hybrid lines, accessing genetic material while acknowledging Intellectual Property Rights, stimulating knowledge exchange, and working towards accessibility and affordability of new technological options for low-income producers. The following were agreed on as the guidelines for the way forward.

Ø An interim committee with Godfrey Chigeza (South Africa) as the Chairperson was formed. Other members included: Mr Walter Anyanga (Uganda), Gueye Goule (Senegal) and Prof. Mohamed Younis (Sudan). Dr Maria Pacureanu (Romania) was included in order to guide the interim committee on appropriate working groups to be developed within the network.

Ø The interim committee was tasked to develop a framework regarding the formation of the network (Though email exchanges among members) to be submitted to ISA by March 2008 and distributed to national stakeholders.

Ø Prof Skoric promised to send the document used for development of European Sunflower network to guide the committee.

Ø ISA was requested to support initial meeting of this committee to develop a full proposal. The proposal to be circulated to other African countries for their inputs.

Ø Support for the network to be sourced from FAO, EU and others.

Ø Conditions for regional collaboration should be spelt out clearly

## **4. CLOSING REMARKS**

### **4.1 Director General NARO**

The concluding session was chaired by Dr. Cyprian Ebong, Director Quality Assurance in NARO, who also made remarks on behalf of the DG NARO. He delivered apologies of Dr. Dennis Kyetere, DG NARO, who could not make it for the closing of the symposium due to other important issues he had to attend to in Parliament.

Speaking for the DG NARO, Dr. Ebong expressed deep heartfelt thanks to the all stakeholders present, and he called it real sacrifice. He thanked the International Sunflower community for doing MAAIF and NARO proud. He cited the contribution of the private sector and the farmer community for making the symposium a success. He expressed that if someone his time - which was sometimes more valuable than money then he valued you greatly. He further thanked the NOC for organising the very successful symposium which he said was evidenced by the high level of participation.

The DG informed participants that Sunflower is a promising value chain in the Ugandan economy. He assured participants that from a modest start, sunflower had gained a priority level in crops in Uganda in as far as the policy to eradicate poverty in Uganda is concerned. Partners like Mukwano, APEP have worked hard to put SF in a good position. It therefore has a justifiable position in the fight against poverty.

### **4.2 Dr. Peter Esele, Member NARO Council**

Dr. Esele, member of the Ugandan NARO council, congratulated participants upon successful conclusion of the sunflower symposium. He observed that the objectives of the conference had been achieved. Giving the history of sunflower in NARO, he pointed out that in the priority setting exercise

of 1992, it was not in the picture. However, it has quickly gained popularity because of the importance of its oil, its adaptability, relative ease of production and as a good source of income.

Dr. Esele appreciated Worldbank /IFAD who played a big role in kick starting sunflower research in Uganda by training scientists and lecturers and funding research activities. Currently there was 1 NARO sunflower breeder, but there is hope for increasing scientists working on the crop.

In the “Bonnabagawale” (“Prosperity for all”) government program, Sunflower is one of the crops being promoted. On the issue of forwarding agricultural policy issues to parliament, Dr. Esele urged the Ministry of Agriculture to put more pressure on policy makers. He cited the example of the Biotechnology bill which was drafted more than 10 years ago but has not been moved, probably because it was being pushing National Council of Science and Technology under the Ministry of Finance and Planning which probably was not appropriate. He emphasised, that as scientists, the most important reward was to see that the technologies generated were adopted by farmers.

Concerning funding, government could not do everything. Dr. Esele therefore called upon all those who could help, to fund sunflower research. On the part of NARO council, he said sunflower research had been prioritised and would and would commit part of what would be available to fund sunflower research.

In conclusion, Dr. Esele, thanked the Director ISA, MAAIF, NARO and all the organisers for bringing all participants together for the symposium. Finally he wished every one a Merry Christmas and New Year.

#### **4.3 Dr. Andre Pouzet, Secretary General International Sunflower Association (ISA)**

The Secretary General ISA, Dr. Andrew Pouzet, began his speech by reminiscing on the 1st sunflower symposium held in Maputo, Mozambique in 1999. He observed that since then marked progress had been made in sunflower research. For example, one of the main issues in the first conference was availability of sunflower genetic materials but the issue now is availability of seed. Similarly the RAM press (for sunflower processing) was presented in the first conference and by the 3rd symposium it had widely been used. He said, however that, sometimes things may not move very fast, but there was surely progress.

Dr. Pouzet commended the idea of forming a regional Sunflower network, but cautioned that it was not an easy task. He posed the challenge to participants to make appropriate proposals for the network. He thanked those who had organised the symposium, citing Dr. Emily Twinamasiko (Director of Research in NARO) and the organising team in Uganda and the donors like Mukwano and APEP. He applauded participants for the high quality presentations and appreciated the high quality entertainment in the Sunflower night. He hoped that there would be suitable candidates for organising the 4th symposium. Finally, he thanked all presented and hoped for he would meet them again.



#### **4.4 Guest of Honour: Mr. James Komayombi, Director Crop Resources Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)**

The Director of Crop Resources in Uganda's MAAIF, Mr. Komayombi officiated as the chief guest in the closing ceremony of the symposium.

Mr. Komayombi, expressed his thanks to all participants and said he had enjoyed every bit of the symposium. He noted that there was keen interest and lively discussions through the symposium, which showed motivation to move the sunflower industry forward. He refuted the allegations that sunflower had not been in their vocabulary, and the message portrayed during the sunflower night drama which depicted the extension messages as not relevant to the farmers. He was also indicated that they were pushing the biotechnology bill which could be enacted by July 2008.

He said that he had become better informed about sunflower than before and felt participants were set to tackle the challenges identified in the symposium. Such challenges including availing seed, release of more varieties, support to farmers to produce more, and organised marketing. He cited the initiatives undertaken by Vegetable Oil Development Project (VODP) to address seed availability and marketing issues and pledged that he together with other stakeholders would do whatever it took to address the challenges including providing policies. He gave an example of the Crop Protection Bill which was already in advanced stage.

The guest of Honour was happy about the formation of an interim committee to look into the formation of the African sunflower network. This network would bring all stakeholders to tap all synergies to move the industry forward. However, he advised that the formation of the African network did not mean that move alone but still needed to move globally.

Mr. Komayombi expressed that Uganda was honoured to host the symposium and encouraged foreign participants to bring more similar meetings to Uganda. He also encouraged them to explore the tourism opportunities that was developing fast in Uganda and encouraged them to visit other parts of Uganda – the Pearl of Africa.

In conclusion, he thanked the ISA chairman, observed the many aspirations of participants and suggested the possibility of holding symposia more regularly. He wished participants well in the field trips and urged them to criticize freely. Finally, he wished participants a safe journey home and a Merry Christmas.

#### **II. Completion Report**

##### **1.0 Introduction:**

The above symposium was co-hosted by the International Sunflower Association (ISA) and the Uganda Government represented by the Ministry of Agricultural Animal Industry and Fisheries. (MAAIF) at the Imperial Resort Beach Hotel Entebbe, Uganda from 9 – 13 December 2007. The Conference brought together all stakeholders in the sunflower commodity chain and covered topics ranging from sunflower production and management to economics and marketing of sunflower. All in all about 100 participants from developing and developed countries attended. (Annex i) The symposium was blessed by H.E. the Vice President of the Republic of Uganda and was rated a success.

## **2.0 Support:**

### **2.1. Supportive Agencies:**

The Conference was supported by the International Sunflower Association, Ministry of Agriculture Animal Industry and Fisheries, Vegetable Oil Development Project (VODP), National Agricultural Research Organization (NARO), United States Aid for International Development/Agricultural Productivity Enhancement Project (USAID/APEP), Mukwano Industries, Uganda Oil Seed Producers Association (UOSPA), BIDCO, and Makerere University Faculty of Agriculture. (Annex ii)

### **2.2. Receipts**

A total of about Shs. 93,657,540 equivalent to US \$ 53,826 was mobilised for the Conference. APEP, Mukwano and NARO paid directly for services namely publishing, Publicity and coordination respectively. The detail of the money received is shown in Annex iii

### **2.3. Expenses:**

The total expenditure at the time of writing this report is Shs. 92,292,284 equivalent to US \$ 53,042 leaving a balance of Shs. 1,365,256 equivalent to US \$ 785. This amount will be used for postage of the CDs ROMs to ISA and other local participants.

## **3.0 Conclusion:**

The conference was very successful. We shall remain indebted to ISA for having chosen Uganda to co-host the Symposium. Participants parted in high spirit with promise to come back to Uganda when chances allow. The processing of the symposium, the Editorial Committee (Dr. Cyprian Ebong and Dr. Herbert Talwana) and USAID/APEP) who sponsored the activity. We are grateful to Uganda Government through the Ministry of Agriculture, Animal Industry and Fisheries for having accepted to co-host the Conference. The Central role played by the Top Management of the Ministry is highly appreciated. We thank unreservedly, H.E the Vice President of Uganda for gracing the Conference. Thanks to all those who contributed to the success of the Conference especially those who delivered key note addresses.

FULL PRESENTATIONS ON CD