



REPORT OF THE PROCEEDINGS OF THE  
**STAKEHOLDERS' CONSULTATIVE WORKSHOP ON MORINGA  
IN UGANDA**

*HOTEL EQUATORIA, KAMPALA*

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## **LIST OF ACRONYMS**

MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MFI	Micro-finance Institutions
MODA	Moringa Development Association
MOH	Ministry of Health
MU	Makerere University
NAADS	National Agricultural Advisory Services
NARO	National Agricultural Research Organisation
NDA	National Drug Authority
NGO	Non-governmental Organisation
PMA	Plan for Modernisation of Agriculture
UBOS	Uganda Bureau of Statistics
UEPB	National Export Promotion Board
UIA	Uganda Investment Authority
UMOGA	Uganda Moringa Growers Association
UNFA	Uganda National Farmers Federation
UNBS	Uganda National Bureau of Standards
UNCST	Uganda National Council for Science and Technology
UNFFE	Uganda National Farmers' Federation

## **EXECUTIVE SUMMARY**

The Moringa tree has generated a lot of interest among farmers and therefore its potential as an economic crop, needs to be evaluated and determined. However very little information if any, is available about its markets or technological requirements.

Therefore NAADS Secretariat and NARO organised a stakeholders consultative workshop on 28/11/2003 to take stock of the major stakeholders and their experiences in the production and marketing of Moringa with a view to develop a strategy for its development and promotion.

**The main objective of the workshop was therefore to share information and knowledge available about Moringa. The specific objectives of the workshop were to:**

1. Take stock of the available knowledge, information and experiences of the stakeholders in production and marketing of Moringa;
2. Identify the commonly grown varieties of Moringa, and assess their yield and economic potential,
3. Identify the suitable varieties for different ecological conditions in Uganda;
4. Identify the opportunities and challenges in production and marketing of Moringa and
5. Identify the stakeholders and their roles and responsibilities in exploiting the identified opportunities and addressing the constraints.

The Hon. Minister for MAAIF presided over the opening ceremony and presented a paper on "Prospects for Moringa as an Enterprise in Uganda." He highlighted the following knowledge gaps: location and size of existing market locally, regionally and internationally, as well as potential markets; the required varieties on the market; established marketing system, quality control systems and pests and diseases that affect Moringa.

Several papers were presented highlighting; origins and agronomic practises of Moringa, challenges to market access and profit maximisation of Moringa and its products and product development and current and potential uses of the tree.

There was general consensus that there were still a lot of unclear issues regarding Moringa yet it seems to be potentially profitable. The participants therefore recommended that there is need to have one body responsible for providing authentic and authoritative information about Moringa. A lot of research should also be done to determine various gaps in Moringa development but especially to ascertain the products that will be most cost effective for Uganda to engage in, taking into account the availability of markets.

## **1.0 INTRODUCTION**

### **1.1 Background**

The National agricultural Advisory Services (NAADS) programme is one of the seven core programmes under the Plan for Modernisation of Agriculture (PMA). Important principles of NAADS are: commercialisation and market orientation, which are aimed at guiding NAADS contribution to the PMA objective of transforming Ugandan agriculture from subsistence to commercial farming. The strategy the programme is pursuing to contribute to the PMA's objective is Enterprise identification, development and promotion. However, promotion of an existing or new enterprise requires identification of available and potential market opportunities as well as careful analysis of the supply chain and important actors for that enterprise.

Development and promotion of an enterprise is designed to ensure increased productivity and profitability. Increasing productivity requires generation, development and farmers' use of productivity-enhancing technologies. The National Agricultural Research Organisation (NARO) is mandated to address the research and technology needs of farmers in order to contribute to the national goal of poverty eradication through commercialisation of agriculture. NARO's mission is to contribute to the improvement of the welfare of the people of Uganda and conservation of natural resource base by increasing productivity and utilisation of crop, fisheries and forestry resources through the enhancement of scientific knowledge, and the generation, adaptation and transfer of the improved technologies, methods and policy advice.

NAADS will support the development of enterprises that enable farmers to exploit specific identified market opportunities and facilitate farmer linkage to private sector market actors and markets. One potential enterprise is the Moringa (*Moringa Oleifera*) tree, which is generating intense farmer interest.

Moringa is an indigenous plant to many parts of Africa and can be grown in a variety of climates and sub-standard soils. In the market, it is presented in various forms; oil and powder among them. The plant is reputed to have high value with multiple uses. Some of these include medicinal, nutritional and pesticidal values; water purification properties among others. The interest Moringa has generated is demonstrated by the fact that several nurseries have been established and many farmers are already increasingly growing the plant as a crop enterprise. Indeed, it is already on the market as a medicament for varied ailments in various parts of the country, especially in Kampala City.

Given the interest it has generated, its potential as an economic crop, needs to be evaluated and determined. However very little information if any, is available about its markets or technological requirements.

Therefore NAADS Secretariat and NARO organised stakeholders' consultative workshop to take stock of the major stakeholders and their experiences in the production and

marketing of Moringa with a view to develop a strategy for its development and promotion.

The workshop was attended by a cross-section of participants including farmers, processors, traders, researchers and policy makers (Annex I) and the programme for the workshop is attached (Annex II).

## **1.2 Workshop Objectives**

The main objective was to share information and knowledge available about Moringa.

The specific objectives of the workshop were the following:

6. Take stock of the available knowledge, information and experiences of the stakeholders in production and marketing of Moringa;
7. Identify the commonly grown varieties of Moringa, and assess their yield and economic potential;
8. Identify the suitable varieties for different ecological conditions in Uganda,
9. Identify the opportunities and challenges in production and marketing of Moringa and
10. Identify the stakeholders and their roles and responsibilities in exploiting the identified opportunities and addressing the constraints.

## **1.3 Workshop Methodology**

The following methods were employed during the workshop:

- Presentations by identified personnel, to share information and experiences,
- Group discussions on identified key thematic areas and
- Plenary presentations and discussion.

## **2.0 Proceedings of the Workshop**

### **2.1 Welcome remarks**

The Technical Services Manager, NAADS, Dr. Oryokot welcomed participants and informed them that this was the first consultative workshop after which there would be another planning workshop to establish the way forward. He called on participants to actively participate in the discussions.

### **2.2 Remarks by Executive Director (ED) NAADS**

The ED NAADS welcomed participants to the workshop. He informed participants that there have been several questions raised on Moringa such as;

- Who the main stakeholders in Moringa production and marketing are;
- What the values of Moringa are;
- Where one can access Moringa planting materials and products;

- Where the markets are;

He added that the workshop had therefore been held in effort to find answers to these questions. He hoped that by the end of the workshop all unclear issues would be resolved.

### **2.3 Remarks by Director General (DG) of the National Agricultural Research Organisation (NARO)**

The Acting DG NARO, Dr. Aluma noted that any plant could be used as food, food supplements and as drugs. He also emphasized the importance of indigenous knowledge and noted that money can be earned from exploiting it. He informed participants that Uganda National Council for Science and Technology (UNCST) has recognised this and they hold workshops to sensitise people. Indeed a draft Action Plan is in place to promote indigenous knowledge.

Dr. Aluma added that plant products can be whole, parts of the plant or extracts e.g. oil. Even extracts can be segregated into active ingredients or multiple plant parts, which, can be used as a concoction. In order to move to further develop Moringa enterprise, "we need people with knowledge i.e. scientists, nutritionists, human doctors, engineers, producers, farmers, industrialists, processors, investors, buyers, traders, legal people, policy makers, consumers and leaders," he said. He also emphasized that the focus should not be on a single tree but on several plants. In order for this to happen, partnerships; markets; promotion leverage resources; research sustainability; market intelligence and market development; enterprise and organisational development; effective development strategies; quality control systems, research and technology transfer and information services are all needed, Dr. Aluma emphasized.

### **2.4 Address by Hon. Minister, Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)**

The Hon. Minister for MAAIF presented a paper on "Prospects for Moringa as an Enterprise in Uganda" (Annex III). He applauded the private sector for spearheading government efforts to develop various enterprises. The Minister noted that under PMA and NAADS, the management of "*agriculture as a business*" is emphasized. He called on researchers to produce the best varieties of commodities to enable farmers to engage in business development. He also reminded participants of NAADS' role in enterprise development and how NAADS will support farmer linkage to markets. The Hon. Minister however, noted that Moringa is not yet developed because of limited information about the crop.

The Minister highlighted the following knowledge gaps:

- Location and size of existing market locally, regionally and internationally, as well as potential markets.
- The required varieties on the market.
- Marketing system.
- Quality control systems.

- Pests and diseases that affect Moringa.

He hoped that the workshop would establish the following:

- Current practises including sources of planting material and other production inputs;
- Opportunities and challenges in production, processing and marketing and;
- Current research activities in Moringa enterprise development.

The Minister challenged NAADS to produce a Database to be used for planning

## **2.5 Paper presentations**

The following papers were presented and participants asked questions after each paper.

- i. ***“Understanding the Moringa Family”*** (Annex IV), presented by Mr. Esegu Osoto

He elaborated on the origin of the Moringa tree and its family characteristics. He also highlighted Moringa major uses and the current and future research prospects for the Moringa tree.

- ii. ***“Prospects for Increased Moringa production – opportunities and challenges”***(Annex V), presented by a Moringa farmer, Mr. Samuel Tebandeke

He highlighted the planting methods and uses for the Moringa tree. He also noted some problems faced by Moringa farmers.

- iii. ***“Challenges to Market Access and Profit Maximisation/optimisation of Moringa and its products”*** (Annex VI) presented by Professor Kasawuli on behalf of Moringa Development Association (MODA).

He mentioned the evolution and role of the MODA. He enumerated the uses of the Moringa tree and also noted the constraints and challenges to development of the Moringa enterprise.

- iv. ***“Challenges to Market Access and Profit Maximisation of Moringa and its products”*** (Annex VII), presented by Hon. Fred Omach on behalf of Uganda Moringa Growers Association (UMOGA)

Hon. Omach presented the origin of the Moringa tree. He also highlighted the uses and opportunities and challenges to market access. He proposed strategies for exploiting the opportunities and challenges.

**v. "Product Development: Current and potential food values"** (Annex VIII), presented by Dr. Muyanja Charles.

He introduced the origins of *Moringa Oleifera*, and enumerated its potential benefits. He cited some constraints to Moringa enterprise development but emphasized its great potential to stabilise nutrition and health.

**vi. "Moringa Oleifera: Product Development: Current and potential medicinal values"** (Annex IX), presented by Dr. Grace Nambatya Kyeyune.

She explained the role of the Ministry of Health in development of natural products. She elaborated the characteristics, propagation and management of *Moringa Oleifera* tree. She also enumerated the uses, constraints and potential of the Moringa tree.

The questions and responses from all papers are summarised below:

<b>Question</b>	<b>Response</b>
1. There are very many synonyms for the different species of Moringa, how can one avoid confusion?	There are 14 known species of Moringa but clarification is needed to avoid confusing the synonyms.
2. Has any research been done about values of Moringa as opposed to those cited from countries where Moringa originated?	Some research is going on under NARO to establish the value of the various products and the proper agronomic practises but this is in the preliminary stages. The MOH chemotherapeutic laboratory at Wandegeya is also doing some research to establish the nutritional and medicinal value of Moringa/Moringa products.
3. What is the most economic Moringa product, which, Uganda should focus on?	Oil would fetch a lot of money but proper extraction methods need to be developed/adopted. However, the cost effectiveness of other products e.g. seed husks for pesticides, powder as a water flocculant could also be established.
4. Shouldn't NAADS promote all medicinal plants at the same time?	NAADS works on the principle of demand-driven enterprise development.

## **2.6 Group work**

Participants formed three groups (Production, Processing and Marketing) and discussed and presented to plenary discussions on thematic areas below;

- a) Available knowledge about production, processing and marketing and the source of this knowledge;
- b) Constraints in production, processing and marketing of Moringa/Moringa Products;
- c) Strategies proposed to address the identified constraints,
- d) Stakeholders responsible for the identified strategies and
- e) Research gaps

## **PRODUCTION**

### **A) Available information/knowledge on Moringa production**

<b>Knowledge/information available on production of Moringa?</b>	<b>Source of this information?</b>
<p><i>Planting material management:</i></p> <ul style="list-style-type: none"> <li>• Tree growing using stems and branches, seeds and tissue culturing</li> </ul>	<ul style="list-style-type: none"> <li>• Internet</li> <li>• Church World service</li> <li>• United Nations organisations</li> <li>• Individual farmers</li> <li>• Kenya Forestry Research Institute</li> <li>• Seminars, workshops, conferences</li> <li>• Newspaper, radio</li> <li>• National tree seed centre, NGOs, Missionary society e.g. in Kalangala</li> <li>• Research institutions</li> <li>• Chemotherapeutic laboratory</li> <li>• Non-governmental organisations</li> <li>• Missionary societies</li> <li>• Written reference documents – Literature</li> </ul>
<p><i>Management of trees;</i></p> <ul style="list-style-type: none"> <li>• Literature - on spacing (3 x 3') for leaf production and (10 x 10') for seed production.</li> <li>• Prevent the plant from becoming too tall by plucking on tips</li> <li>• Apply manure on soils for better production</li> <li>• Plant during appropriate weather</li> </ul>	
<p><i>Pests and diseases:</i></p> <ul style="list-style-type: none"> <li>• Yellowing of leaves – treat with leaf juice</li> </ul>	

### **B) Constraints, Strategies and Stakeholders**

<b>Constraints</b>	<b>Solutions</b>	<b>Responsible stakeholder</b>
Lack of land	<ul style="list-style-type: none"> <li>• Sensitise farmers on optimal (efficient) land use</li> <li>• Acquire land from forestry department</li> </ul>	<ul style="list-style-type: none"> <li>• Farmers</li> <li>• NAADS</li> </ul>
Lack of inputs - money for cultivation	<ul style="list-style-type: none"> <li>• Increased production of seed to lower costs</li> <li>• Form cooperative groups for collective access to inputs, output markets and information</li> <li>• Integrate pest management in farm management practises</li> </ul>	<ul style="list-style-type: none"> <li>• Farmers</li> <li>• NAADS</li> </ul>
Variance in quality of planting material	Standardise quality of planting materials	<ul style="list-style-type: none"> <li>• NARO</li> <li>• NAADS</li> <li>• UNBS</li> </ul>
Lack of knowledge on efficient production practices	Farmers need training on all these aspects	<ul style="list-style-type: none"> <li>• NARO</li> <li>• NAADS</li> <li>• UNBS</li> </ul>
Low yield varieties		
Trimming failure (too tall)		
Pests and diseases - Birds eat up flowers (human beings too!) They taste like mushroom)		
Lack of knowledge on profitability of enterprise.		

## **PROCESSING**

### **A) Available information/knowledge on Moringa processing**

<b>Knowledge/information available on the processing of Moringa?</b>	<b>Source of this information?</b>
How to produce leaf powder	<ul style="list-style-type: none"> <li>• MODA</li> <li>• Practising farmers</li> </ul>
Utilisation of leaf powder	
Other uses such as; <ul style="list-style-type: none"> <li>• Fertiliser, (apply to soil)</li> <li>• Pesticide (banana weevils, coffee wilt, kills centipedes/millipedes &amp; other insect pests)</li> <li>• Dewormer</li> <li>• Soap making</li> <li>• Oil</li> <li>• Root powder (edible and medicinal)</li> <li>• Seeds (seed cake for animal feeding, seed powder acts as water flocculant, seed powder is used as medicine).</li> </ul>	

## **B) Constraints, Strategies and Stakeholders**

<b>Constraints</b>	<b>Solutions</b>	<b>Responsible stakeholder</b>
Lack of necessary equipment	<ul style="list-style-type: none"> <li>• Group formation</li> <li>• Centralised processing</li> <li>• Micro-financing</li> <li>• Use Egypt design</li> </ul>	<ul style="list-style-type: none"> <li>• Farmers with NAADS help</li> <li>• Associations e.g. MODA and private sector</li> <li>• MFI</li> <li>• Makerere University</li> <li>• NARO (Namalere)</li> <li>• UIA</li> <li>• Foreign collaboration</li> </ul>
No quality control	<ul style="list-style-type: none"> <li>• Centralised processing</li> <li>• Farmer sensitisation and training</li> <li>• Use appropriate machinery/equipment</li> <li>• Identify correct variety</li> <li>• Lab analysis</li> <li>• Design appropriate packaging</li> </ul>	<ul style="list-style-type: none"> <li>• Associations/private sector</li> <li>• UMOGA/MODA</li> <li>• UNBS</li> <li>• Makerere University</li> <li>• NARO</li> <li>• NAADS</li> <li>• Government analyst</li> <li>• Food Science department in MUK</li> <li>• UNBS</li> <li>• UEPB</li> <li>• Private sector</li> </ul>
Adulteration of products	<ul style="list-style-type: none"> <li>• Centralised processing</li> <li>• Farmer sensitisation and training</li> <li>• Use appropriate machinery/equipment</li> <li>• Identify correct variety</li> <li>• Lab analysis</li> <li>• Design appropriate packaging</li> <li>• Establish by-laws</li> </ul>	<ul style="list-style-type: none"> <li>• Associations/private sector</li> <li>• UMOGA/MODA</li> <li>• UNBS and UEPB etc.</li> <li>• Makerere University</li> <li>• NARO</li> <li>• NAADS</li> <li>• Government analyst</li> <li>• Food Science department in MUK</li> <li>• UNBS</li> <li>• UEPB</li> <li>• Private sector</li> <li>• UNFFE</li> <li>• MAAIF</li> </ul>
Fragmentation of producers	<ul style="list-style-type: none"> <li>• Form co-operatives/associations</li> </ul>	<ul style="list-style-type: none"> <li>• MAAIF</li> <li>• UNFFE</li> <li>• NAADS</li> </ul>
Logistics e.g. transport	<ul style="list-style-type: none"> <li>• Form co-operatives/associations</li> <li>• Micro-finance</li> </ul>	<ul style="list-style-type: none"> <li>• MAAIF</li> <li>• UNFFE</li> <li>• NAADS</li> </ul>
Lack of proper packaging	<ul style="list-style-type: none"> <li>• Research in appropriate packaging</li> <li>• Liase with markets</li> </ul>	<ul style="list-style-type: none"> <li>• UNBS</li> <li>• Private sector</li> <li>• UEPB</li> </ul>

## **MARKETING**

### **A) Available information /knowledge on the marketing of Moringa**

<b>Knowledge/information available on the marketing of Moringa?</b>	<b>Source of this information?</b>
Vanilla products e.g. seeds, seedlings, leaf powder, oil, and value-added products.	Associations, individual farmers, buyers and processors.
Bio-trade workshops	Uganda Export Promotion Board (UEPB)
Available market opportunities internationally	President's office (economic monitoring)

### **B) Constraints, Strategies and Stakeholders**

<b>Constraints</b>	<b>Solutions</b>	<b>Responsible stakeholder</b>
Lack of organisation in the sector	<ul style="list-style-type: none"> <li>• Establish viability of Moringa enterprise</li> <li>• Form an Apex body</li> <li>• Develop government policy</li> </ul>	<ul style="list-style-type: none"> <li>• NAADS</li> <li>• Private/Public partnership</li> <li>• MAAIF</li> </ul>
Lack of distribution channels in market	Co-operatives	<ul style="list-style-type: none"> <li>• UEPB, UIA (external markets)</li> <li>• UNCC&amp;I (internal markets)</li> </ul>
Lack of knowledge on market requirements	Research	<ul style="list-style-type: none"> <li>• UBOS</li> <li>• Accredited NGOs</li> </ul>
Lack of set quality standards in packaging and labelling	<ul style="list-style-type: none"> <li>• Training</li> <li>• Standardisation</li> <li>• Access to funding</li> </ul>	<ul style="list-style-type: none"> <li>• Training institutions</li> <li>• NDA</li> <li>• UNBS</li> <li>• Packaging firms</li> </ul>
Lack of funds	Access to credit finance	<ul style="list-style-type: none"> <li>• Banks</li> <li>• Micro-finance NGOs</li> <li>• Donors</li> </ul>
<ul style="list-style-type: none"> <li>• Lack of information on Moringa products</li> <li>• Poor information sharing</li> </ul>	Sensitise consumers about products, price and value. This will create effective demand for Moringa.	<ul style="list-style-type: none"> <li>• NGOs</li> <li>• Training and research institutions</li> </ul>

### **Researchable areas**

1. Market opportunities for Moringa products;
2. How much can Uganda produce and where are the markets.
3. Economic value of Moringa products;
4. Profitability levels of different scales of Moringa production;
5. Change of value with time;
6. Optimal harvesting stage for different plant parts;
7. Difference in physical structures, chemical composition and uses of the male and female varieties;
8. Efficient use of land thorough inter-cropping with Moringa;
9. Appropriate processing methods: drying methods, oil extraction etc.
10. Keeping qualities of the various Moringa products;
11. Quality control in Moringa processing and marketing;
12. Nutritional/medicinal value
13. Uses of the different parts and products;

## **2.7 General recommendations**

1. There is need to have one body responsible for authentic and authoritative information about Moringa.
2. There is need to establish the proper spacing in growing Moringa and to disseminate this information to farmer.
3. Cooperative societies are required to regulate quality of products.
4. Use of the root powder needs a lot of guidance because exposure to air makes it very toxic.
5. Need to develop/adopt more effective ways of oil extraction because currently only 25% of the oil is extracted yet the Moringa seed contains about 42% oil.
6. Proper packaging of Moringa should be determined and disseminated because the current transparent packs expose Moringa products to sunrays that cause deterioration of the product.
7. There is need to have one body to spearhead marketing.
8. Cooperatives will also be needed to spearhead promotion of Moringa activities.
9. Collaboration is needed among farmers to solve problems of theft and marketing.
10. There is need to standardise products even for the local market, as well as standardise processing methods and techniques.
11. For any natural products, one has to note the right amounts that are needed and this may depend on biochemical make-up of the person.
12. Farmers and traders should avoid transporting Moringa in bulk because it promotes fast deterioration therefore decentralised processing should be encouraged.
13. Farmer organisation is very crucial in promoting Moringa as well as research in uses of the different plant parts and varieties. Also important is knowledge on the economic importance of the crop.

## **2.8 Way forward**

Dr. Oryokot noted that several questions remain unanswered about Moringa. Therefore there is need to re-focus and think about what exactly to focus on. He informed participants that a contract has been secured to carry out a quick baseline survey on Moringa so that research is done basing on a sound basis rather than sentiments.