



# **SPICES PRODUCTION AND FARMERS' INCOME**

**lessons from Amani, Tanga**

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TARP II – SUA Project

**SPICES PRODUCTION AND  
FARMERS' INCOME:  
LESSONS FROM AMANI, TANGA**

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## **Preface**

Sokoine University of Agriculture (SUA) in collaboration with the Ministry of Agriculture and Food Security (MAFS) and Agricultural University of Norway (NLH) is implementing a research project on Food Security and Household Income for Smallholder Farmers in Tanzania. The project operates in two zones, Eastern and Southern Highlands zones.

One of the components of this project is to strengthen Farmer-Research-Extension Linkage. To meet this goal, the project has arranged a programme to enable farmers exchange visits within and between project zones.

This publication presents a report from one exchange visit carried out at the end of April 2002. Farmers and extension officers from Morogoro Rural District visited fellow farmers who grow and sell varieties of spices at Amani, Muheza District in Tanga Region. This document is also available in Kiswahili Language.

Prof. L.D.B. Kinabo  
TARP II – SUA Project Coordinator,

June 2002.

## **Abbreviations and Acronyms**

ARI	Agricultural Research Institute
MAFS	Ministry of Agriculture and Food Security
NLH	Agricultural University of Norway
NORAD	Norwegian Agency for Development Cooperation
SUA	Sokoine University of Agriculture
TARP II	Tanzania Agricultural Research Project Phase Two

## **1.0 INTRODUCTION**

The Food Security and Household Income Project which puts emphasis on women issues has laid different strategies to ensure an increased household income for smallholder farmer in Tanzania. One of the strategies is to educate farmers in different ways, including training in class, and on-farm and on station research. On-farm training involves farming activities and farmer exchange visits.

For exchange visits, farmers, livestock keepers, extension officers and researchers in the Eastern and Southern highlands zones have been given opportunities to visit and learn from each other on different technologies that are practiced. In March 2002, farmers from Morogoro in Eastern zone visited their fellow farmers in Muheza, Tanga (Annex 1). The main objective of this visit was to give farmers an opportunity to learn practically and theoretically about production and marketing strategies for different spices. Farmers from Morogoro are known to be good spice growers. They grow different spices including cocoa, clove, black pepper, cinnamon etc.

The exchange visit was carried out in Amani, Muheza District. Twelve farmers (six females and six males) and two extension officers from Mkuyuni and Matombo divisions in Morogoro Rural district participated in the visit (Annex 2). Different spice farms, tea plantations and processing plant were observed. In general, the trip was successful as farmers

learned a lot about spices growing, use, storage and marketing strategies within and outside the country. This publication gives a summary on production of different spices, access to market and suggested follow-up activities emanating from the visit.

## **2.0 SPICE FARMS**

### **2.1 Kizugu cocoa garden**

Kizugu farm, which is located at Amani, deals with cultivation of cocoa under the Agricultural Research Institute (ARI) Mlingano spice seedling production section. The cocoa produced in this garden originated from Nigeria, Trinidad and Ghana way back in 1959. Cocoa has been a new crop in many parts of Tanzania. However, it is nowadays accorded priority. Cocoa is used as beverage, in cosmetics, additive in sweets and chocolates and for medicinal purposes. There are five main varieties of cocoa that are cultivated and produced in this garden, namely, T60, ICS95, DR1, DR2 and DR38.

Cocoa trees perform better in areas with: loamy soil, fertile (with manure or compost) and with suitable shade conditions. Ripe cocoa fruit (fresh) is sown horizontally, 2.5 cm apart in sawdust or paddy husk seedbeds. Thereafter, the fruits are covered and watered. Seeds germinate after 12-21 days, giving a bean like seedling it, which is transplanted in banana or polythene tubes filled with mixture of soil and manure



and arranged under shade. The seedling grows for about 9 months to one year before planting out.

Early farm preparation, adequate soil fertility and shade trees are the main pre-conditions for the cultivation of this crop. Trees that may be suitable for inter cropping with cocoa include banana, palm trees and *Senna species* (misaji). Planting space between seedlings during transplanting is important for tree growth, better crop production and prevention of insect pests. Spacing of 4 x 4 m is recommended for big varieties (T60, ICS 95) whereas spacing of 2 x 4 m is recommended for smaller varieties (DR1, DR2 and DR3). The recommended size of planting hole for cocoa seedling is 60 cm (2ft) deep with the same dimensions for length and width. Maintenance of weeding methods is also important. In a well-managed cocoa farm, it may take three to five years before harvesting.

Amani farmers said they are not experiencing marketing problems for the crop. The minimum price is Tshs 400/= (about USD 0.40) per kilogram and a single tree yields between 20-30 kgs per year. Basing on planting space of 4 x 4 m, about 625 seedlings may be produced per hectare and thus a farmer may earn up to five million shillings (5,000,000/=; about USD 5,000) per year.

## 2.2 Spice trail

Spice trail is a name given to a spice seedling garden at Amani. For many years, the garden has been owned and managed by ARI Mlingano. Currently, the garden is under Tanzania Pest Research Institute (TPRI) based in Arusha although most of the workers are employed by the ARI Mlingano, Tanga.

The garden consists of different types of spice seedlings like cardamom, cinnamon, black pepper, "pilipili mtama", turmeric, cloves, mango stein, "tundachachu", ginger, palm trees, "language" (*cananga odorata*), vanilla, strawberry guava (*Psidium oathiumum*), "mang'ong'o" (*Spondias cythelas*), jack fruit, carambola, *Artocarpus odoratissima*, all spices and "bilimbi" (*averhoa bilimbi*) etc. (Annex 3). Viable seedlings are sold to individuals and to different organizations.

The seedling production section owns a tree spice farm where spices are grown using Non-or zero tillage system. Suitable shade trees such as *Grilsidia spp* and *Albizia spp* were mixed with other indigenous and fruit trees to support climbing spices like black pepper and vanilla.

## 2.3 Individual farms

Amani farmers grow mainly cardamom, black pepper, cloves and other spices. They have also planted spice trees under no tillage system while others have adopted

tillage as well as mixed farming system. It was noted that, farmers are aware that mixed farming plays a key role in soil conservation. However, mixed farming may be a reflection of land scarcity, which is common in Amani. Amani farmers are knowledgeable and skilled in the management of wide varieties of spices. In addition, farmers are acquainted to storage and marketing issues. Also farmers use different types of fertilizers in their farms including the following: cow manure, goat manure and wild animal manure. Apart from their indigenous knowledge, farmers also benefit from extension officers and from field assistants in the seedling garden section.

Cardamom is the main cash crop to most farmers and is sold up to five thousand shillings (5,000/=; about USD 5) per kilogram. For years, these farmers belonged to a cooperative union, which played a major role in searching market for cardamom. Currently, the cooperative union is no longer functional and thus farmers have to search for their own market. On this regard, farmers have realized the importance of having farmer groups/organizations in order to improve spice production and marketing.

#### **2.4 Tea plantations**

Amani Tea plantations handle tea at all stages, from production of seedlings in the nursery processing and final packaging. Visiting farmers had opportunity to observe step by step the preparation of sowing pots to packaging ready for external market via Mombasa or

Dar es Salaam port. Due to the existence of local and foreign business organizations purchasing tea, market is not a problem, however, quality standards are emphasized.

Tea is a new crop to most of the visiting farmers although some of them (Farmers from Tawa) have tea trees in their village which were planted by Germans many years ago, but they never knew that its final product is tea.

Small-scale tea farmers work as casual laborers in Amani tea plantations. They are also employed by the industry seasonally. These activities contribute to increasing their household income in addition to gains from selling tea to the industry.

### **3.0 KEY OBSERVATIONS**

#### **3.1 Lessons learned**

From the visit, farmers learned the following.

- Preparation of cocoa seedbeds and cocoa farms.
- Planting of cocoa and suitable shade trees in cocoa farms.
- Preparation of sowing pots for spices and tea using bamboo stems, dry banana leaves and coconut leaves.
- How to harvest tea.
- Land/soil conservation by zero tillage and non-weeding methods.

- Agro forestry: mixture of spice and fruit trees for shade and soil conservation.
- How to grow cocoa seeds on sawdust.
- Management and harvesting of long-horned cardamom.
- Proper planting of spice trees using recommended spacing and dimensions.
- How to use organic manure from goat and wild animals to bring about soil fertility.
- Proper harvesting of cinnamon (bark scratching).
- Importance of planting trees for environmental conservation including conserving water sources (catchment areas).
- Proper planting of black pepper and the use of short support trees to simplify crop harvesting.
- The importance of farmer organizations/groups for easy accessing of market and farm implements.

### **3.2 Follow-up activities suggested by farmers**

- To initiate clove and cinnamon seedling projects.
- To expand individual farms for more spice trees.
- To encourage the formation of spice farmer organizations/groups.
- To improve spice farming using composite and animal manure.
- To start clove tree nursery.

- To encourage others to continue with spice farming and the search for a common market.
- To conserve the environment.
- To develop cloves farm.
- To properly manage a spice farm.
- To make sowing pots and seedling nursery.
- Planting shade trees in a cardamom farm.

## **4.0 VIEWS**

### **4.1 Participants**

The visiting farmers admitted to have learned new techniques of spice farming, although, they were also spice farmers. They have gained new techniques particularly on:

- Farm, seeds, seedling preparation and seedling transplanting by using recommended measurements
- Selection of good seeds compared to the ones they normally use.
- Spice farm management and the use of fertilizer (compost and animal manure).

### **4.2 Amani Farmers**

On the other hand Amani farmers learned on the importance of forming groups in order to find common markets for their products.

### **4.3 Facilitators**

Visit facilitators noted the importance of the exchange visit of spice farmers from Morogoro because farmers have been exposed to improved management techniques such as identification of better seeds, which are early maturing and are marketable. Also farmers were provided with the names of potential customers for their products. Facilitators also, promised to make a follow up on activities that farmers have promised to work on.

The facilitators had an opportunity to talk to the tea factory management about the possibility of conducting research at Nyachiro and Tawa villages in order to find out if there is a possibility of starting tea plantations, which were previously planned as early as in the 1950s. Of course this would only be feasible if the initiative would be accompanied with even a mini tea-drying factory in those areas (Nyachiro and Tawa).

## 5.0 ANNEXES

### 5.1 List of participants

S/N	Name	Occupation	Village	Ward	Address
1	Geroda Amani	Farmer	Konde	Kisemu	P.O.Box 640Morogoro
2	Yahya Kondo	Farmer	Kibogwa	Kibogwa	P.O.Box 1880, Morogoro
3	Peter Chamagonda	Farmer	Tawa	Tawa	P.O.Box 1880, Morogoro
4	Safia Hamadi	Farmer	Kibogwa	Kibogwa	P.O.Box 1880, Morogoro
5	Ramadhani Changango	Farmer	Nyachiro	Tawa	P.O.Box 1880, Morogoro
6	Christina John	Farmer	Tawa	Tawa	P.O.Box 1880, Morogoro
7	Ayubu Salum	Farmer	Kinole	Matombo	P.O.Box 1880, Morogoro
8	Monica Emil	Farmer	Nyachiro	Kibogwa	P.O.Box 1880, Morogoro
9	Vitalis Mbena	Farmer	Konde	Kisemu	P.O.Box 1880, Morogoro
10	Hassan Dikinga	Farmer	Nyachiro	Kibogwa	P.O.Box 1880, Morogoro



11	Aziza Athumani	Farmer	Kibogwa	Kibogwa	P.O.Box 1880, Morogoro
12	Fatuma Ramadhani	Farmer	Kinole	Matombo	P.O.Box 1880, Morogoro
13	Andrew Mandia	VEO *		Tawa	P.O.Box 1880, Morogoro
14	Heriel Amir	VEO *		Kisemu	P.O.Box 1880, Morogoro

\*Village/Ward extension officers

**5.2 List and distribution of spices found at Zigi garden as of 25 July 1996**

Scientific name	Common name	Swahili name	No.
<b>A: Spices:</b>			
1. <i>Cinnamom zeylanicum</i>	Cinnamon	Mdalasini	50
2. <i>Elletaria cardamonum</i>	Cardamon	Iliki	0.5ha
3. <i>Eugenia aromatica</i>	Cloves	Karafuu	40
4. <i>Myristica fragrans</i>	Nutmeg	Kungumanga	4
5. <i>Piper nigrum</i>	Black pepper	Pilipili manga	100
6. <i>Vinnila latifolia</i>	Vanilla	Vanilla	9
<b>B: Fruits and Nuts:</b>			
1. <i>Annona muricata</i>	Sour sop	Stafeli	3
2. <i>Annona reticulata</i>	Bullocks heart	Topetope	2
3. <i>Artocarpus integrifolia</i>	Jack fruit	Fenesi	1
4. <i>Artocarpus odoratisima</i>	-	Shelisheli	1
5. <i>Artocarpus utilis</i>	Bread fruit	Shelisheli	6
6. <i>Artocarpus heterophyllus</i>	Bread fruit	Shelisheli	1
7. <i>Averhoa bilimbi</i>	Bilimbi	Mbilimbi	2
8. <i>Averhoa carambolla</i>	Carambola	Karambola	4
9. <i>Areca catecho</i>	Batelnut	Popoo	7
10. <i>Cola nitida</i>	Cola nut	Cola	6
11. <i>Chrysobalanas cainito</i>	Star apple	-	2
12. <i>Chrysobalanas icaco</i>	US coco plum	-	3
13. <i>Dillenia indica</i>	Elephant fruit	-	4
14. <i>Eugenia malacensis</i>	Malay apple	-	6
15. <i>Eugenia domestica</i>	-	-	6
16. <i>Eugenia uniflora</i>	Pitang cherry	-	3
17. <i>Garcinia mango stana</i>	Mangostein	Tuna tamu	10
18. <i>Lucuina salisfolia</i>	Canistel	Zeituni	6
19. <i>Mammea americana</i>	Mammey	-	3
20. <i>Macadamia ternifolia</i>	apple	-	1
21. <i>Nephelium litchi</i>	Macadamia	Hichi	3
22. <i>Passiflora quadrangulis</i>	nut	Papai kamba	1
23. <i>Passiflora edulis</i>	Litchee	Makakara	1

24. <i>Psidium cattleianum</i>	Sour	Mapera	10
25. <i>Psidium guajava</i>	granadilla	Mapera	10
26. <i>Punica granatum</i>	Passion fruit	Komamanga	2
27. <i>Persia americana</i>	Straw berry	Parachichi	10
28. <i>Spondius lutes</i>	guava	Sambia	2
29. <i>Spondius cytherea</i>	Common	Ngongo	8
30. <i>Terminalia catapa</i>	guava	Mkungu	4
31. <i>Mangifera indica</i>	Pommegranate	Mwembe	4
32. <i>Macadamia ternifolia</i>	Avocado	-	1
33. <i>Prunus domestica</i>	Mombin plum	-	7
<b>A: Oil seeds:</b>	Mombin plum	Nil	
1. <i>Arenga pinnata</i>	Indian almond	Nil	
2. <i>Acacia fernanciana</i>	Mango	Mlanga langa	
3. <i>Cananga odorata</i>	Macadamia	Nil	10
4. <i>Pimmenta acris</i>	nut	Nil	3
5. <i>Cymbopogon citrates</i>	Peaches	Nil	10
6. <i>Pentadesma butyraceae</i>	Sugar palm	Mawese	6
7. <i>Elaies guinensis</i>	Cassia oil	Machachu	1
8. <i>Garcinia Xantomonas</i>	Ylang ylang	Nil	6
9. <i>Ressia edulis</i>	All spice	Nil	10
10. <i>Jambos jambosa</i>	Lemon grass	Nil	2
11. <i>Pasgvelia latifolia</i>	-	Nil	4
12. <i>Canarium communea</i>	African palm		4
	oil		1
	-		1
<b>B:Others:</b>	-	Nil	6
1. <i>Bixa olerana</i>	Rose apple	Black silk dye	
2. <i>Diospyros mollis</i>	-		
3. <i>Crescentia cujete</i>	Java almond		6
4. <i>Carcimilowa edulis</i>			1
			2
<b>C: Extinct spices:</b>			3
1. <i>Curcuma longa</i>		Binzari	
2. <i>Zingibar officinalis</i>	Dye	Tangawizi	
3. <i>Cinnamon camphora</i>	Ebenester Dye	Karafuu maiti	
	-		
	-	Nil	
<b>D: Fruits and nuts:</b>		Nil	
1. <i>Achras sapota</i>		Nil	
2. <i>Eriabotrya japonica</i>		Nil	
3. <i>Feijoa sellowiana</i>	Turmeric	Nil	

4. <i>Pasiflora ligularis</i>	Ginger	Mapera meupe
5. <i>Psidium gvajava</i>	-	Kakara
6. <i>Black passion fruit</i>		Nil
7. <i>Annona squamosa</i>	Sapoddila	Nil
8. <i>Annona cherimoya</i>	Loquat	Zabibu
9. <i>Vitis spp</i>	Feijoa	Chai
10. <i>Catha edulis</i>	Sweet	Nil
11. <i>Prunus persica</i>	granaddila	Nil
	White guava	
	Passion fruit	
	Squamesa	
	Cherimoya	
	Grape fruit	
	Arabian tea	
	Pears	
	Apples	

### 5.3 Itinerary: 24/4/2002 – 28/4/2002

Date	Activity	Venue	Responsible Person
24/4/2002	- Arrival in Muheza	- Muheza	- Participants and facilitators
25/4/2002	- Visiting "Kizugu" farm	- Kizugu (Amani)	- Participants, facilitators and Mr. Mandoshe
	- Visiting seedling garden	- Zigi	- participants, facilitators and Mr. Selemani
26/4/2002	- Visiting individual farms	- Zigi Upper	- Participants, facilitators and Mr. John Lyimo
		- Kisiwani (Mavumbi)	- Participants, facilitators, Sangai's family and Mr. J. Kiluwa
27/4/2002	- Visiting tea plantations and processing plant	- Amani	- Participants, facilitators and Mr. K. Kabage
28/4/2002	- General remarks/summary	- Tanga	- Participants and facilitators
	- Trip to Morogoro		All