Policy strategies interventions and the way forward for sesame crop: A case study of Kordofan region, Sudan

Shawgi Ali [1], Dekha Sheikh [1] & Ali Musa [1]

[1]Department of agribusiness management and trade, Kenyatta University, School of Agriculture & Enterprise Development, P. O. Box 43844 Nairobi, Kenya

Corresponding author: shawgi56@yahoo.com

Abstract

Kordofan region is one of the most important traditional producers of sesame in Sudan. This study analysed the sesame crop value chain of Kordofan region from producers to processors in terms of material flows, information flows and relationships within and between the actors that constitute the value chain. The study also determined constraints and opportunities in the sesame production and processing system. The study used qualitative (functional analysis and flowcharts, mapping the current sesame value chain), strengths, weaknesses, opportunities and threats matrix (SWOT) analysis to determine constraints and opportunities in the chain and quantitative (financial analysis) methods of analysis. The study suggested a set of value chain development policy strategy interventions to improve sesame production and processing.

Keywords: Kordofan, sesame value chain, Sudan, SWOT analysis, value chain development policy

Résumé

La région de Kordofan est l'un des plus importants producteurs traditionnels de sésame au Soudan. Cette étude a analysé la chaîne devaleur de la culture de sésame de la région du Kordofan des producteurs aux transformateurs en termes de flux de matières, flux d'information et des relations au sein et entre les acteurs qui constituent la chaîne de valeur. L'étude a également déterminé les contraintes et les opportunités dans la production de sésame et le système de traitement. Cette étude a mis en œuvre l'analyse qualitative (analyse fonctionnelle et des organigrammes, la cartographie de la chaîne de valeur actuelle de sésame) des forces, des faiblesses, des opportunités et de la matrice des menaces (SWOT) pour déterminer les contraintes et les opportunités dans la chaîne et les méthodes quantitatives de l'analyse (analyse financière). L'étude a suggéré un ensemble d'interventions de stratégie de politique de

développement de la chaîne de valeur pour améliorer la production et le traitement de sésame.

Mots-clés: Région du Kordofan, chaîne de valeur de sésame, analyse SWOT, politique de développement des chaînes de valeur

Background

Sudan is the third largest producer of sesame (*Sesamum indicum*) in the world, after India and China. Nevertheless, it is considered the main world exporter of sesame seeds (Maryoud *et al*., 2008). The most important oil crops grown in Sudan are sesame, groundnut and sunflower. In the recent past the country witnessed an expansion in area planted to sesame. The area under sesame cultivation is currently estimated at about 4,938,238 feddans (one hectare is 2.4 feddans). Sesame seed production in Sudan is estimated at about 450,000 MTs and is grown under rain-fed conditions by subsistence, semi-commercial and commercial farmers. It contributes to Sudan's export trade and earnings. There are three wild relatives of sesame recognised in Sudan including *S. alatum*, *S. latifolium* and *S. anguistifolium*. The existing wide variability in cultivated landraces and the wide spread of wild types makes Sudan an important location for sesame genetic diversity. Collection efforts between 1999 and 2008 have resulted in more than 300 accessions from areas in eastern, western and central Sudan including both cultivated and wild material with different characteristics especially seed color (Nahar, 2009). Sesame and groundnuts are the main oilseed crops grown in Sudan. Although Sudan was an important exporter of sesame, its position in world trade has declined in recent years (Elshafie *et al*., 2007).

Literature Summary

Value chain mapping facilitates a clear understanding of the sequence of activities, key actors and relationships involved in the chain. It includes analysis in qualitative and quantitative terms of the various actors of the chain, their linkages and all operations of the chain from pre-production (supply of inputs) to industrial processing and marketing (Garcia, 2009). Mapping diagrams are prepared through an iterative process which can be divided into two stages: The first stage is an initial map depicting the structure and flow of the chain in logical clusters including the main actors and the activities carried out at the local level, their links to activities at other domestic or foreign locations, the supporting services and their interactions, the links to the final market, and some initial indications of size and importance. The second stage is quantifying the value chain. This involves adding

detail to the basic maps drawn in the first stage (structure and flow), and depends on the level of detail needed for the research entry point.

A study by Garcia (2009) on agro-value chain analysis and development used Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis to identify the main strengths and weaknesses of the different segments of oilseeds value chain in Ethiopia and found out that the major strengths of the sesame farmers were suitable climate and land, large internal market for oil and oil cake and increasing demand for organic products and healthy oils. The major weaknesses encountered included fragmented small holdings, few commercial farms, high pre- and post-harvest losses and limited access to finance.

Study Description

This study was conducted in the region of Greater Kordofan, which encompasses the two states of North and South Kordofan. The territory of the region covers approximately 380,552 km^2, and lies between latitudes 10° 15'-14° 30' N and longitudes 29° 15' – 32° 30' E in Central-Western Sudan. The State of North Kordofan is located southwest of Khartoum, almost in the center of the country and covers an area of 221,900 km^2. The State of South Kordofan covers an area of approximately 158,355 km^2. Administratively, North Kordofan is divided into 17 localities and 5 provinces while South Kordofan comprises of 16 localities and 5 provinces. The climate ranges from desert in the north of the region to semi-humid in large parts of South Kordofan (Harizi *et al.,* 2006). This study used both qualitative and quantitative research design to capture data from different groups of respondents. This study was conducted between the months of April and June, 2011. Initially the study established the target sample size namely, sesame value chain actors. Subsequently, a sample of 150 (forming 10% of the total sesame farmer population of 1,500) was drawn. In this study, 30 sesame value chain players (4 industry oil processors, 3 "tahania" processors, 4 traditional oil processors, 7 traders, 8 brokers, and 4 assemblers/village collectors) were selected and interviewed using purposive sampling procedure.

Research Application

Functional analysis (Table 1), flow chart and value chain mapping methodologies were used to characterise the current sesame value chain. This involved the collection of information (qualitative and quantitative) to enable graphical representation (process mapping) of the material flows, information flows and relationships within and between the actors that constitute the

Table 1. Functional analysis of the sesame value chain.

Stage of the chain	Functions	Agents	Outputs
Production and primary marketing	Cultivation Marketing Transporting to town market	Farmers & Assemblers/ village collectors	Sesame seeds in the village Sesame seeds delivered to town
Marketing	Marketing Transporting	Wholesalers	White sesame seeds to tahania (sweet) processors Red sesame seeds to oil processors White sesame seeds to exporters
Factories	Processing	Tahania (sweet) industries Oil industries	Tahania (sweet) to wholesalers Cooking oil to wholesalers By-product (cake for livestock feed) to wholesalers
Export	Marketing Transporting	Exporters	White sesame seeds to world market By-product cake (livestock feed) to world market
Retail	Marketing Transporting	Retailers	Tahania (sweet) Cooking oil Livestock feed(cake)

sesame value chain. Strengths, weaknesses, opportunities and threats (SWOT) matrix analysis was used to analyse the sesame producers' and processors' constraints and opportunities.

A flow chart of current sesame crop value chain in Kordofan region. The information contained in a functional analysis table is represented in a flow chart (Fig. 1). This is a visual repesentation of the complexity of the interactions and flows between agents. The flowchart of sesame crop value chain in Kordofan region that corresponds to the functional analysis table above and is given in Figure 1.

From this study, sesame production in Kordofan was constrained by the non-existence of improved varieties suitable for the agro-ecology. Other constraints included lack of extension services, civil war and conflicts between farmers and livestock keepers over natural resources, scarcity of machinery at the right time to plough the land and labour during the harvesting season. Oil processors are constrained by high cost of inputs especially fuel, high taxes, insufficient supply of sesame seed, high sesame prices due to exporters' competitive advantage and oil imports.
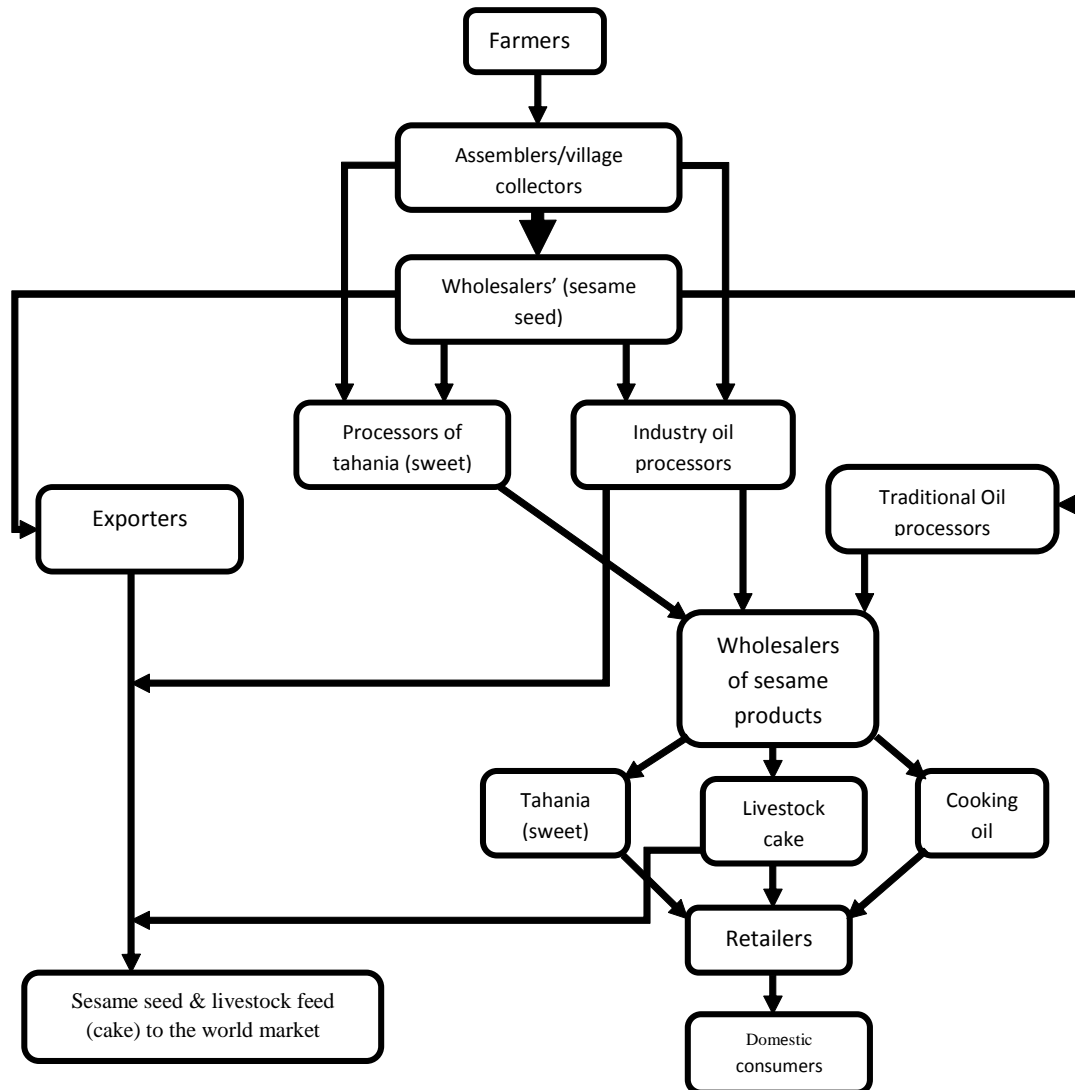
Figure 1. **Flowchart of the sesame crop value chain in Kordofan region, Sudan.**

Sesame producers' opportunities in the region included good local varieties, favorable growing conditions, vast land suitable for sesame growing estimated at 5.1 million ha and availability of sesame oil processors with the potential to increase oil production and compete with other oils through improved quality. In addition, there appeared to be great potential to export livestock cake to world markets directly rather than selling it to exporters.

Policy Strategies Interventions

Based on the analysis of the sesame value chain, constraints and opportunities, the following are needed value chain

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development policy strategy interventions to improve sesame production and processing:

- Agriculture in Kordofan region is largely subsistence. Therefore, there is need to facilitate farmers to improve their production through improved agricultural practices, utilisation of improved technology and capacity building in agribusiness.
- Farmers in Kordofan region view farming as a means of survival and not as a viable business opportunity. Sensitisation of farmers to the potential of agriculture as a source income above subsistence and small scale operation would encourage them to expand their operations and maximise their profits. Providing farmers with information with regard to the gap that exists between local supply and demand as well as their ability to take advantage of this situation would inspire them to increase their productivity and production.
- Increasing the exposure of farmers to improved agricultural practices such as in-line cultivation and sowing techniques would allow farmers to improve their productivity.
- Exposure of farmers to technologies such as the sesame harvesting machines would enable farmers cultivate larger areas and increases their production capacity.
- Enhance networking with neighboring countries in search of superior seed varieties and investigate the possibility of launching partnership with International Research Institutions for the development of improved seed varieties.
- Undertake sensitisation programmes to educate farmers on the values of new varieties and establish programmes for distribution of new seed stocks for testing and multiplication.
- Facilitate farmers access to soft loans to meet farmer production and processing needs. Sensitisation and promotion of internal lending schemes within farmers' organisations should be encouraged.

Acknowledgement

References

Elshafie, B.M., Hag Saeid, H.E. and Ijaimi, A. 2007. Marketing costs and margins for selected commodities. Khartoum-Sudan: Moaf.

Garcia, G. 2009. Agro-value chain analysis and development. Vienna: UNIDO.

Gubitz, G.M., Mittelbach, M. and Tradi, M. 1999. Exploitation of the tropical oil seed plant Jatropha Curcus. *Elsevier Journal of Bioresource Technology* 67:73-82.

Harizi, K.E., Shields, G. and Prato, B. 2006. Sustainable solutions for ending hunger and poverty. Empowering the Rural Poor under Volatile Policy Environments in the Near East and North Africa Region Research Project – Sudan Case Study (pp. 5-13). Khartoum, Sudan: IFPRI.

Maryoud, M.E., Makeen, M.A. and Mahmud, T.E. 2008. A study of markets and revenues in Kordofan region. Elobeid-Sudan: Kordofan University.

Mendoza and Mark Rose Gant. 1995. Pricing conduct of spatially differentiated markets. pp. 343-356. Prices, Products, and People. International Potato Center, Lima, Peru.

MOAF. 2010. Annual report. Kadogli, South Kordofaf: MOAF.

Nahar, A.B. 2009. Sudan's fourth national report to the convention on biological diversity. Khartoum, Sudan: Higher Council for Environment and Natural Resources.