

Assessing Gender Roles and Environmental Impacts during Oil Crop Production in Lare Nakuru, Kenya

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Abstract

The oil crops sector had been identified as one of the entry points in the execution of the food reliance and a vehicle for poverty reduction by government of Kenya (MoA, 2008). As a result many studies and development projects aimed at promoting soybean and sunflower in Kenya have been undertaken since the 1990s. While a lot of studies have been based on low adoption of these crops, challenges like gender roles, access to and control of the farmland remain undocumented. To address this gap, this study focused on gender roles and the related potential environmental effects during oil crop production by small holder farmers, in Lare Division, Nakuru County, Kenya. Gender roles, access to information by gender and awareness of environmental and gender policies were analyzed. Purposive sampling was used to obtain a sample size of 180 small holder farmers from 330 households within the study area. The results indicated that the activities and production of oil crop was a gender crop. Male farmers owned land and accessed information through trainings but were not involved in all activities of soybean and sunflower production. Gender roles adhere to traditional and cultural codes on pesticide application; it was done by male farmers with no protective gears despite having been trained on safe practices. On environmental and gender policies awareness, 58% and 13% of female and male farmers were not aware. The study concludes that sunflower and soybean is a female enterprise crop. Male farmers owned the land hence made all regardless of the gender labor requirement. All male farmers' accessed information on best farming practices, while women farmers (n=93) did not. There was slow awareness on policies because 52% and 13% (female and male farmers respectively) were not aware. This slow of awareness is likely to lead to poor farming practices that are likely to increase environmental risks. The study recommends that there is need to promote policies, programmes and projects that improve both men and women's access to and control over productive resources, inputs and services equally at grassroots' levels. There is a need to study the changes in the gender roles in agriculture in order to understand the cultural setup in different area. The understanding of such changes goes a long way in enhancing better projects planning and implementations.

Introduction

Oil crops are grown all over the world and in many economies; they play a crucial role in the agricultural sector. Among seed oils, soybeans and sunflower have had an extraordinary growth due to rising consumption of livestock products and concurrent rapid growth in meal demand; as well as the fact that they are cheap source of proteins especially in developing nations.

Soybeans and sunflower account for more than 50% of the world oilseed output (Joshi, 2001). As the world population continues to grow and is predicted to reach about nine billion in 2050, the demand for oil produce will continue to grow. Governments, donors and development partners committed resources towards the development of the oilseed sub sector (MDG 2001). Currently, 40% of edible oil consumed within the region is imported as crude palm oil and blended with the locally produced oil seeds to be sold in the domestic and regional markets. There is a high demand and potential for bio-fuels due to lack of sufficient energy or irregularity of energy supply for processing, lighting and production activities thus influencing livelihoods of over twenty million Kenyans and accounts for over 70% of oil production in the country (EPZ, 2005). In Kenya, the development of the oil crop industry has been of considerable importance to the country's economy. Kenya is currently importing over 95% of her vegetable oil requirements at a cost of US \$ 90 million annually (FAO, 2002).

The consumption of edible oils has grown at about 13% per annum in recent years but production of oilseeds has been declining since the mid-1980s. At a population growth of about 3.4% per annum, it is estimated that Kenya will need approximately 250,000 metric tonnes edible oils, 200,000 tonnes of oilseed cake and an additional 500,000 tonnes for other (industrial) purposes by the turn of the century (EPZ,2005). This demand can only be achieved by shifting to domestic production and processing of vegetable oils. There is a strategy in the country focused on transforming subsistence agriculture to market-oriented farming (MoA, 2006). The oil crops sector had been identified as one of the entry points by the Kenyan government in the execution of the food reliance and a vehicle for poverty reduction. Oilseed contributed to food security; to the livestock sub sector through the seed cake as animal feed; to the energy sector through production of bio-fuels, energy that can in turn be used to support value addition in the oilseed sub sector through processing and packaging and can be used as forage for bees for improved production in the apiculture sub sector (KARI, 2008). Sunflower and soy bean crops are widely adapted and they were among the major oil crops grown in Kenya mainly in the Rift valley and Southwest of Kenya. Kenya has suitable agro-ecological zones with potential for the cultivation of various oilseed crops and essential oil crops. In areas where meaningful research has been carried out (Okoko *et al.*, 1998), it has been established that the presently low yields attained by farmers could be increased threefold if they adopted scientifically developed appropriate technologies.

Prioritisation of oilseed crop research programmes would greatly facilitate and accelerate the generation of production technologies, especially so for those crops which hitherto have not been accorded priority as subjects for research. In Nakuru County, oil crop production is undertaken mainly in areas with an altitude of less than 1200 meters above sea level, which are low lying zones. These areas include Lare, Rongai, Njoro, Molo and the adjacent areas. Oil crop in these areas produce for the local market which include the local vegetable oil manufacturers e.g. Bidco oil Company. Studies on sunflower and soybean production in Kenya have shown that although sunflower and soybean have good potential for commercial production, there are still some challenges such as gender bias mainly on roles, access and control of resources, low land acreages leading to shortage of seeds for processing, poor agronomic practices mainly on fertilizer usage, and also low production yields (KARI, 2008). Other production constraints include socio- economic, lack of policy and regulatory bodies and cultural issues, lack of extension services, and climatic changes (Okoko *et al.*, 1998). However, to sustain production of sunflower and soybean, it was envisaged that gender roles and environmental impacts should be established to document 'who' does 'what' and 'how' and to assess impacts of oil crop production to the environment.

Methodology

The study was conducted in Lare Division of Njoro District in Nakuru County, Kenya which is characterized into four agro-ecological zones (AEZ). Farmers in Lare practice subsistence farming where most of their acreage of farm holding is between 1.5 to 5 acres of land. The cropping pattern is intercropping (especially maize with common bean/ sunflower/ soya bean), which is increasing with increase in land scarcity due to population pressure in the area. The study was designed as an *ex post-facto* survey and questionnaires were administered in each household only once.

The sampling frame of 180 small holder farmers was based on the 2008/2009 data of the Ministry of Agriculture, Njoro District, Nakuru County (MOA 2008). The farmers were selected based on oil crops practiced and willingness to participate. Data was collected through a farm survey by face-to-face interviews with household heads either (male or female). The data collected included gender of farmer, household characteristic, land use, cropping pattern, pesticide application techniques, knowledge on impact to environment and policies.

Results and Discussion

Demographic characteristics of the households

Lare division has a total population of 27,727 (2009 census) with four sub-division (Naishi, Bagaria, Gichobo and Lare). A total of 330 households (MoA, 2008) practice oil crop production. 180 small holder farmers (87 male and 93 female) were sampled. The area receives a medium annual rainfall averaging about 600-1000 mm mainly in March and which gradually tapers off in December. This has greatly influenced the crop performance in the area. The average monthly minimum and maximum temperature ranges from either 22 to 26 (degrees) or 8 to 10 (degrees) respectively. The major soils in Lare are developed on the ashes and pumice from recent volcanoes (Jaetzold and Schimidt 1983).

Activities carried out in oil crop production

A total of 180 households were surveyed within the study area. The respondents' frequency distribution revealed there were 48% male farmers and 52% female farmers and the gender distribution of respondents was about equal for male and female respondents during the survey. In this study, the gender activities analysis showed that the relationship between male and female farmers during oil crop production was not gender-neutral, thus affected both genders differently. In Lare Division, women farmers (n=93) contribute 90% of the labor for oil crop production, as compared to male labor (n=87) who contribute 10% labor. The results further showed that women farmers are an important source of labor during oil crop production. What is clear from the interviewed respondents (n=180) is that oil crop production in Lare has become a predominantly female enterprise as a consequence of its labor demanding during production. This qualified early study by UN, (1989) who found that women constitute the majority of smallholder farmers, providing most of the labor and managing a large part of the farming activities on a daily basis.

Men and women gender labor activities were analyzed based on different agricultural activities. This included: land clearing, tilling, planting, weeding, harvesting, threshing and selling of the sunflower and soya bean crops. The results showed that activities such as selling and supervising are mostly done by men (48%) while land clearing, tilling, planting, harvesting, and threshing is mostly done by women (52%). Guyer *et al.* (1988) notes that women's work is dominated by the 'symbolism of bending' meaning that women tend to be more involved in activities that necessitate bending, such as planting allocation, weeding, threshing and winnowing. This fact hold true in our study area where all female respondents did activities of land clearing, land preparation, planting, weeding, harvesting, threshing and winnowing.

Land Tenure

In the sample area, 48 % (n=87) of male farmers acquired their land through inheritance while none of the sampled female farmers 52% (n=93) own or acquired their land through inheritance. It is argued that insecure land tenure influences how different genders use natural resources or adopts environmentally sustainable farming practices (Young, 1994). FAO, (2010) also argue that when tenure is not secure, women have little incentive to invest in soil conservation and are also significantly less likely to plant trees for food and fuel-wood in areas where future access is uncertain. On land cultivation, 97 % of male respondents cultivated one acre of land within the range of 1 – 5 acres with a mean size of 3.4 acres while, all the female farmers fell within the range of 1 – 2 acres with a mean size of 1.6 acres. The survey results indicated that women (52%) are generally involved in the management, maintenance and conservation of land resources for collective and community consumption. Men (48%) tend to plant permanent trees like coffee, fruit trees and wood lots on their pieces of land due to land security. This qualified early study by KARI (2008) who found out land ownership and use was gender based resource.

Table 1: Land Tenure by Gender

Gender	Frequency		Percentage
	Owned	Hired	
Male	174	5	96.7%
Female	6	2	3.3%
Total	N=180	-	100

The above table indicates that even the female respondents who were interviewed regarded land as a male asset. This is due to the culture of Lare people whose tribe is mainly Kikuyu.

Decision Making

The findings of the study showed that in Lare division, agriculture is regarded as one of the risky ventures (n=180). In this study, results show that gender plays a big role during decisions on the type of crop they grow, inputs used, markets where they sell their products, and management of available resources like land. Decision making, thus, plays a vital role in the day to-day life of Lare farmers and their families. Lare farmers have to consider a number of factors before arriving at any decision regarding farm and non-farm activities. In this study, women (n=93) did not make individual decisions regarding oil crop production without the consent of either their spouses or any adult male in the family. The absence of women (52%) in decision making within households pointed to gender based constraints that prevented them from making positive decisions regarding oil crop production. This supports Rio de Janeiro (1992) who found that the present decision has its roots in the past and reflects upon the future decision.

Further results indicated that land, labor availability and finances are considered as the major factors influencing decision making in sunflower and soy bean activities by 54% of the farmers. Only 46% of the total respondents (men and women) considered type of crop as the factor influencing their decision making in any agricultural activities. On farm activities, male farmers (n=87) took more of self-decisions than consultative decisions or decisions by their spouses in case of choice of crop and varieties choice; cropping, fertilizers and their use; plant protection chemicals and their use; marketing of crop produce, and land usage. The probable reason for this respondents said was traditionally “land” issues are a male right and domain therefore male farmers’ still feel that the performance of taking such crucial decisions regarding land lies with themselves. These results showed that being involved in a process is not the same as having a voice or ability to influence and thus farmer’s daily interaction and decisions on environment use was gender specific.

Extension Advice

The respondents were further asked how many times they sought extensions’ advice on environmental risks. Only 68% of the respondents agreed that they always sought for advice on environmental risks while 32% said that they usually received advice during public gatherings. This qualified early findings by MOA, 2006 (Nakuru County) that the technical advice sought for by small scale farmers applied more directly to the production activities of the family farm and to the action needed to improve or sustain the farming production and reduce environmental risks. On finding out about gender technology accessibility, 42 % of the male farmers were aware of new technology with 19 % of the female farmers aware. Only 6% of male farmers had no knowledge at all about new technologies while 52% of female had no knowledge at all. This indicated that Lare women farmers were not accessing extension for farming information.

Education Levels by gender

The results further showed that oil crop production activities were associated with level of education of either male or female household head. The results indicates that 26% of women and 10% of men had no formal education, while 8% of women and 22% of men had attended primary school and above.

Table 2: Education level of respondents by Gender

Level of education	Gender	Frequency	Percentage
No formal education	Male	18	10
	Female	46	26
Primary	Male	40	22
	Female	14	8
Secondary	Male	37	20
	Female	12	7
Tertiary	Male	11	6
	Female	2	1
Total		n=180	100

These levels of education showed the male and female respondents who attained primary level of education and above were engaging more labor towards producing sunflower and soy bean. According to Teich *et al.* (1990), improved communication and higher levels of education make people more adaptable to new ideas and new social reforms required by technology towards any agricultural enterprise.

Construction of Gender Roles by Cultural Setups

In Lare Division, gender roles adhere to traditional and cultural codes. A division inhabited by over 95% Kikuyu tribe; tradition and culture are upheld tightly. Women farmers (n=93) do the heavy work of tending crops, fetching and carrying water and fuel wood, in addition to household chores and childcare. They operate under serious time constraints, thus limiting their efficiency and the ability to respond to changing economic opportunities. Lare women (52%) are responsible for production of all or most food crops and many are left to run family farms alone while their husbands (48%) migrate in search of paid employment. These results were found from focus groups discussions within the division (Naishi, Lare, Bagaria and Gichobo sub- divisions). For example, results from one focus group discussion in Naishi sub-division (n=18 women) indicated that women farmers are constrained by existing socio-cultural norms through which they are perceived as inferior or second class citizens. From the discussion, women farmers indicated that culture was used to justify the subordinate position of women in the household. The disincentives thus created undermine women's interest and motivation to invest and work on the land and instead, seek other options that directly benefit them.

Division of labor and responsibilities of males and females is a social reality in all households interviewed (n=180). This compliments Olawoye (2001) who found that the subject of gender roles concentrates attention on the obligations, privileges and duties assigned to men and women in society and the relationships between them. From the study findings, 28% of male respondents said most of the farm work was done by their spouses (women). Out of 20% men who said they shared farm work with their spouses, 52% of female respondents said they do most of the farm work alone. This supports findings from the 1990s (Quisumbing 1995) and (Peterman, (2009) who have documented gender inequalities in agricultural roles that disadvantage women as agricultural producers. Given the important role women play in agricultural production around the world, focusing on the unique challenges women face and the resources they lack is key to gender inequality.

Conclusion

From these study findings, it can be concluded that, sunflower and soybean is a female enterprise crop because women farmers carry out all farming activities while male farmers are involved mainly in transportation and marketing. Male farmers owned all the land while female farmers were users. Male farmers (48%) made decisions on what land that needed to be planted while women (52%) did most of the chores in the farm. Male farmers' (n=87) accessed information regarding best farming practices, while women farmers (n=93) did not. Female farmers were not trained, either was busy on farms or had no time to attend meetings which led to land degradation thus impacting the environment negatively due to lack of information. No female farmers ((52%) were aware about environmental and gender policies while 35% male farmers were aware. This slow of awareness is likely to lead to poor farming practices that are likely to increase environmental risks.

Recommendations

From the analysis of data gathered from all the 180 respondents in Lare division, the study recommends that, there is need to promote policies, programmes and projects that improve both men and women's access to and control over productive resources, inputs and services equally at grassroots' levels. It is critical that commodity-specific gender analyses be carried out at the very beginning of any intervention since each commodity brings with it specific challenges and opportunities. This includes reaching out to both women and men individually, and recognizing their different roles and priorities in relation to the environment use. There is a need to study the changes in the gender roles in agriculture in order to understand the cultural setup in different area. Culture is not static, and the dynamics of culture is ruled by a series of factors that may be economic and social in nature. The understanding of such changes goes a long way in enhancing better projects planning and implementations.

References

- Abera, G. (2006). *Gender Based Roles and Resource Use Right in Potato Production and Marketing System: The Case of Some Districts in Oromia, Ethiopia*.
- FAO, WHO, UNU. (2004). *Human Energy Requirement, Report of a Joint FAO/ WHO/ UNU Expert Consultation 17-21 October 2001*. Rome: Food and Agricultural Organization of United Nations(FAO).
- FAO, (1997). *Gender and Participation in Agricultural Development Planning*.

- FAO, (1994c). *Tropical Soybean Improvement and Production*: Plant Production and Protection Series No. 27, FAO, Rome.
- FAO, (1989). *Sustainable Agricultural Production*: Implications for International Agricultural Research.
- Fargione, Joseph E., Richard J. Plevin, and Jason D. Hill. 2010. "The Ecological Impact of Biofuels." *Annu. Rev. Ecol. Evol. Syst.* 41 (1): 351–377. doi:10.1146/annurev-ecolsys-102209-144720.
- Harcourt (ed.) (1994). *Feminist Perspectives on Sustainable Development*. London and New Jersey: Zed Books Ltd.: pp.145-155.
- KARI. (2008). *Annual Report*.
- KARI. (2007). *Annual report*
- MoA. (2008). *Nakuru District*
- Overholt, C., M. Anderson, Cloud K. and Austin, J. (1985). *Gender Roles in Development Projects: Cases for Planners*. West Hartford, CT: Kumarian Press.
- Quisumbing A.R., L.R. Brown, H.S. Feldstein, L. Haddad, and C. Pena. (1995). *Women: The key to food security*. Food Policy Report, IFPRI, Washington, DC, USA.
- World Bank Group (Ed.). (2011). *World Development Report 2012: Gender Equality and Development*. Washington, DC: World Bank Publications.
- Young, K. (1994). *Planning Development with Women, Making a World of Difference*. London. Macmillan.
- World Bank, (2007). *Gender and Development Briefing Notes: Water, Sanitation and Gender*.
- World Bank, (2001). *Gender and Growth: Africa's missed potential*. World Bank.
- World Bank, (1992). *Development and the Environment: World Development Report, 1992*, New York, Oxford University Press.
- World Bank, (1991). *Women's Crucial Role in Managing the Environment in Sub-Saharan Africa: Africa Technical Department, Women in Development Unit, Technical Note, IBRD, Washington*

Appendix 1

APPENDIX II: Guiding questions for Researcher

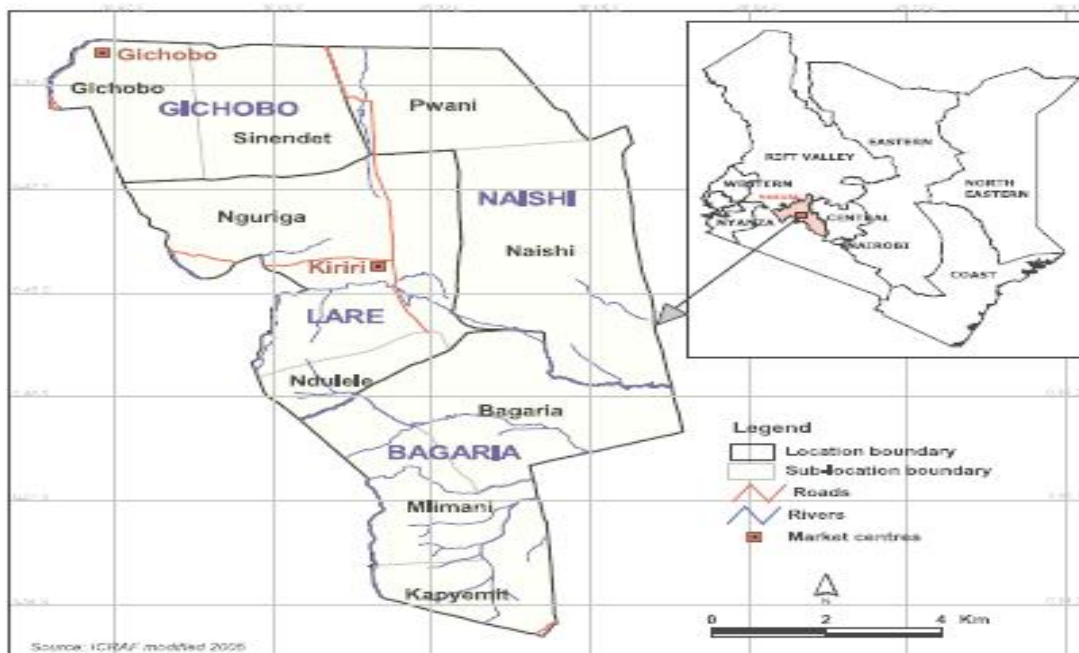


Figure 1: Map of Kenva and Lare Division

Source: ICRAF, 2006