ROLE OF INDIGENOUS KNOWLEDGE IN ENHANCING HOUSEHOLD FOOD SECURITY: A CASE STUDY OF MUKUNGWE, MASAKA DISTRICT, CENTRAL UGANDA

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ABSTRACT

This study examined and documented the role of indigenous knowledge in enhancing household food security in Uganda focussing on Mukungwe sub-county, Masaka district. It specifically identified the indigenous practices which enhances household food security; determined the extent of use indigenous knowledge versus western knowledge in enhancing household food security; identified the factors that limit the use of indigenous practices in enhancing food security. The data were collected using semi-structured questionnaires, personal interviews and group discussions. The finding showed that many people depend on the use of indigenous knowledge practices in sustaining subsistence farming and enhancing household food security. Majority of farmers mulch their crops using local materials like coffee husks while others use locally concocted pesticides to control pests such as maize stem borers and cabbage diamondback moths. Use of locally made mortars and stones to pound and grind foodstuffs such as groundnuts was common. Fresh cassava and potato tubers were buried into the soil to increase their shelf-life. There is a need to build strong awareness programs by extension agents on indigenous knowledge systems in order for farmers to appreciate its role in enhancing household food security in especially rural areas where the factors of production is scarce.

Keywords: Local knowledge, indigenous practices, food security, Uganda.

INTRODUCTION

The fundamental roles of indigenous knowledge in sustaining the livelihoods of Africa's poorest people have often been neglected in the agricultural and rural development sector. In Uganda, a predominantly agricultural country the value of this knowledge in enhancing household food security has not been given sufficient attention. There are no formal interventions that seek to encourage people to use the local knowledge to improve agricultural crop production. The seasonal nature of food production and gathering (Mutyaba, 1998) in the country creates a need to store and preserve foods during periods of massive food production. In addition, short self-life of some foods creates a need to process them before storage using indigenous technologies such as drying or smoking. Processing of such foods using indigenous practices and technologies could enhance food availability to household in periods of scarcity (Mukiibi, 2001).

Although different strategies such as food supply by World Food Program have been in place to help ensure that people have access to food at all time (Mutyaba, 1998), many households in Uganda are food insecure. Studies on the role

of indigenous knowledge in food security could provide important information for development of policies that support such knowledge for human sustenance. This study examined the role of indigenous knowledge in enhancing household food security in Uganda focusing on Mukungwe sub-county, Masaka district. The specific objectives of the study were to: (i) identify the indigenous practices and technologies which enhances household food security; (ii) determine the extent of use indigenous knowledge versus scientific knowledge in enhancing household food security and (iii) identify the factors that limits the use of indigenous farming practices and technologies in enhancing food security.

METHODOLOGY

Study area

Mukungwe sub-county is located in Bokoto county, Masaka district in Central Uganda. It lies between longitude 30°3´ and 31°3´E, and latitudes 0°15´ and 0°30´S (Kikomeko, 1994) with an average altitude of 115 m above sea level. The area has small hills with undulating slope up to about 1000 m above sea level (Bifiirawala, 1994). The hilly terrain creates a serious problem of soil erosion, which affects farmers in the area. The area has a bi-modal rainfall regime with clearly marked wet and dry seasons. The mean annual rainfall is 1125 mm. The temperature in the area is moderately high with a minimum of about 18°C and a maximum of about 30°C. The soils are generally sandy to loam in nature with high erosive potential. The sub-county has the total population of 35,032 people with 17,213 males and 17,819 females (UBOS 2002). Traditionally, the economy in the area has been centred on subsistence agricultural crop production and livestock rearing. The major crops grown are Coffee, Bananas, Beans, Maize and the livestock reared are cattle, goats, and sheep.

Study procedure

The study was carried out in six parishes (Bugabira, Bulayi, Kalagala, Katwadde, Matanga and Samalia) that make up Mukungwe sub-county. A parish under the leadership of a parish chief is the second smallest administrative unit of the central central government under the current government system in Uganda. A total of 60 households were randomly selected as follows: 14 from Bugabira parish, 8 from Bulayi, 10 from Kalagala, 12 from Katwadde, 6 from Matanga and 10 from Samalia parish. The data were collected using semi-structured questionnaires, personal interviews, group discussions and informal observation. SPSS was used to summarise the data into simple descriptive statistics.

RESULTS

Socio-economic and demographic characteristics of the respondents

Majority (58%) of the respondents were women (Table 1). Forty seventy percent of these were aged between 15-30 years. Most (68%) of the respondents were married. About 42% of them were educated only up to primary school level. Majority (69%) were subsistence farmers and about 72% owned between 0.164 - 2.025 hectares of land.

Table 1: Socio-economic and demographic characteristics of the respondents (N=60)

Variable	%
Sex	
Male	42
Female	58
Age group	
15-30	47
31-45	30
46-60	23
Marital status	
Married	68
Divorced	4
Single	28
Educational level	
Primary	42
Secondary	38
Tertiary	20
Occupation	
Subsistence farming	69
Business	21
Civil servant	10
Size of land owned	
< 1 acre (0.164 ha)	10
1-5 acre (0.164 - 2.025 ha)	72
> 5 acre (2.025 ha)	18

Indigenous practices and technologies used in food crop production

Three main indigenous practices were used by households to increase the yield of food crops in Mukungwe sub-county (Table 2). Majority of the respondents mulch their food crops in the garden while 87% use organic manure to enrich the soil. About 58% said they were using locally-made pesticides to protect their crop while in the field from pest infestation.

Table 2: Indigenous practices and technologies used in food crop production (N=60)

Indigenous practices/technologies	% response
Mulching using elephant grass, spear grass, small tree/shrub branches, banana leaves and fibres	90
Use of organic manure such as animal wastes and crop residues	87
Use of locally made pesticides (mixture of red pepper, human and animal urine, neem tree, tobacco and Tephrosia vogelii leaves)	58

Indigenous practices in food processing

Majority (95%) of the respondents said sun drying was the major indigenous practice for food processing (Table 3). Food crops like maize, beans and groundnuts were sun-dried before storage to increase their shelf life for about six

months. Other local practices reportedly used for food processing included pounding foods like groundnuts using locally-made mortars, grinding sorghum and millet using stones, winnowing and roasting certain foods like groundnuts and soyabeans.

Table 3: Indigenous practices used in food processing (N=60)

Indigenous practices	% response
Sun-drying	95
Winnowing	83
Pounding using locally-made mortars	67
Roasting and frying foods	62
Grinding using stones	30

Indigenous practices used for storage of harvested foods

Majority (80%) of the households in Mukungwe sub-county store their food in granary. About 42% said they keep their food in locally made sacks, kitchen shelves above the fireplace, in pots and or baskets. Others bury fresh food like cassava, yams and sweet potatoes in moistened soil so that it last for five to seven days. Sixty-seven percent of the people prefer to use local concoctions made from a mixture of red pepper and concentrated banana juice to increase shelf life of the stored foods from storage pests for a period three to six months. Others use concoctions from woodash, Neem tree, mixture of tobacco and tephrosia leaves, mixture of citrus lemon leaves and red pepper (Table 4).

Table 4: Indigenous practices for storage of harvested food (N=60)

Indigenous practices	% response
Storage	
Granary	80
Use of sacks, kitchen shelves, pots and baskets	42
Bury in moistened soil and sawdust	8
Local concoctions	
Mixture of red pepper and concentrated banana juice	67
Wood ash from any tree	62
Neem tree (Azadirachta indica)	58
Mixture of tobacco and Tephrosia vogelii leaves	55
Mixture of citrus lemon leaves and red pepper	30

Extent of use of indigenous knowledge versus western knowledge

Majority (77%) of the households reported to be using locally-made pesticides red pepper, banana juice, wood ash, citrus lemon leaves, neem tree, tobacco and tephrosia leaves to control array of pests such as maize stem borers and cabbage diamondback moths that food crops while in the gardens and those such as rodents and bean weevils (bruchids) in storage. Only 5% of the households

interviewed depended on synthetic pesticides (Table 5). Modern synthetic pesticides were said to be costly to buy thus its low use by the farmers. About 55% said they use organic manure to maintain soil fertility compared to only 2% who were using inorganic fertilizers because of its cost. Majority (90%) of the households were also using traditional storage methods like the granary and pots compared to only 10% of the households that relies on modern storage methods like refrigerators

Table 5: Extent of use of indigenous knowledge in pest control, storage and soil fertility enhancement versus western knowledge (N=60)

Practices	% response
Control of pests in the garden	
Use locally-made pesticides only	77
Use synthetic pesticides from industries only	5
Use both locally-made and synthetic pesticides from industries	18
Maintenance of soil fertility	
Use organic manures only	55
Use inorganic manures only	43
Use both organic and inorganic manures	2
Storage technologies	
Traditional methods like use of granary, burying certain foods in moistened soil	90
Modern storage methods like refrigerator	10

Factors that limit the use of indigenous practices in enhancing household food security

A number of factors influencing the use of indigenous practices and technologies in enhancing household food security were reported (Table 6). One of the major limiting factors to the use of indigenous knowledge in enhancing food security was lack of documentation. Other limitations included lack of proven scientific procedural explanations, young peoples' perception that indigenous knowledge is obsolete and out-dated compared with western scientific knowledge and practices.

Table 6: Factors limiting the use of indigenous practices and technologies in enhancing food security (N=60)

Limiting factors	% response
Its lack of documentation	93
Lack of proven scientific procedural explanations	74
Restricted only to those who have the knowledge	71
Obsolete and out of date	55
Unsupportive cultures	49
Some local practices/technologies are time demanding	43

DISCUSSION

Most of the early studies on the role of indigenous knowledge have largely been restricted environmental conservation (NARO, 1997). This study has however examined the role of indigenous knowledge in enhancing household food security in Uganda focussing on Mukungwe sub-county, Masaka district. The finding shows that the use of local knowledge in enhancing food security and improved agricultural productivity is increasingly becoming an important issue in the sub-county. A large section of the households are relying on this local knowledge for better crop yield, pest management, food processing, preservation and storage. The use of organic materials such as elephant grass (*Pennistum purpureum*), spear grass (*Imperata cylindrical*) and African couch grass (*Digitaria abyssinica*) as mulching materials is common in this sub-county. Besides, some households use animal wastes such as chicken manure, cow dung and crop residues such as coffee husks to fertilize their gardens in order to have an increased crop yields. This is not surprising because Esegu *et al.,* (2000) reported that such materials are abundant in many parts of Masaka district. Roland and Canas (1998) also reported the use of organic materials, dried coffee pulp as fertilizers by most farmers in Hunduras. The use of such materials is therefore not limited to Mukungwe sub-county alone.

The use of locally made concoctions as pesticides to control pests that attack crops while in the field and while in storage was common in Mukungwe sub-county, Masaka district. Most farmers tended to use mixtures of red pepper, tobacco and *Tephrosia vogelli* to manage insects and animal pests that attack crops or stored produce. The use of such concoctions was also reported by Lisa and Asa (2002) in Vi Agroforestry Project areas of Masaka and Rakai districts. Elsewhere, farmers have also made the best use of indigenous technical knowledge to control pests. For instance in an Indian district of Thrissur, some farmers use a mixture of dried prawn powder and cement as baits to control rodents in agriculture fileds and storehouses while others use a mixture of cotton wool and jaggery and place it near the rat holes (Manju, 2001). Such kinds of practices are cheap, affordable and therefore if advocated for could serve as low cost pest management measures for poor farmers. This would go a long way in reducing pre- and post-harvest losses and hence increase food safety for poor households.

The use of locally made pounding mortars and pestles and grinding curved stones to process foods such as groundnuts and sorghum was also a common practice in the Mukungwe sub-county. Majority of the households in the area are poor, earning less than one hundred fifty dollars per annum, and few can afford to take their harvests to the grinding mills, therefore many of the households tend to look for the most cost effective alternatives. This could partly explain why there is a thriving business in wooden mortars and other items in this sub-county. The use of mortars and pestles for food processing was also reported to be widely exploited by women in Cameroon (Numfor, 1999). Here the women pound freshly chopped cassava into a fine paste, which is later sun-dried. In Mukungwe sub-county, it was found that appreciable section of the people were also relying on sun to dry certain crops like coffee beans and maize grains.

In spite of the increasing reliance on indigenous knowledge (IK) to enhance household food security by households in Mukungwe sub-county, there were a number of factors hampering it use. One of the major limiting factors is its lack of documentation. When IK is not documented, useful information that could be exploited to enhance food security are lost from one generation to another. Lack of documentation of Indigenous practices and technologies were also limited by their lack of proven scientific procedural explanations. The local knowledge was also reported to be in a precarious position because it depends on the willingness of those who have the knowledge to share it with others. Many young people view it as obsolete and out of date compared with western scientific knowledge and practices.

CONCLUSION AND RECOMMENDATION

The use of local knowledge in enhancing food security and improved agricultural productivity is increasingly becoming important in the sub-county, Masaka district. Many households do mulch their crops using local materials and use locally concocted pesticides to control pest both in the field and in the storehouse. The use of locally made mortars and pestles pound and curved large stones to grind foods like groundnuts is popular. Some households have developed a technique of burying certain foods like fresh cassava tubers in moistened soil to increase its storage life. The use of these practices and technologies is, however, largely limited by lack of their documentations. There is, therefore, a need to build strong awareness programs to appreciate indigenous knowledge systems and its role in enhancing household food security; document, and disseminate detailed information about indigenous knowledge; promote and transfer indigenous practices and technologies to areas with similar characteristics.

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