

## CONTRIBUTION OF LOCAL TRADE IN *ZIZIPHUS SPINA-CHRISTI* L. FRUITS TO RURAL HOUSEHOLD'S ECONOMY IN RASHAD LOCALITY, SUDAN

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UDC 630.6

Received: 18 May 2010

Accepted: 05 February 2011

### **Abstract**

Local trade in tree fruits has offered an important source of cash income and employment to trading households for generations in the drier areas of Sudan. Yet, its contribution to the rural households is not acknowledged. The study investigates the extent to which the local trade contributes to rural household economy with special emphasis on cash income and employment; and identifies the factors influence the level of cash income earned from the local business. Data were collected from 70 households purposely selected using interviews and direct observation in 2008/2009 season. The results indicated that fruits local trade was generated the highest annual average cash income (US\$ 202.73) followed by agriculture (US\$ 71.57), remittances (US\$ 49.81), wage labor (US\$ 30.10), and livestock (US\$ 20.40). Also, the most of the employment (30%) was generated by local trade followed by agriculture (25%). There are significant variations in cash income earnings. These variations are attributed to household personal characteristics and market variables. The study concluded that tree fruits local trade is the most important source of cash income and employment. Microfinance and local sellers' organization are recommended to sustain and increase the economic returns from the local business in the fruits much beyond what currently contribute today.

**Key words:** cash income, employment, rural economy, Sudan, tree fruits.

### **Introduction**

The trade in non timber forest products (NTFPs) for income generation is not new. Tree fruits are examples of some available NTFPs that may be found for sale in the vast majority of the rural markets and nearby towns and cities (Shacklenton 2006). Local markets can

provide a guaranteed way of reaching some of the poorest people, and play a crucial role in improving rural economy. Despite some recent works in non timber forest products (NTFPs), numerous gaps exist in understanding the role of NTFPs local trade in rural economy, and there is a need for further empirical studies (Campbell and Byron 1996, Arnold

2002). Lawrence (2003) mentions that there is still a need for case specific, systematic analysis of the potential or actual role of trading NTFPs on development. Indeed, in many countries little national level information, based on solid empirical study, exists that quantifies the contribution of local trade in tree fruits to household income and employment, reliably assesses their role or examines their potential for rural economic development (Sunderlin and Ndoye 2004, Rose-Tonen and Wiersum 2003). Although the growing local trade in tree fruits in drier Savannah of Sudan and the increasing recognition of its importance to households, however, the contribution of the local trade to households' cash income and employment is not acknowledged. Most of the literature on NTFPs in Sudan focuses on exported products (e.g. gum

Arabic). Therefore efforts are needed to develop understanding of the role of local trade in tree fruits in rural economy. With this knowledge gap, it is difficult to design development programs to build on what already exists. Accordingly, this study was initiated to investigate the contribution of local level trade to rural economy with special emphasis on household's cash income and employment in relation to other economic activities; and to identify the factors that affect the cash incomes earned from local trade in tree fruits.

## Research Methodology

### Study Area

The area selected for the study was Rashad locality in the north-western part

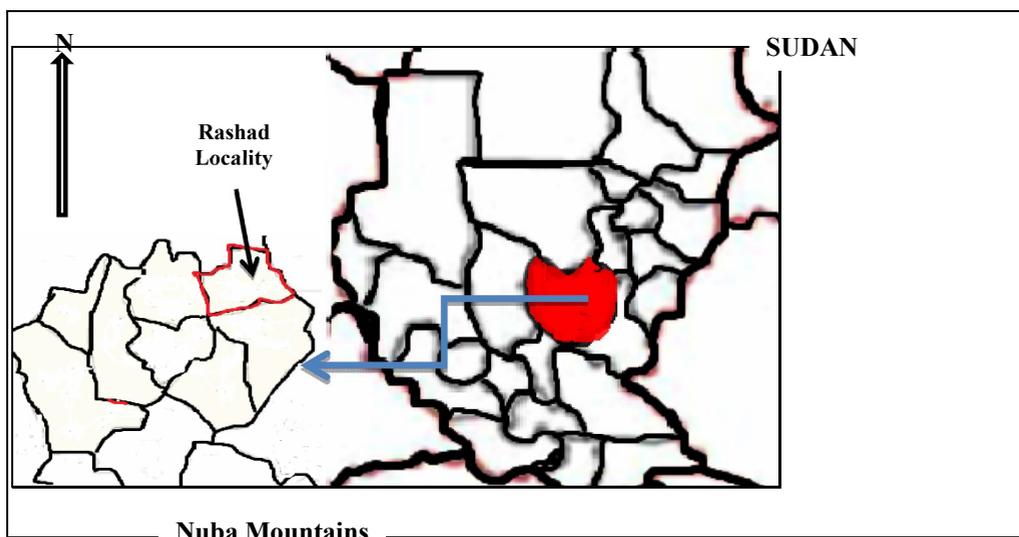


Fig 1: The study area (Rashad Locality).

Source: Rural South Kordofan Food Security Assessment, March, 2009.

of central clay plain in dry land Savanna Zone of Nuba Mountains in South Kordofan State. It lies between latitudes 10° and 13° north and longitudes 29° and 33° east (Fig. 1). The study area occupied a total area of 7872 km<sup>2</sup> with a population around 241,046 (UNDP 2003). There are three main livelihood groups in the study area; the agriculturists, the pastoralists; and the town/urban groups. The key determinant of wealth and main form of income for agriculturists, pastoralists are crop production and livestock population (NMPACT 2002). Non timber forest products also contribute to rural people income (El Tahir and Gebauer 2004), and are only the source of income during the dry season for the payment for food as well as for water, education and health expenditure (UNDP 2003, Hassan 2005).

### Data collection, tabulation and analysis

The households were selected purposely and interviewed using a structured questionnaire. Annual quantities of collected fruits were registered. The annual cash income from local trade was obtained by multiplying the amount of the fruit sold annually by mean price obtained from the local markets and interviews. Cash income from commercial farming was computed by multiplying the crop yields with their farm gate prices. Labour earnings from local wage employment were calculated by multiplying the number of days worked by the wage rate. Information on employment was collected from individual members

in terms of the number of hours worked per day and number of days worked in each operation. Employment was expressed in terms of person-days, where each person-day was equivalent to eight hours of work. The cash income from the sales of tree fruits and from other economic sources were averaged and converted to US\$ using the conversion rate for Sudanese Pound at the time of the survey (2008/09).

Descriptive analysis was applied to estimate the average cash incomes and their percentages to total household cash income, whilst correlation analysis was used to identify the factors which affect the annual net cash income from the fruits local business. Net annual cash incomes from local level trade were used as the independent variable and an array of continuous as independent variables.

### Results and Discussion

Table 1 reveals that 32.9% and 67.1% of fruit sellers were male and female, respectively. The same table shows also that 17.1%, 22.9%, 30%, 25.7% and 4.3% of fruit sellers have ages of <18, 18–28, 29–38, 39–48 and 49–58 years, respectively (Table 1). Table 1 depicts a great variation in education level among fruit sellers, a large percentage were illiterate (40%), only 22.9%, 32.8%, 1.4% and 2.9% have some *Khalwa*<sup>1</sup>, primary, intermediate and secondary education, respectively. It is

<sup>1</sup>Religious School in which Muslim learn Holy Goran and its studies.

also found that 32.9%, 14.3%, 14.3%, 21.4% and 17.1% of fruit sellers were married, unmarried, divorced, widowed and children, respectively (Table 1). Results of the survey indicate that all collectors were women and children (Table 1).

**Table 1. Sex, age, education level and marital status profiles of *Z. spina-christi* fruit sellers (% of interviewees in each class).**

Variable/attribute	Class	% of sellers (n = 70)
Sex	Male	32.9
	Female	67.1
Age	< 18 years	17.1
	18–28 years	22.9
	29–38 years	30.0
	39–48 years	25.7
	49–58 years	4.3
Education level	Illiterate	40.0
	Khalwa	22.9
	Primary	32.8
	Intermediate	1.4
	Secondary	2.9
Marital status	Married	32.9
	Unmarried	14.3
	Divorced	14.3
	Widowed	21.4
	Children	17.1

Source: Field Survey, 2008/09.  
n = number of interviewees.

Cash incomes in the study area are generated by five major activities: *Z. spina-christi* local trade (US\$ 202.73), agriculture (US\$ 71.57), livestock (US\$ 20.40), labour wage (US\$ 30.10) and remittances (US\$ 49.81) (Table 2). The household total annual average cash in-

come was US\$ 374.61 (Table 2). The fruits local trade was the first most important contributor to households' annual total cash incomes when compared with agriculture and livestock as the main activities in the study area (Table 2). This is due to the fact that agriculture in the study area tends to be quite low because of the small land holding (averaging 0.55 ha), lack of rains, and poor soil quality (UNDP 2003). Livestock contribution was also small to the total household's income when compared with the contribution of the fruits local trade (Table 2). The fruits local trade share was important in providing cash income to sampled households as evidenced by higher contribution (54%) towards total household income (Table 2). These findings agree with studies conducted in, Ethiopia by Lemenih et al. (2003) and Grimes et al. (1994) in Ecuador where these independent studies reported that NTFPs sale contributing to total household income more than other alternative land uses such as agriculture and cattle ranch. Similarly, a study conducted by Ndam (2004) in middle Cameroon reported that the harvesters of *Prunus africana* bark contribution to their annual total cash income was 70%.

Table 3 reveals that the total employment days<sup>2</sup> per household per year was 380.68. The same table explains that local trade in the tree fruits was the major employment contributor, representing 30% (114.204) day per household per year to total household annual employment, whilst the agriculture sector share was estimated at 25% (95.170) day per household per year. Comparing employ-

<sup>2</sup> A day was equivalent to eight hours of work in each economic activity.

ment generation in various household sectors, the fruits local business sector generated the highest employment (Table 3). The source of employment gave by the fruits local trade to rural households has wider economic implications in the dry and semi-dry areas like Rashad locality where the opportunity to

work from home is rare. In addition, the fruits sales are particularly important in lowering the unemployment rate during the dry season which extends from April to June. This risk-management role of the local trade in the fruits is crucial in rural areas of Sudan.

The correlation results show that household age is positively and significantly correlated with annual net cash income derived from local level trade in *Z. spina-christi* ( $r=0.430$ ;  $P<0.01$ ) (Table 4). This is due to the fact that elder households able to build trust and relationships with their customers as they sale the NTFPs for long time in local markets, and this, permit them to generate more than younger households. Cash income from other sources own by

**Table 2. Distribution of household's income (US\$) from different economic activities in season 2008/09 (n = 70).**

Activity	Annual average contribution, US\$.yr <sup>-1</sup>	% of Contribution to total income, US\$.yr <sup>-1</sup>	SE*	Minimum, US\$.yr <sup>-1</sup>	Maximum, US\$.yr <sup>-1</sup>
Fruits local trade	202.73	54	15.38	18.10	542.90
Agriculture	71.57	19	3.61	20.00	150.00
Livestock	20.40	6	2.79	0.00	80.00
Wage labour	30.10	8	3.58	0.00	98.00
Remittances	49.81	13	3.87	0.00	100.00
<b>Total annual income</b>	<b>374.61</b>	<b>100</b>			

n = number of respondents; \* Standard error; 1US\$ = 2.1SP (Sudanese Pound) at 2008/2009.

the households explain positive and significant correlation with the cash income earned from *Z. spina-christi* ( $r=0.595$ ;  $P<0.01$ ) (Table 4). Such observation is common in some NTFPs related studies. For instance, Cetachew et al. (2007) have reported similar results. This is mostly due to the fact that owning extra financial capital is important as this assists households to overcome numerous constraints such as cash flow problems and high transportation costs, allowing them to collect more often or reach more distance markets outside Rashad locality. In fact, there are also results demonstrating the opposite (e.g. Shackleton 2006, Inoni 2009), which indicate that poor households derive more income from collection and selling of NTFPs than the wealthy category of the households.

**Table 3. Distribution of household's employment (days.hh<sup>-1</sup>.yr<sup>-1</sup>) in different economic sectors in season 2008/09 (n = 70).**

Activity	Employment generated, days <sup>*</sup> .hh <sup>-1</sup> .yr <sup>-1</sup> (%)
Fruits local trade	114.204 (30%)
Agriculture	95.170 (25%)
Livestock rearing	76.136 (20%)
Wage labour	76.136 (20%)
Others	19.034 (5%)
Total annual employment	380.68 (100%)

Figures in parenthesis indicate percentage to total. n = number of respondents;

\*A day was equivalent to eight hours of work; hh = household; yr = year.

Labour input in the collection and selling of the fruits is positively and signifi-

cantly correlated with the cash income earned from local level trade in *Z. spina-christi* ( $r=0.870$ ;  $P<0.01$ ) (Table 4). This is due to the fact that some people are hard workers- work for long time- and often also involve in other profit activities. In the same table, number of persons per household showed positive and significant correlation with the cash income derived from *Z. spina-christi* fruits local trade ( $r=0.764$ ;  $P<0.01$ ) (Table 4). Families with large labour force on account of their size can mobilize household labour in collecting more products from the forest, than households with a smaller labour force to meet their needs for cash income. This finding agrees with study conducted in south India by (Hegde and Enters 2000) where this study reported that large households tended to derive more income from NTFPs activities.

Household education level is another variable which shows a negative and significant correlation with earnings from *Z. spina-christi* fruits ( $r=0.0273$ ;

**Table 4. Correlation between household characteristics and annual cash income derived from fruits local trade (n = 70).**

Household characteristics	Annual cash income (US\$) from fruits trade
Household age, years	0.430** (0.000)
Number of person/household	0.764** (0.000)
Household education level, years of education attendance	-0.0273* (0.000)
Household labour input, hrs.yr <sup>-1</sup>	0.870** (0.000)
Households income from other sources, US\$.yr <sup>-1</sup>	0.595** (0.000)

\*\* Correlation is significant at the 0.01 level (2-tailed); \*Correlation is significant at the 0.05 level (2-tailed); n = number of respondents.

$P < 0.05$ ) (Table 4). Higher levels of education attainment makes NTFPs collection unattractive to local people. Since education improves the wealth status of literate rural families, they tend to concentrate on permanent profitable activities, in the face of the seasonality of the fruits. In addition high level of education provides a wider range of employment opportunities and reduces the economic returns from forest products. This finding is similar to Gunatilake (1998) and Adhikari et al. (2004) who concluded that education level of the family members negatively correlated to the returns from forest products.

Beside the household characteristics, it was found that other than measured variables also are important in shaping the cash income generation from local trade in the fruits. Qualitative and general observations revealed that some people were 'born entrepreneurs'. They are innovative, often also involved in other economic activities. Returns from local trade are thus often related to the degree of effort expended, as well as the ability of households. Poor infrastructure, access to market and low product price also limit the potential benefit of local people from the fruits local business. Such constraints seem universal as most NTFPs case studies reveal more or less similar conditions. For example, Pierce et al. (2002) reported almost similar constraints that limit the benefit from NTFPs activities, and so do (e.g. Marshal et al. 2003, 2006; te Velde et al. 2006). Therefore, improving market infrastructure will enhance proportionally the economic returns from the local trade and ultimately to rural household economy.

Another important constraint is lack of organization and cooperation for the fruit sellers, which influence the cash income generations due to its contribution to high transaction costs that prevent some households to transport their products to distant markets. In addition trading products individually represents weak competition of the seller, and this, limits the bargaining power in local markets due to inadequate information on the fruits market conditions and prices.

## Conclusions

Local trade in the fruits is the most important source of cash income (54%) and employment (30%) for the rural household. However, there are variations in level of cash incomes generation from the local business by the rural households. These variations are due to the household's characteristics (age, level of education, other income sources, number of persons per household, household labour input and entrepreneurs) and market factors (access to markets, low price for the fruits and level of coordination and organization for the sellers).

## Recommendations

Rural households with multiple sources of cash incomes earned higher returns from the local trade as this allows greater cash investment in the local business. Some extra cash incomes thus greatly ease the local business for the sellers, assisting them to overcome numer-

ous constraints such as the high costs of transport. Sellers themselves often mentioned transportation cost as a major constraint and feel access to micro-credit would be extremely beneficial.

Building organizational and institutional capacity by assisting sellers to organize themselves better so that they have an identity, and can negotiate with different stakeholders regarding their needs, undertake group activities such as sharing transport to distant markets, and cooperate in terms of, for example, price fixing, etc. is a critical area of intervention.

## Acknowledgements

The authors would like to acknowledge the Ministry of Higher Education, Sudan who financed the data collection and the study of the first author. Special thanks also to the collectors and traders of the NTFPs in Rashad locality, Forests National Corporation (FNC), rural development officers in Khartoum and Rashad locality, and several individuals who have been helpful in many ways during the field work.

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