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## **Assessing the Importance of Rice as Food and Income Security Crop in Puti-puti Sub-county, Pallisa District, Uganda**

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### **Authors' contributions**

*Both authors contributed equally. The second author collected and analysed the data while the first author wrote the paper. Both authors read and approved the final manuscript.*

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### **ABSTRACT**

**Aims:** This study was conducted to assess the importance of rice to household food and income security.

**Study Design:** This was a cross sectional survey.

**Place and Duration of Study:** The study was conducted in Puti-Puti sub-county, Pallisa district, eastern Uganda during the period June-July 2011.

**Methodology:** Multi-stage random sampling technique was used to identify the target location and the respondents. Semi-structured questionnaires and interview guides were used to collect information from 50 respondents comprising (40 farmers, 4 political and 6 technical staff) on the importance of rice to household food and income security.

**Results:** The findings showed that rice is an important food staple and source of cash income in the sub-county contributing 34 % and 36 % of the food and income source, respectively. Nearly 50% of the respondents earned at least UGX 400,000/= per annum from sale of rice of which 32% is spend on household needs. The other reasons for growing rice included easy storage, pests and disease tolerance among others. The findings also showed that the major types of rice grown were mainly paddy as opposed to the upland. However, the majority (76%) of the rice growers owned between 0-5-1 acres only. Similarly, lack of capital, pests and diseases infestation and use of poor varieties were the other constraints in rice growing.

**Conclusion:** Overall, rice contributed 12% of the household returns after sweet potato and groundnuts, respectively. Therefore, this study has concluded that rice is an important

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household food and income security crop in the sub-county. However, to improve the popularity of rice as an household food and income security, there is need for better varieties that are high yielding, early maturing, tasty, pest and disease resistant as well as easy to grow and market.

*Keywords: Cash; food; importance; income; rice; security.*

## 1. INTRODUCTION

Rice (*Oryza sativa* L.) is an important cereal staple food for a large part of the world population in terms of the area cultivated and amount consumed. Globally, more than 90 and 60 % of the global rice is grown and consumed in Asia and south east Asia, respectively [1]. According to Tsuboi [2], the total area under rice cultivation globally is estimated to be 150,000,000 ha with annual production averaging 500 million metric tons. In fact, rice represents 29 % of the total output of grain crops worldwide [3]. Recent, production statistics within the east African region showed that Tanzania has attained self-sufficiency in rice production while in Uganda area under rice cultivation has grown tremendously as a result of government efforts to diversify the economy [4]. Traditionally, rice has the potential to improve nutrition, boost food security, foster rural development and support sustainable land use in Africa. Accordingly, rice has grown to become an important food staple and source of cash income for the majority of the farming communities in Uganda. Rice is also becoming increasingly popular in Africa, the Americas, and elsewhere. Indeed, the growing importance of rice as a food staple and cash crop is due to the extensive urbanisation and decline in production of finger millet, cassava and banana the major sources of carbohydrate staples in Uganda [5]. According to Bigirwa *et al.* [6], rice is now considered among the food security crops in Uganda for alleviating poverty among the rural poor. Currently, Uganda produces 350,000MT against the demand of 450,000MT per annum [7]. Yet, FAO projections indicate that, the number of people depending on rice worldwide is expected to reach 3.5 billion in 2025(1). Consequently, the importance of rice in food security and socioeconomic stability is self-evident.

Although, in Uganda rice growing dates as far back as 1904, serious rice production gained prominence among the farming communities in the early 1990s. At that time, efforts to build up a strong food reserve was not so much successful as most crops grown were for subsistence rather than commercial purposes. According to UBOS [8], one of the most preferred and considered crops that are likely to boost household food and income security is rice. Consequently, the importance of rice as a food security crop relates to the measures in place to ensure continuous supply to meets the demands as at the required time, scope, quantity and quality as desired by the population [9]. This is because all activities involved in the rice value chain have a potential to create wealth for all including farmers, transporters, millers, traders and the economy. Although, until 1950, rice growing was not popular in Pallisa district, the growing population in the district and the need for more food to supplement other staple crops especially finger millet, sorghum, sweet potatoes and maize has boosted rice growing as a common economic activity in the district [10]. However, information on the importance of rice as a food security and household income in Puti-Puti sub-county is not documented. Therefore, the objective of this study was to assess the importance of rice as food and cash crop in the Puti-Puti sub-county, Pallisa district eastern Uganda.

## **2. METHODOLOGY**

The study was a cross sectional survey conducted in Puti-Puti sub-county, Pallisa district, eastern Uganda. Pallisa district has an undulating landscape with bimodal rainfall. The minimum and maximum temperatures ranged from 18-20°C–28-32°C, respectively. The soils are relatively fertile despite the monoculture types of cultivation being practiced [11]. Both quantitative and qualitative approaches were used to solicit information from the respondents comprising the farmers, key informants/opinion leaders and agricultural extension workers. Multi-stage random sampling technique was used to identify and select the location and the respondents. Four parishes were selected based on the size and the intensity of rice production. From each parish, 5 villages were surveyed from which eight farmers were randomly selected from the local council registers of each village. Semi-structured questionnaires and interview guides were used to collect information on the importance of rice as food and cash crop, types of varieties grown, uses of rice, reasons for and against growing rice as well as the contribution of rice to household expenditure from the respondents. In total, 50 respondents consisting of 40 farmers, 4 key informants/local leaders and 6 agricultural extension workers were interviewed. All data collected were coded, edited and entered on excel spreadsheet and analysed using descriptive statistics of SPSS version 16.0 for windows 2007 computer package.

## **3. RESULTS AND DISCUSSION**

### **3.1 Results**

The importance of rice growing to household food and income security is presented in Tables 1 and 2. A number of crops were grown for both food and sale. Yet, only groundnuts and sweet potatoes were ranked the most dominant food crops in the sub-county contributing 29% and 25% of the household income, respectively. Similarly, a number of crops were grown for sale in the sub-county. For instance, coffee and rice contributed 42% and 26% of the household income, respectively. Interestingly, the major traditional cash crops such as cotton and tobacco were of less significance in the sub-county but rice featured more prominently as both food and cash crop contributing 12 and 26% of the household income, respectively. In both cases, rice production was higher than those of the other crops in the sub-county (Tables 1 and 2). However, rice was grown mainly as a subsistent rather than commercial crop (Fig.1). In fact, 76% of the respondents grew rice on very small acreage ranging between 0.5-1 acre compared to 3 acres and above (Table 3). Overall, the average production of rice was between 100-200 metric tonnes per season although higher harvest was obtained from the first season than the second season (Fig. 1). Accordingly, the low rice harvest during the second season was attributed to shorter rainfall, reduced cultivated acreage due to uncertainty in rainfall and bird damage among others. Rice growing in Puti-Puti sub-county was categorized into two namely, paddy and upland (Fig.2). The most common lowland and upland varieties grown was Supa and NERICAs, respectively (data not shown).

**Table 1. Household cash income from sales of food crops grown in Puti-Puti sub-county, Pallisa district, 2010/2011**

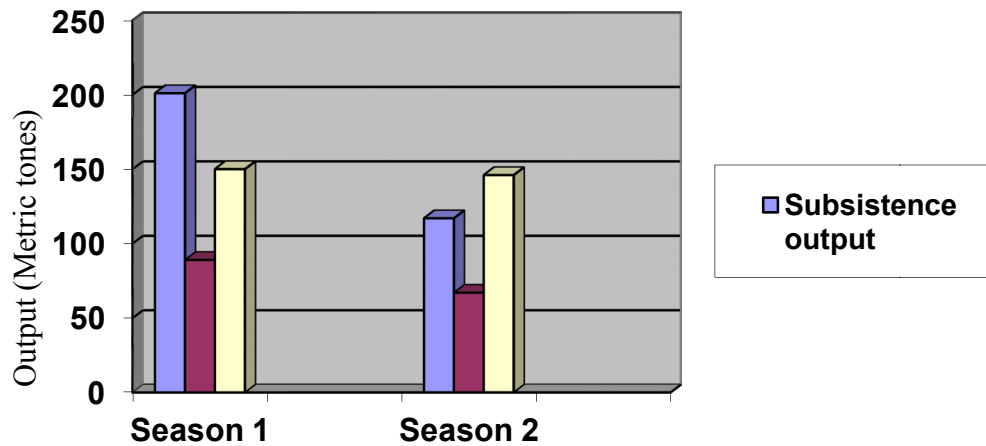
Crop	Estimated production (metric tonnes)	Average annual household income (UGX)*	Percentage of output sold
Sweetpotatoes	4.3	500,000	25
Finger millet	2.5	100,000	5
Groundnuts	4.7	700,000	29
Simsim	0.5	125,000	10
Rice	40	300,000	12
Matooke	1.8	200,000	7

\*1 US \$= 2650 Uganda shillings

**Table 2. Household cash income from cash crops grown in Puti-Puti sub-county, Pallisa district, 2010/2011**

Crop	Estimated production (metric tonnes)	Average annual household income (UGX)*	Percentage of output sold
Tobacco	0.3	190,000	9
Coffee	9.5	500,000	42
Cotton	0.2	120,000	7
Tea	0.4	125,000	10
Rice	110	400,000	26

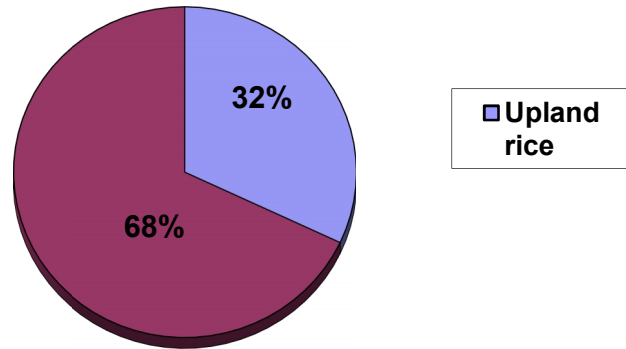
\*1 US \$= 2650 Uganda shillings



**Fig. 1. Total household rice production per season in Puti-Puti Sub-county, Pallisa district, 2010/2011**

**Table 3. Acreage of rice farmland in Puti-Puti sub-county, Pallisa district 2010/2011**

Area ( Acres)	Frequency (%)
<0.5	08
0.5 -1	76
1- 3	12
>3	04
<b>Total</b>	<b>100</b>



**Fig. 2. Category of rice grown in Puti-Puti sub-county, Pallisa district, 2010/2011**

The income from the sale of rice ranged from UGX 400,000/= to UGX 1,200,000/=. However, the proportion of respondents earning between UGX 800,000/= to 1,200,000/= and above was less than 20% (Table 4). The money obtained from the sale of rice was used for a variety purposes including catering for household needs and starting up other businesses among other things (Table 5). Various reasons were given for growing rice including food and source of cash income. The other contributions of growing rice were occupation of availability of land and treatment as traditional crop. In general, 36% and 34% of the respondents grew rice for both cash and food, respectively (Table 6). The major attributes for growing rice in Puti-Puti sub-county were storability, pests and diseases resistance, both cash and food crops as well as faster maturity (Table 7). Unfortunately, rice growing in Puti-Puti sub-county was constrained by a number of factors including limited capital, pests and diseases as well as poor varieties among others (Table 8).

**Table 4. Annual estimated income from rice growing in Puti-Puti sub-county, Pallisa district, and 2010/2011**

Annual income estimate (UGX)	Frequency (%)
<400,000	48
400,000- 800,000	36
800,000 – 1,200,000	10
>1,200,000	06
<b>Total</b>	<b>100</b>

\*1 US=2650 Uganda shillings

**Table 5. Household expenditure from rice income in Puti-Puti sub-county, Pallisa district, 2010/2011**

<b>Expenditure (uses) / items</b>	<b>Frequency (%)</b>
Buying household basic needs	32
Startup of commercial ventures	30
Acquisition of more land	20
Seeking other employment opportunities	10
Acquisition of other crop varieties	08
<b>Total</b>	<b>100</b>

**Table 6. Importance of rice growing in Puti-Puti sub-county, Pallisa district, 2010/2011**

<b>Contribution</b>	<b>Frequency (%)</b>
Increased income	36
Increased food for household	34
Occupation of available land	20
Considered a traditional crop	10
<b>Total</b>	<b>100</b>

**Table 7. Major attributes for rice growing in Puti-Puti sub-county, Pallisa district, 2010/2011**

<b>Attributes</b>	<b>Frequency (%)</b>
Storability	32
Pests and disease resistance	20
Both a cash and food crop	26
Widely grown and accessible	08
Matures faster	14
<b>Total</b>	<b>100</b>

**Table 8. Constraints of rice growing to households in Puti-Puti sub-county, Pallisa district, 2010/2011**

<b>Constraints</b>	<b>Frequency (%)</b>
Limited capital	26
Pest and diseases	22
Poor rice varieties	20
Inadequate agriculture tools and equipment	14
Shortage of land	08
Shortage of labour	06
Limited market	04
<b>Total</b>	<b>100</b>

### 3.2 Discussion

This study was conducted to assess the importance of rice as food and income security crop in Puti-Puti sub-county. Rice was ranked very highly both as food and cash by the

respondents where it contributed 34 and 36% of the household food and cash income, respectively. Previously, Hyuha et al. [12] reported that rice has some favourable impact on the welfare of the farm families involved in its production because it ensures food security and can be sold for money to cater for other household needs. Therefore, higher production means higher quantity to save for food and sell for money, respectively. Accordingly, our findings have shown that rice does not only serve as food for home consumption but also serve as a source of cash income to many households an indication that a significant proportion of the respondents derived livelihoods from it. Besides, rice was considered as a way of utilizing idle land as well as traditional crop. This therefore, means that anybody can grow it as long as some land can be secured. Accordingly, UBOS [8] had forecasted the importance of rice as a preferred food and income security crop for Uganda. However, the proceeds from rice sale did not equal or match the one for crops such as sweet potato, groundnuts and coffee. This probably implies that the majority of the farmers were either not used to rice growing or the prices offered is unfavourable or they lacked where to grow it. Indeed, they may also lack the bargaining power to negotiate for better prices or access to better markets [10]. Invariably, our findings have shown that rice is grown predominantly as a subsistence crop where the majority of the farmers owned between 0.5-1 acres of rice plots compared to 5 acres above. Elsewhere, it has been shown that rice growing is predominantly undertaken by resource-poor farmers who lacked adequate resources to engage in large-scale production [13,14,15]. Besides, the intensive nature of cultivation and high labour requirements has also been reported to account for the smaller acreages [5]

The most predominantly grown types of rice in Puti-Puti sub-county like elsewhere in the region were mainly lowland varieties as opposed to the upland. This scenario could be attributed to a number of reasons including unavailability of seeds, lack of awareness and sensitisation, taste and preference as well as marketability. According to Bigirwa *et al.* [6], rice growing in Uganda is a new culture characterized by a number of challenges including limited knowledge on crop husbandry, manual farm operations, limited farm inputs, unpredictable weather and bird damage among others. The major attributes to rice growing were good storability, pest and disease resistance among others. Accordingly, Kisamba [10] noted that as cultural and general agricultural practice, rice builds a strong contribution to food security and income since it lasts long in store. Moreover, it can be stored as grain or with cereals in their sheath which keeps them pest free for long period of storage. Furthermore, Elamin et al. [15] demonstrated that families in areas where rice growing is dominant tend to have a stock of rice crop at almost every time of the year. This acts as a "buffer stock" for food which keeps food available both in dry and wet spells of the year.

#### **4. CONCLUSION**

This study has shown that rice is a source of livelihood to the majority of respondents in Puti-Puti sub-county because it serves as both food for home consumption and source of cash income. However, the lack of high yielding varieties coupled with poor production technologies including pest and disease infestations as well as bird damage makes rice growing a less profitable venture. Therefore, there is need for rice enhancing technologies to facilitate widespread adoption and diffusion of rice as food and income security crop. There is also need to sensitise the different stakeholders in the rice value chain about the importance of rice and its by-products to avoid the negative effects of rice as a climate change promoter.

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## **COMPETING INTERESTS**

The authors have declared that No Competing Interests exists.

## **REFERENCES**

1. FAOSTAT. Rough rice area (000ha) by country and geographical region 1961-2004, FAO, Rome, available at: [http://www.irri.org/science/rice\\_stat/index](http://www.irri.org/science/rice_stat/index), 2005.
2. Tsuboi T. Paper presented at the WARDA. – NERICA rice Workshop, Ivory Coast, 8th October, 2004.
3. Xu Kuangdi, GuofangShen. Promoting Chinese rice production through innovative science and technology. Pages11-18. Proceedings of the International Rice Research Conference,16-19 September 2002, Beijing, China; 2003.
4. National Agricultural Research Organization (NARO). Rice Production in Uganda, Annual Report, Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, 2010.
5. Ochollah AR, Ogenga-Latigo MW, Nsubuga ENB. Impact of upland rice cultivation on crop choice and income of farmers in Gulu and Bundibugyo districts, African Crop Science Conference Proceedings. 1997;3:1407-1411.
6. Bigirwa G, Kikafunda J, Lamo J, Ochen J, Opio F, Tsuboi T. Upland rice growing in Uganda: Reasons for the rapid spread. African Crop Science Conference Proceedings 2005;7:151-154.
7. National Agricultural Research Organisation (NARO). Rice Production in Uganda, Annual Report, Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, 2012.
8. Uganda Bureau of Statistics (UBOS). Statistical abstracts. Kampala, Uganda. 2004.
9. World Bank. PRSP Progress Report. Washington DC: World Bank. 2001
10. Kisamba MW. Sustainable food Security for all by 2020 Statement at Vision 2020 conference in Bonn, Germany, 2001.
11. National Agricultural Research Organisation (NARO). Rice Production in Uganda, Annual Report, Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, Uganda, 2002.
12. Hyuha TS, Sabiiti EN, Hisal E. Impact of rice production on food security and women in Uganda, African Crop Science Conference Proceedings. 2005;7:833-839.
13. Grist DH. Rice, Fourth Edition. Western Printing Services Ltd. Bristol-Great Britain: 1965.
14. Ou SH. Rice Diseases. Second Edition, Commonwealth Mycological Institute, Kew Surrey, England; 1985.



15. Elamin EM, Bauer S, Osman A. Commercialization and food security. Alpaks publications, Khartoum, Sudan; 2005.

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