

# POTATO FARMER AND MARKET'S STRATEGIES TO COPE WITH SEASONALITIES AND IMPLICATIONS FOR POSTHARVEST LOSSES IN EASTERN UGANDA

S. Namanda<sup>1</sup>, D. Naziri<sup>1</sup>, C. Nabukera<sup>2</sup>, A. Wasukira<sup>3</sup> and M. L. Parker<sup>1</sup>

<sup>1</sup> International Potato Center (CIP), Kampala, Uganda - CGIAR Research Program on Roots, Tubers and Bananas (RTB)

<sup>2</sup> Makerere University, Kampala, Uganda

<sup>3</sup> Buginyanya Zonal Agricultural and Development Institute, National Agricultural Research Organization (NARO), Uganda

Contact: s.namanda@cgiar.org

## Introduction

In Uganda, eastern highlands region is the second largest producer of potato (*Solanum tuberosum*, L.) after the southwest. According to Namanda *et al.* (2004) production is characterized by two major harvesting seasons, in July-August (for tubers planted in March-April) and December-January (for tubers planted in August-September). Some farmers, especially those who plant early, harvest prematurely in the first season, particularly between mid-May and end of June, attracted by the high market prices before the peak production. Furthermore, failure to manage diseases such as late blight and bacterial wilt is an additional incentive to harvest prematurely (Namanda *et al.*, 2004). Extremely short growing period (only 50 to 80 days from planting to harvest) results in reduced tuber yield and quality as well as higher postharvest damage of early-lifted tubers (Tahsin and Ferhat 2011). Traders try to dispose of the supplies as quickly as possible not only to anticipate the future drop in market prices but also to limit postharvest losses such as rotting and weight loss to which prematurely harvested tubers are particularly susceptible (Tahsin and Ferhat, 2011). This study aimed at assessing the implications of premature harvest, particularly in terms of the tradeoff between reduced yield and higher prices fetched by farmers.

## Materials and Method

The effect of the stage of maturity on yield and quality traits was investigated in two key potato growing districts in eastern Uganda (Kween and Mbale). On-farm sampling of Rwangume variety was conducted at 70, 90 and 110 days after planting (DAP). The field were purposively selected based on cultivated variety, planting date (mid-March 2016) and flowering stage at time of the first sampling. At every DAP, three samples were collected from three different fields (0.4 Ha each) in the two districts (i.e., 18 samples at each DAP). Sampling set plots (12 plants from 2.7m<sup>2</sup> each) were randomly selected in each field, separated by at least 10 walking strides, making sure to avoid anthills and previous fire spots. Observations on vigour, pests and diseases infections, including late blight, were recorded before harvesting. Harvesting was done ensuring that all tubers were collected. Tubers were graded by size (big, medium and small), counted and data on weight and diameter for each category were taken. Information on prevailing monthly wholesale prices for eastern Uganda in 2015 and 2016 were obtained from FarmGain Africa and discounted by transport costs to generate indicative farm-gate prices. Data were analysed using the GenStat package and gross income computed.

## Results and Discussion

- Total tuber yield and big tuber yield were significantly different ( $P < 0.05$ ) between harvesting stages (Table 1). By premature harvesting at 70 DAP, farmers lose two thirds of the yield of the biggest and highest priced tubers (Plate 1).
- Regardless of the grade, farmers who harvest prematurely benefit of considerable higher prices (Table 1 and Figure 1).
- Farmers do not sell small tubers and, in order to increase the marketability of potatoes, usually sell a mix of big and medium sized tubers.

Table 1: Effect of harvesting at DAP on potato tuber yield (t/Ha) and farm-gate prices (UgSh) in eastern Uganda

	70 DAP	90 DAP	110 DAP	Lsd <sub>0.05</sub>
Total tuber yield (t/Ha)	14.6	24.4	28.4	1.56
Yield loss due early harvesting (%)	48.6	14.1	0	
Marketable tubers' size				
A. Big tubers ( $\geq 7$ cm diameter) (t/Ha)	5.6	11.0	15.7	1.76
(% total output)	(38.4%)	(45.1%)	(55.3%)	
B. Medium tubers (4 - 6cm diameter) (t/Ha)	5.6	9.7	9.8	0.88
(% total output)	(38.4%)	(39.8%)	(34.5%)	
C. A + B (mixed) (t/Ha)	11.3	20.7	25.5	2.09
(% total output)	(77.4%)	(84.9%)	(89.8%)	
Grade A farm-gate price (UgSh/kg)	1,000	600	500	
Grade C (mixed) farm-gate price (UgSh/kg)	700	400	350	

1 USD = 3,347 Ugandan Shillings (UgSh)

- Pre-harvesting at both 70 and 90 DAP resulted into negative changes in gross incomes (Table 2).
- Despite the benefits of harvesting a mature crop, in some cases, farmers inevitably harvest prematurely due to late blight epidemics (Plate 2) or immediate need for cash.
- Margins from mature tubers could be further increased by storing them for sometime since the prices again raise shortly after peak harvesting (Figure 1).
- In absence of price premiums, selling mixed sized tubers is more lucrative than selling big tubers separately.

Table 2: Effect of pre-harvesting on gross income per hectare in eastern Uganda in 2016

Harvest stage (DAP)	Grade	Farm-gate price (UgSh/kg)	Gross income (UgSh million)	Gap with 110 DAP (UgSh million)
70 (End-May)	C	700	7.91	(2.01)
90 (Mid-June)	C	400	8.28	(1.64)
110 (Mid-July)	C	350	9.92	-

## Conclusion and Recommendations

Generally pre-harvesting resulted into yield loss and negative changes in gross income at farmer level. Premature harvesting also compromises the quality of potato and prevents the possibility to store the tubers and obtain better return at a later stage. Considering that potato is a key food and cash crop in the highlands of Uganda, it is recommended that farmers delay harvesting until maturity. Late blight control using fungicides and improved access to financial services can encourage farmers to maintain the crop until maturity.

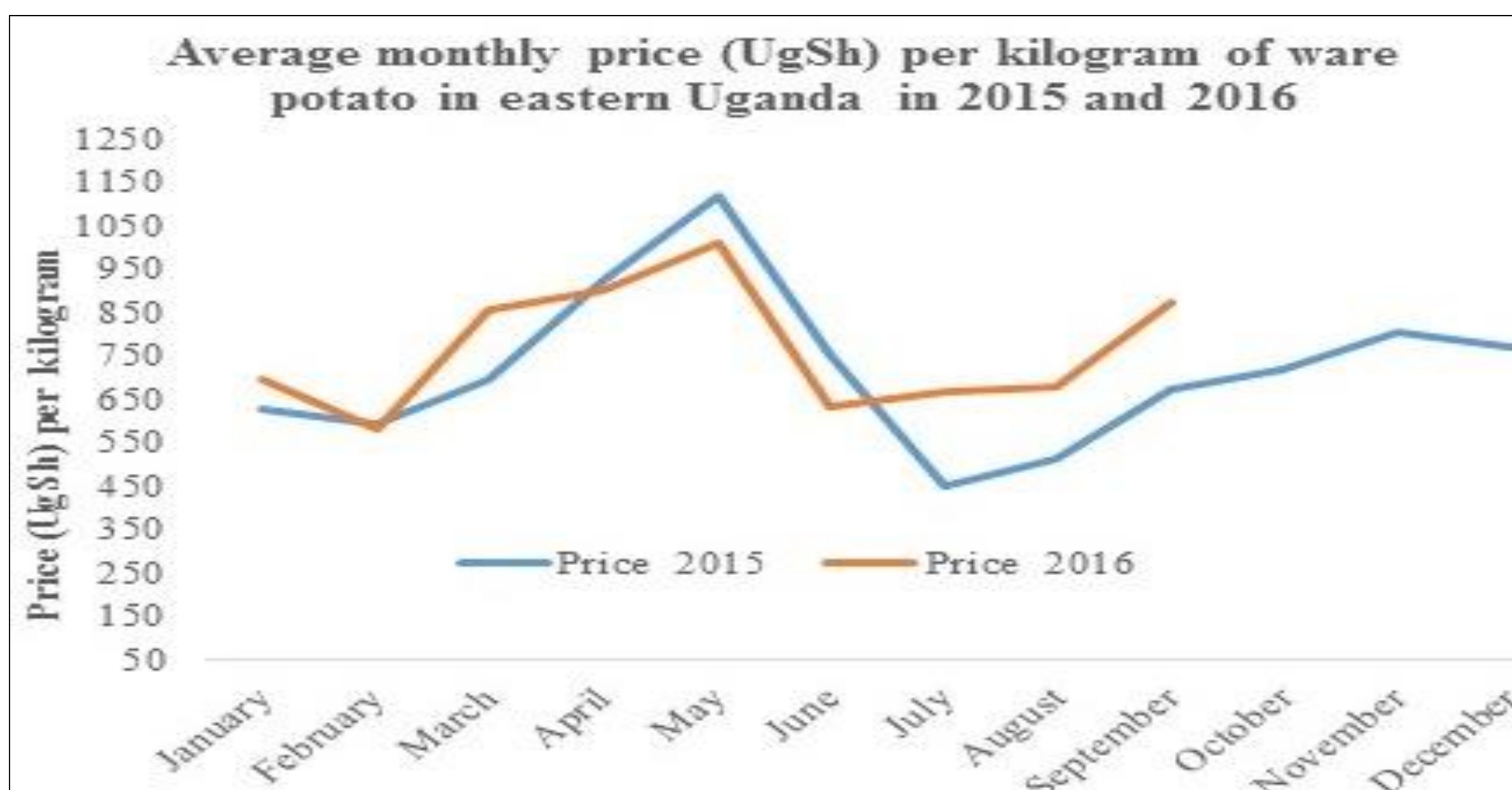


Figure 1: Farmers fetch the highest farm-gate prices between April and June. Then, at peak harvest time, they drop for a short period before raising again.



Plate 1: Premature harvesting at 70 DAP



Plate 2: Late blight influences decision to pre-harvest



Plate 3: Premature thin-skinned tubers on the market

## References

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