Pest Status and Farmers' Pest Management Practices in Sweetpotato Cropping Systems of Uganda

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Introduction

Sweetpotato (*Ipomoea batatus* (L.) Lam.) is the third most important food crop in Uganda. Although it is considered a food security crop, its productivity is far below its potential. This study assessed the pest status and farmers' perception and management practices of the most economically important insect pests of sweetpotato, i.e. the sweetpotato weevils *Cylas puncticollis* Boheman and *C. brunneus* F. and the sweetpotato butterfly *Acraea acerata* Hew (Pictures 1).

Pictures 1. (A) Sweetpotato butterfly: Adults, larvae, and damaged leaves. (B) Sweetpotato weevil: Adult, larvae and damaged sweetpotato roots.

Materials and Methods

A total of 192 rural farm households of the districts Kabale, Kasese, Gulu, Masindi, Soroti and Wakiso were interviewed using a structured questionnaire. Additionally, the infestation rate and intensity of infestation of all three pests was assessed and the root yield loss caused by *Cylas* spp. quantified over two growing seasons in the districts of Kabale and Masindi.

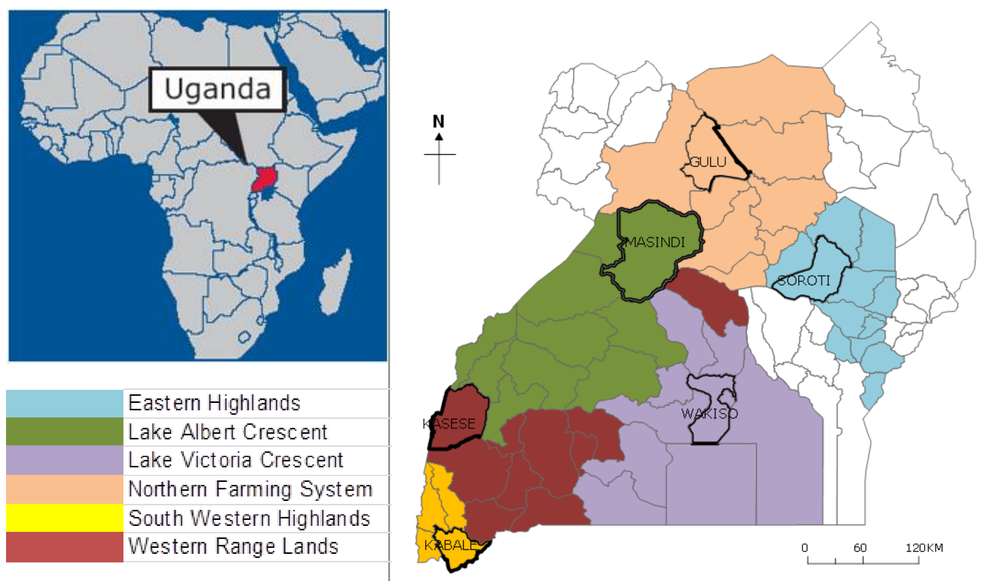

Figure 1. Map of Uganda showing the six study districts and their corresponding agro-ecological zones.

Results

i) Farmer interviews (household survey)

Over 80% of the sweetpotato production is used for home consumption (Fig. 2). Contrary to what was generally assumed, the households of the Soroti district grew sweetpotato also primarily for home use and not for sale. This further emphasizes the importance of sweetpotato as a food security crop across the country. Most of the households (55%) sold sweetpotato roots at the local/road side markets and to middle men (31%). A few households sold sweetpotato roots either to neighbours (11%) or to schools (2%). Among the sweetpotato insect pests mentioned, sweetpotato weevils were ranked as number one by 57% of the households followed by caterpillars of the sweetpotato butterfly (37%) (Fig. 3). Caterpillars of the sweetpotato butterfly in Masindi and Wakiso districts were ranked as most damaging to sweetpotato than the sweetpotato weevils.

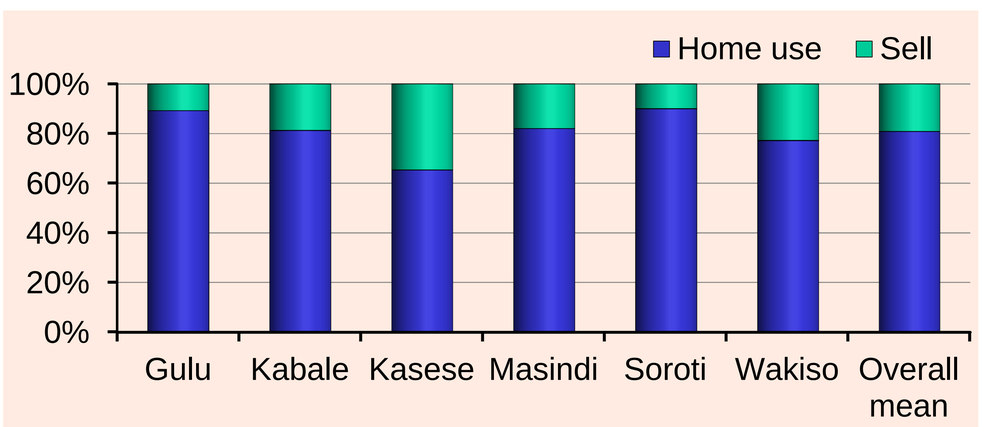

Figure 2. Primary purpose of growing sweetpotato (% households)

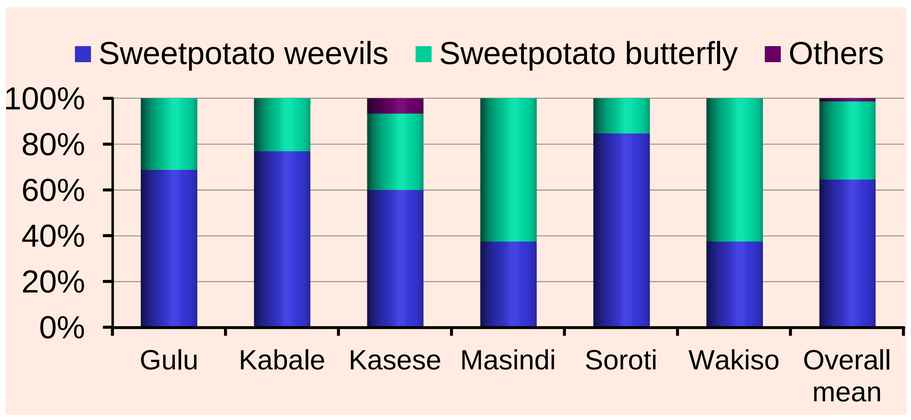

Figure 3. Insect pest ranked number one (most important) in sweetpotato by farmers (% households)

ii) Sweetpotato field surveys

The prevalence of *A. acerata* larvae was generally low (8–25 %) and its larvae caused very little defoliation (1–25 %) (Fig. 4). For *Cylas* spp., the abundance was relatively high (40–97%), with a consequential high yield loss (37–51%) of marketable root weight (Table 1).

Farmer management practices of *A. acerata* included use of chemical insecticides (24% of households), ash application (3 %) and hand picking (2%). However, 65% and 87% of the households did not apply any control measure for *A. acerata* and *Cylas* spp., respectively.

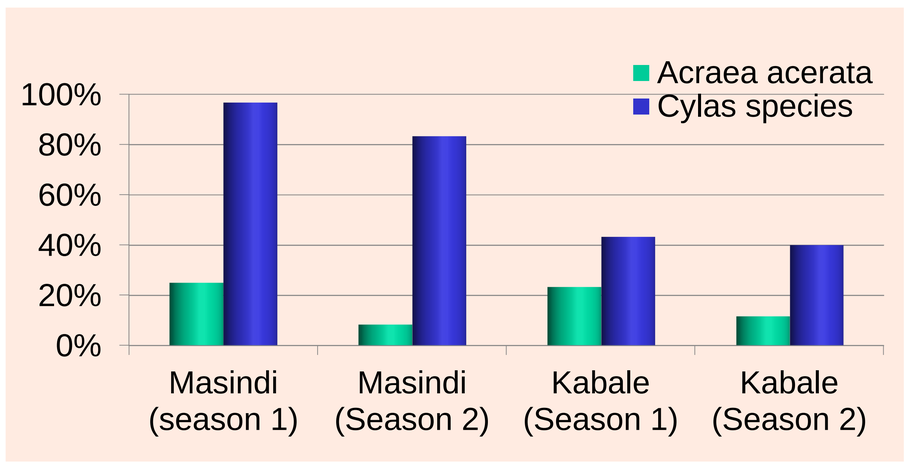

Figure 4. Infestation rate by *A. acerata* and *Cylas* spp. in two districts and seasons (% infested fields)

Table 1: Root yield loss due to damage by *Cylas* spp. weevils

Weevil damage	Kabale		Masindi		t-value
SEASON 1	Mean	SD	Mean	SD	
Root yield loss (%)	37.0±3.1	28.2	50.9±1.7	29.3	3.8**
SEASON 2					
Root yield loss (%)	38.3±2.6	23.5	42.8±2.7	29.1	1.2^{ns}

**Statistical significant at 1%; ns: not statistical significant at 5%.

Conclusions

- Major losses due to *A. acerata* occur after pest outbreaks especially after prolonged dry seasons, which situation was not captured in our survey.
- Appropriate integrated pest management (IPM) strategies must be designed, particularly for *Cylas* spp., if the food security and livelihoods of farmers who depend on this crop is to be improved.

Agroecology/IPM
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