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PERFORMANCE AND ACCEPTABILITY OF ORANGE FLESHED SWEETPOTATO CULTIVARS IN EASTERN UGANDA

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ABSTRACT

White fleshed sweetpotato (*Ipomea batatus*) cultivars are an important staple and source of carbohydrates in Uganda. However, their orange fleshed sweetpotato (OFSP) counterparts are less common. The OFSP varieties can offset Vitamin A deficiency (VAD). Increased consumption of the OFSP cultivars could contribute to alleviation of VAD a common a problem in Uganda. Research was conducted on-farm in twenty parishes of Iganga and Kamuli districts of eastern Uganda to evaluate the agronomic performance, consumer acceptability, dry matter and beta carotene content of 4 OFSP cultivars. The OFSP cultivars gave lower yield than the local white fleshed cultivars. Beta carotene content was generally higher in OFSP cultivars than in while fleshed ones. *Ejumula*, and SPK004 in Iganga, as well as Kala in Kamuli district gave more yield than the other orange fleshed cultivars. Children expressed preference for the OFSP compared to the white fleshed ones. Farmers who participated in on farm trials with OFSP cultivars continued to plant the OFSP cultivars after the trial indicating good potential for adoption. Farmer selection criteria were identified to include high yield, resistance to diseases and pests, fast growth rate, good taste and nutritive value. Given the higher nutritional value, children's taste preference and willingness of farmers to grow OFSP cultivars, it is concluded that the production and distribution of planting materials should be facilitated especially for cultivars *Ejumula, Kala* and SPK004.

Key Words: *Ipomea batatus*, on-farm evaluation, β-carotene

RÉSUMÉ

Les cultivars de patate douce à chair blanche *(Ipomea batatas)* sont une importante nourriture de base et une source de carbohydrates en Ouganda. Cependant leur contrepartie à chair orangée (OFSP) est beaucoup moins commune. Les variétés OFSP peuvent contrer la déficience en Vitamine A (VAD). Une consommation accrue de OFSP pourrait contribuer à l'atténuation de VAD, qui est un problème commun en Ouganda. La recherche était entreprise sur ferme dans vingt localités des districts de Iganga et Kamuli dans l'Est de l'Ouganda, en vue d' la performance agronomique, l'acceptabilité par le consommateur, le contenu en matière sèche et en beta carotène de 4 cultivars de OFSP. Les cultivars OFSP ont produit un rendement plus faible que les cultivars locaux à chair blanche. Le contenu en beta carotène était généralement plus élevé chez les cultivars OFSP que chez ceux à chair blanche. *Ejumula* et SPK004 à Iganga ainsi que Kala dans le district de Kamuli ont donné plus de rendement que les autres de cultivars à chair orangée. Les enfants ont exprimé une préférence pour OFSP par rapport au cultivar à chair blanche. Les agriculteurs qui ont participé aux essais sur ferme avec les cultivars OFSP ont continué à planter ces mêmes cultivars après les tests, indiquant un bon potentiel pour l'adoption. Les critères de sélection pour les agriculteurs étaient évalués comme incluant ; haut rendement, résistance aux maladies et parasites, taux de croissance élevé, goût agréable et valeur nutritive. Etant donnée la haute valeur nutritive, la préférence par les enfants et la volonté des agriculteurs de planter les cultivars OFSP, il est conclu que la production et la distribution de matériel de culture devraient être facilitées en particulier en ce qui concerne *Ejumula, Kala* et SPK004.

Mots Clés: *Ipomea batatas*, essais sur ferme, β-carotène

INTRODUCTION

Vitamin A deficiency (VAD) is widespread, affecting approximately 140 million pre-school children and 7 million pregnant women in the world (World Bank, 2004). VAD negatively affects resistance to illnesses and is the leading cause of blindness in the world. In the case of children, VAD increases fatality from common childhood illnesses such as measles and respiratory infections. In Uganda, prevalence of VAD has been estimated at 28% for children aged 6-59 months and 52% for women aged 15-49 years (UBOS, 2001). World Bank (2004) linked VAD to 11,000 cases of blindness and approximately 8,000 deaths in Uganda annually. In Kamuli district, approximately half of the pre-school age children had insufficient intake of vitamin A and occurrence of VAD related complications of xerophthalmia, night blindness, bitots spots, corneal xerosis and corneal scars were found to be 5.4%, 2.5%, 1%, 0.3% and 1.7%, respectively (Kawuma and Serunjogi, 1992).

Promotion of the consumption of vitamin A rich foods is a promising strategy to combat VAD (Ssebuliba *et al.*, 2001). Yellow and orange fleshed sweetpotatoes (OFSP) are rich in the vitamin A precursor beta-carotene. Sweetpotatoes are an important staple in the eastern Uganda districts of Kamuli and Iganga. The crop exhibits relatively high productivity across a range of environments, short cropping season and flexibility in planting and harvesting schedules (Ewell, 1998). The crop is drought resistant, is efficient in the production of carbohydrates, proteins, vitamins and cash income per unit of land and time (Ewell and Mutuura, 1991). Sweetpotato can be cultivated all year round. Sweetpotatoes are consumed by people of all ages but are particularly liked by children (Oyunga *et al.*, 1997). In Uganda, the most prevalent sweetpotato varieties grown are whitefleshed. In the recent past, however, OFSP were introduced in the coutnry. Majority of these exhibit characteristics which are quite distinct from the long time accepted and cultivated white fleshed sweetpotatoes.

To ensure high adoption of the beta-carotene OFSP cultivars, these cultivars should meet farmers' selection criteria, including yield, disease resistance, taste, flavour, and texture (affected by dry matter content). The objective of this study was to determine the potential of OFSP cultivars to contribute to reduction in VAD in Kamuli and Iganga districts. The agronomic performance, beta-carotene content and farmer acceptability were assessed.

MATERIALS AND METHODS

Study area and selection of women groups. The study was conducted in Iganga and Kamuli districts, in eastern Uganda, where there is high production and consumption of the low β-carotene white fleshed sweetpotato and VAD prevalence is high. Iganga and Kamuli districts are highly populated with a density of up to 400 people per square kilometer. Consequently, many farms are tiny and are cultivated intensively. The districts are characterised by food insecurity, high poverty and morbidity levels especially malaria and AIDS. These are also among those with high vitamin A deficiency rates (Kawuma and Sserunjogi, 1992). Sweetpotato is an important food crop where it contributes to food security.

Ten groups of women farmers from each district were selected to grow and evaluate four OFSP cultivars in Nabitende, Namutumba, Bukanga, Bugono and Buwambi sub-counties in Iganga and in Namugongo, Nakalama, Nawaikoke, Bumanya and Busanda sub-counties in Kamuli district. The criteria for selection of the women's groups included; good organization, easy accessibility, and willingness to grow the new OFSP cultivars.

On farm sweetpotato production. During the year 2002 each of the selected farmers' groups planted four OFSP cultivars namely; SPK 004, *Kala, Ejumula* and *Sowola 6* in a randomized complete block design with the farmers' most popular cultivar as the local check. The local check cultivars varied among the farmers and included *Dimbuka, Yongera abalenzi emboli, Nakasoma, Bunduguza* and *Silika*. Trials were planted in March, May and October 2002 on the same farm but on different fields. Planting materials for the OFSP cultivars were obtained and multiplied from Namulonge Agricultural and

Animal Production Research Institute (NAARI). The members of the women groups together with the researchers were involved in the management of the trials from planting to harvest. Trials were planted on mounds that were approximately 1 metre apart with 3 cuttings per mound. The mounds per clone averaged 150 in three replicates of 50 mounds. Normal agronomic practices of weeding and earthing up were done uniformly on all the plots.

Data collection. Trials were harvested five months after planting when the sweetpotato tubers had attained physiological maturity. Twelve mounds per clone (four mounds per replication) from the middle of the experimental plots were dug up. Data were collected on the total number of tubers, total tuber yield, and marketable tuber yield. Marketable and non-marketable tubers measured ≥ 3 cm and < 3 cm, respectively. Also determined were tuber weevil damage, virus disease, rotting, sprout and cracking scores.

Tuber weevil damage was recorded per plot using a score of 1 - 5 based on the extent of external damage (where 1 = no damage, 2 = mild damage on a few tubers, 3 = moderate damage on many tubers, 4 = severe damage on most tubers, and 5=very severe damage on all the tubers). Data on sprouting, rotting, cracking, and virus diseases was scored using a scale of 0 - 5 (where 0 = none/ no symptom, 1 = mild, 2 = moderate, 3 = severe, 4 = excessive and 5 = very excessive).

Following the harvest of the March, May and October planted sweetpotato trials, the farmers cooked the tubers of each cultivar separately and evaluated them for ease of cooking, absence of fibre, appearance, taste, and acceptability to children in the age ranges of 7 - 12 months, 1-5 years, and 5-12 years. Acceptability analysis was carried out using a questionnaire. The scoring was on a scale of 1-5 with 1 corresponding to very poor, 2 - poor, 3- fair, 4 - good, 5 - very good. The farmers were also requested to identify desirable and undesirable attributes for each of the sweetpotato cultivars.

For each harvest, dry matter and β-carotene content was determined for each cultivar. Dry matter was determined by the dry oven method while β-carotene content was determined by spectrophotometry (Ameny and Wilson, 1997).

Data analysis. Analyses of variance (ANOVA) were conducted for all measured variables using Genstat v 8 software (Lawes Agricultural Trust, 1995). The LSD was used to detect significant differences between treatment means. A combined analysis of variance across sites and planting dates was carried out and tests of significance were done using the F-test. For all the analyses, α level of 0.05 was applied.

RESULTS AND DISCUSSIONS

On farm performance. A summary of the ANOVA for yield components and tuber characteristics is given in Table 1. In most cases, the district and planting date effects were significant. The cultivar effect was significant for total tuber yield, tuber weight, β-carotene content and virus diseases score. All levels of interaction were not significant with the exception of district x planting date where interactions were significant for tuber cracking, sprouting and rotting.

Yield. Overall, yields in Kamuli district recorded significantly higher tuber yields compared to sweetpotato fields in Iganga (Table 1). With the exception of the 3rd planting, the local cultivar *Bunduguza* had the highest mean yield (10.81 t ha^{-1} for the first planting and 10.06 t ha^{-1} for the second planting) while *Kala* had the lowest mean yield of 4.87 t ha^{-1}. The highest yield recorded in Iganga district for the three planting dates was for cultivar *Kala* with 7.96 t ha^{-1} in the first planting while the lowest was for cultivar Sowola in the first and second planting, and SPK004 in the third planting (Table 2). The March planting produced the highest yields, followed by May and then October. In eastern Uganda March is the main planting time; as the crop receives adequate moisture. Delayed planting as seen in May significantly reduces tuber yield probably due to limited moisture this crop received. Limited moisture results in a short bulking period. Other factors that have influenced yield between planting dates and locations could be genetic variability, differences in soil types and fertility, and management practices.

There were significant cultivar differences in the marketable tuber yield with fields in Kamuli district producing significantly higher marketable

TABLE 1. Mean squares and tests of significance from a combined analysis across sites and planting dates for tuber yield and yield characteristics of orange fleshed sweet potato cultivars in Iganga and Kamuli districts

Source of variation	DF	Total tuber yield	Number of tubers ha^{-1}	Weight/tuber	Beta-Carotene	Cracking damage	Sprouting damage	Rotting damage	Virus score
Planting District (A)	1	39.74**	3730.34**	64.82	8,203,841	0.71456**	0.37408**	0.19683**	0.00736
Planting Date (B)	2	16.76**	3367.72**	4418.77**	1.563E+07*	3.67069**	1.98856**	4.28404**	0.02181
Cultivar (C)	4	5.45*	632.13	660.40*	1.990E+07**	0.05128	0.00365	0.00535	0.23252**
A*B	2	2.31	168.15	391.39	5,901,841	0.39326**	0.62174**	0.04941*	0.08233
A*C	4	2.58	243.97	140.34	2,816,931	0.03054	0.00343	0.00959	0.01880
B*C	8	1.17	20.48	171.61	4,519,995	0.01606	0.00865	0.12090	0.05208
A*B*C	8	1.00	133.95	113.22	2,136,507	0.01354	0.01191	0.00987	0.20500

*, ** Designate significant F-test at the probability levels of 0.05 and 0.01, respectively

TABLE 2. Total tuber yield, marketable yield and total number of tubers of orange fleshed sweet potato cultivars in Iganga and Kamuli districts during the year 2002

Cultivar	Total tuber yield (t ha^{-1})						Marketable yield of tubers (t ha^{-1})						Total number ha^{-1} ('000)					
	March		May		October		March		May		October		March		May		October	
	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli
Ejumula	6.69a	7.15bc	5.23a	6.42bc	4.03a	7.59a	3.48a	4.12bc	3.67a	3.96c	1.33a	3.74a	89.56a	104.80b*	40.81a	75.81a	52.92a	83.38a
Kala	7.96a	7.04bc	3.27b	7.67b	3.02ab	5.22b	5.19a	4.85abc	1.85b	5.45b	0.96a	3.02ab	78.56bc	63.31c	23.92b	61.44b	35.23b	54.86c
Sowola	5.58a	4.94c	2.98b	4.88c	2.65ab	4.98b	2.23a	2.60c	1.56b	2.63d	0.83a	2.38b	82.63b	67.25c	33.56ab	45.92c	37.44b	63.13b
SPK 004	5.83a	8.18ab	5.48a	7.04b	2.48b	4.90b	3.27a	5.27ab	4.08a	5.02bc	1.04a	2.60b	72.94cd	99.00b	40.81a	62.44b	40.42b	59.56bc
Local	6.08a	10.81a	5.23a	10.06a	2.67ab	6.85a	5.51a	7.38a	3.81a	7.85a	1.06a	3.88a	67.94d	121.60a	44.19a	76.25a*	49.17a	85.88a*

Means followed by the same letter within a column are not significantly different according to the LSD test

tuber yield compared to fields in Iganga. The marketable yields were also significantly higher for the March crop followed by the May and October crops. The local check cultivars (*Bunduguza* for Kamuli district and *Nakasoma* for Iganga district) produced significantly higher marketable tuber yields compared to the OFSP cultivars for all the planting dates, while cultivar *Sowola* produced significantly lower marketable tuber yields compared to the other OFSP cultivars in both districts and for all the three planting dates. The lower marketable yield for OFSP cultivars may limit their adoption by some farmers.

The total number of tubers varied significantly in both locations during the three planting dates (Tables 1 and 2). Total tuber numbers also followed the trends above, with Kamuli district recording the highest numbers. Likewise, the March planted crops produced the highest tuber numbers. While the local cultivar, *Bunduguza* had the highest in Kamuli district. With the exception of the May crop, the local variety Ejumula produced the highest tuber numbers of 89560 and 52920 for March and October crops, respectively in Iganga district. Its notworthy that another local variety produced the highest tuber numbers in May (Table 2). In Kamuli district, the local varieties again were superior for tuber numbers compared to the OFSP varieties (Table 2).

The combination of more tubers and larger size explain the higher yield of local cultivars in comparison to the OFSP cultivars. This is probably due to the fact that the local sweetpotato varieties were better adapted to the conditions in the two districts. The results of this study contrast those of Gichuki *et al.* (1998) whose high β-carotene introductions yielded more than the local checks and therefore more desirable by consumers (Ocitti P'Obwoya and Namakula, 1997). This implies that the local varieties cannot be completely abandoned in the two districts in preference for the OFSP varieties at least in the short run.

Cracking damage on the tubers was significantly higher for Kamuli district compared to Iganga district and on the March planted crop compared to the May and October planting dates (Table 3). There were no significant differences in the cracking score for the sweetpotato cultivars produced in Iganga during both the March and

TABLE 3. Cracking damage, weevil damage and sprouting scores of orange fleshed sweet potato cultivars in Iganga and Kamuli districts during the year 2002

Cultivar	Cracking damage (score)						Weevil damage (score)						Sprouting (score)					
	March		May		October		March		May		October		March		May		October	
	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli
Ejumula	1.07a	1.32abc	0.50a	1.58a	0.00	0.17a	1.75a	1.43a	1.41a	1.90a	1.66a	1.50a	1.40a	0.92b	0.92a	1.00a	0.00	0.91a
Kala	1.07a	1.40ab	0.50a	1.56a	0.00	0.25a	1.50ab	1.75a	1.32a	1.99a	1.79a	1.21a	1.25a	1.33a	0.93a	1.00	0.00	0.74a
Sowola	1.00a	1.03bc	0.50a	1.07ab	0.00	0.17a	1.23ab	1.33a	1.25a	1.49ab	1.91a	1.33a	1.23a	1.18ab	0.99a	1.08a	0.00	0.67a
SPK 004	1.00a	0.93c	0.50a	1.00b	0.00	0.25a	1.68ab	1.65a	1.32a	1.39b	1.50a	1.16a	1.40a	1.17ab	0.92a	1.00a	0.00	0.74a
Local	1.17a	1.48a	0.67a	1.24ab	0.00	0.42a	1.08b	1.50a	1.38a	1.59ab	1.33a	1.33a	1.51a	1.25ab	0.92a	1.00a	0.00	0.83a

Means followed by the same letter within a column are not significantly different according to the LSD test. For weevil and cracking damage: 1 – no damage 5 – very severe damage. For sprouting score 0 – no sign of sprouting, 5 – very excessive sprouting

May planting dates. In Kamuli district, *Ejumula* had the highest cracking damage score while cultivars SPK 004 and *Kala* had the lowest damage score for all planting dates. Its worth noting that cracking was not serious as the highest score was only 1.38.

Weevil damage was mild and only affected a few tubers (Table 3). The highest weevil damage score was 1.99 and was recorded on local variety *Kala* in Kamuli district. Sweetpotatoes cultivars produced in Iganga district during the May and October planting dates showed no significant difference in the weevil damage, but *Ejumula* had significantly more weevil damage than the local cultivar for the March planting date. In Kamuli district there was no significant difference in the weevil damage on the sweetpotato cultivars for March and October planting dates but *Ejumula* and *Kala* had higher scores than SPK004. Generally, weevil damage was more prevalent in Kamuli than in Iganga district.

Sprouting of sweetpotato tubers was either absent or mild. In Iganga, it was observed in March and May planted crops whereas it was observed in Kamuli for all crops (Table 3). The sprouting scores were not significant for varieties in Iganga while in Kamuli district variety *Kala* sprouted significantly less than the rest in the March and May crops. In the October crop, there was no significant varietal effect on tuber cracking (Table 3). Tuber rots were only recorded in the March and May planted crops in both districts. Rot scores were however very low ranging, 0-16 (Table 4).

There were no significant varietal effect on virus diseases scores for the crop planted in March in both Iganga and Kamuli districts (Table 4). However, there were significant varietal effect on crops produced in the two districts for the May and October crops with the OFSP cultivars generally exhibiting higher scores than the local cultivars (Tables 3 and 4). The cultivar *Sowola* had the highest virus score in both districts during the three plantings. This probably explains the low number of marketable tubers in this cultivar.

Dry matter content of sweetpotato cultivars. Dry matter content was significantly affected by cultivars. In all cultivars dry matter was above 27% (Table 5) which is considered high and

TABLE 4. Rotting and virus scores of orange fleshed sweet potato cultivars in Iganga and Kamuli districts during the year 2002

Cultivar	Rotting (score)						Virus (score)					
	March		May		October		March		May		October	
	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli
Ejumula	1.2a	0.9b	1.2b	1.2a	0.0	0.0	1.1a	0.9a	1.5a	1.5ab	1.2abc	1.5a
Kala	1.2a	0.9b	1.6a	1.0b	0.0	0.0	1.2a	0.9a	1.2ab	1.1c	1.4a	1.3ab
Sowola	1.1a	0.9b	1.2b	1.1ab	0.0	0.0	1.5a	1.3a	1.1ab	1.6a	1.3ab	1.1abc
SPK 004	1.2a	1.0ab	1.4ab	1.0b	0.0	0.0	1.0a	0.9a	0.8b	1.2bc	0.8bc	0.8c
Local	1.4a	1.1a	1.2b	1.0b	0.0	0.0	1.0a	0.9a	0.7b	1.0c	0.7c	0.9bc

Means followed by the same letter within a column are not significantly different according to the LSD test. 0 – No sign; 5 – very excessive

TABLE 5. Dry matter (%) and Beta-carotene content of different orange fleshed sweet potato cultivars grown in Iganga and Kamuli Districts in the year 2002

Cultivar	Dry matter content (%)						Beta-carotene content (µg/100g sample)					
	March		May		October		March		May		October	
	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli	Iganga	Kamuli
Ejumula	36.65c	32.58d	34.14e	33.10c	36.05b	36.24a	6321a	4821a	441b	954a	13027a	3750a
Kala	36.85c	30.93e	37.84b	39.69a	27.63e	36.31a	510d	358d	228d	280d	2370c	1268c
Sowola	37.76b	37.55a	37.44c	29.54e	35.88c	35.37c	1599b	1026c	673a	571c	2966d	815d
SPK 004	31.49d	35.90b	38.21a	37.75b	36.95a	36.39a	1540c	1295b	376c	661b	1840b	1824b
Local	41.96a	35.33c	35.06d	32.43d	33.81d	32.56b	173e	28e	24e	80e	1375e	45c

Means followed by the same letter within a column are not significantly different according to the LSD test

therefore acceptable to most consumers (Ewell and Mutuura, 1991). The sweetpotato cultivar *Kala* had the lowest dry matter content (27.63%) while the highest (41.96%) was recorded on the local variety. The highest dry matter content among the OFSP varieties was recorded on *Kala* (39.6%). High dry matter is a positive attribute on the fresh market. The watery texture of the low dry matter cultivars could be acceptable to infants, who may find its low dry matter content easier to digest than the drier textured cultivars preferred by adults. High yielding, low dry matter content cultivars may be used for processed products like flour. There was a significant varietal effect on the tuber content of β-carotene. Among the OFSP varieties, *Ejumula* had the highest content of β-carotene. Within this group, the β-carotene content was also significantly different for varieties; with values many times lower than the highest (Table 5).

β-carotene content of the sweetpotato cultivars. As expected, the local white fleshed cultivars *Dimbuka* grown in Iganga and *Bunduguza* grown in Kamuli had the lowest beta-carotene contents (Ameny and Wilson, 1997; Martin, 1983; Hammet 1974; Garcia et al., 1970). All OFSP cultivars had beta-carotene content above 400 µg/100g which makes them a good source of Vitamin A (Woolfe, 1992).

Acceptability. Acceptability of the test sweetpotato varieties ranged from 3.5 - 5, representing fair to very good. All OFSP varieties however, scored 4.0-5. OFSP cultivars were found to be more acceptable to children than the local cultivars (Table 6). According to children's preference, the sweetpotatoes were ranked thus: 1- *Ejumula*; 2- SPK004; 3-*Sowola*; 4- *Kala*; 5- *Silika*; 6-*Sekanyolya*, 7- *Dimbuuka*. It is important to note that *Ejumula* that was most acceptable to children also had the highest β-carotene content. It also produced tuber yields that were acceptable to the farmers. This cultivar can therefore be recommended for cultivation in the study areas with the objective of alleviation of Vitamin A malnutrition in children.

The attributes that farmers considered most important in their choice of potato cultivars to adopt were high yield, resistance to disease, good

TABLE 6. Acceptability of different orange and white fleshed sweet potato cultivars by farmers in Iganga and Kamuli districts

Cultivar	Cooking ease	Fiber absence	Cooked appearance	Taste	Acceptability by children of different ages			Total	Rank
					7-12 months	1-5 years	5-12 years		
Orange									
Ejumula	5.0	5.0	5.0	5.0	5.0	5.0	5.0	35.0	1
SPK 004	5.0	5.0	4.5	4.5	5.0	5.0	4.5	33.5	2
Sowola	5.0	4.5	4.0	4.5	4.5	4.5	4.5	31.5	3
Kala	4.5	4.5	4.0	3.5	5.0	4.0	4.0	29.5	4
White									
Silika	4.5	5.0	4.0	4.0	4.0	4.0	4.0	29.5	4
Sekanyolya	5.0	5.0	4.0	4.0	3.5	4.0	3.5	29.0	6

1 – very poor, 5 – very good

TABLE 7. Desirable and undesirable attributes identified by farmers in Iganga and Kamuli districts for different sweet potato cultivars

Cultivar	Desirable attributes	Undesirable attributes
Ejumula	Good taste Easy cooking High yielding Good quality tuber Early maturity Flavoured Good appearance	Drought susceptible Rots easily on maturity Bears once Has a lot of sap More susceptible to diseases Fiberous tubers
Kala	Easy cooking Good taste Good quality tuber Early maturity Good appearance Flavoured Does not rot easily	Drought susceptible Not resistant to pests and diseases Has low yields Bears once
Sowola	Good quality tubers High yielding Good taste Early maturity Easy cooking Drought resistant Good appearance Cooked tubers keep good overnight Flavoured	Drought susceptible Rots easily after maturity Bears once Has hard potatoes
SPK 004	High yielding Easy cooking Good taste Good quality tuber Drought resistant Early maturity	Produces small tubers Vines are of poor quality Fiberous tubers No tolerance to poor soils Bears once Hard to harvest

TABLE 8. Ranking of the most desirable characteristics identified by farmers in Iganga and Kamuli districts for orange fleshed sweet potato cultivars

Characteristic	Percentage reporting	Rank according to %
High yield	76.9	1
Resistance to pests and diseases	30.8	2
Fast growth	23.1	3
Good taste	15.4	4
Profitability	7.7	5

taste, early maturity, good quality tuber, good flavor and appearance (Tables 7 and 8). These criteria need to be considered when selecting sweetpotato cultivars to promote. This finding implies that orange fleshed sweet potato varieties have to be high yielding if they are to be readily accepted by farmers.

CONCLUSIONS AND RECOMMENDATIONS

Of the orange fleshed sweetpotato cultivars evaluated in Kamuli district, the highest yielding cultivars were *Ejumula* and SPK004. *Ejumula*, SPK004, and *Kala* had acceptable tuber yields in Iganga district. These cultivars are recommended for production in this area. The most important selection criteria were high yield, good taste and ease of cooking, which should be considered important by breeders, in addition to disease and pest resistance. Based on the observed differences in yield resulting from different planting dates, it is recommended that the main sweetpotato crops be planted in March in the study area.

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