BIBLIOGRAPHY

GAYAWET, ROLLY C. APRIL 2009. Yield Evaluation and Farmer Acceptability of Eleven Sweetpotato Entries Under Sapid, Mankayan, Benguet Co.ndition. Benguet State University, La Trinidad, Benguet.

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ABSTRACT

The study was conducted to identify the best entry based on yield and resistance to pest, determine the profitability of growing the different entries at Sapid, Mankayan, and determine the entries selected by farmers at Sapid, Mankayan.

Based on the results, entry SG98-18-01 was the best entry due to its high yield and resistance to pest. Entries PSBSP23, Peke Negro, Macupag, Hawai, Bengueta and Felipe may also be included due to their comparably high yields and resistance to beetle and scab.

SG98-18-01, Macupag, Bengueta and Felipe had above 400% ROCE and may therefore be profitably grown at Sapid, Mankayan.

SG98-18-01, Macupag, and Bengueta were selected by ten farmers due to their high yields whereas Haponita and Hawai were selected due to the purple and red flesh color of the entries.

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INTRODUCTION

Sweetpotato (*Ipomoea batatas*) is traditionally used as a staple crop by many mountain tribes in the Northern Philippines (NPRCRTC, 1991). It is a regular part of the people's diet especially in areas where rice supply is low.

Every part of the sweetpotato plant is consumed. The storage roots are eaten as food; the tender leaves are eaten as vegetables and used as planting materials or feeds (Rasco and Amante, 1994). The roots may also be processed into candies, wine and cookies.

Sweetpotato can be planted all year round and may be used as cover crop to minimize soil erosion. It is also a low input crop with stable yield (Gonzales, 1983) giving higher profit to farmers.

Continuous evaluation of sweetpotato varieties should therefore be done to exploit the benefits of this crop. Evaluation of different varieties of sweetpotato may lead to improvement of the yield and eating quality of the crop.

Farmers in Mankayan also depend on native cultivars which are generally low yielders and late maturing. Thus, through the results of this study, a suitable high yielding variety may be introduced to the farmers for higher profit.

The study was conducted to:

1. identify the best entry based on yield and resistance to pest;
2. determine the profitability of growing the different entries at Sapid, Mankayan; and
3. determine the entries selected by farmers at Sapid, Mankayan.

The study was conducted at Sapid, Mankayan, Benguet from October 2007 to March 2008.

REVIEW OF LITERATURE

The Sweetpotato Plant

The sweetpotato plant can be divided into three basic parts, each has its specific function. The above ground canopy absorbs light energy and converts it to manageable chemical form (carbon compound). The root absorbs water and nutrients and act as an anchor for plant. It also stores excess energy that are not needed for maintenance in the form of carbohydrates in large storage roots (Woolfe, 1992).

Knott and Deanon (1967) reported that early varieties can be harvested in 70 to 90 days and late maturing are ready to harvest at about 120 days. It usually takes longer for a crop to mature in wet season than in dry season.

Climatic Requirement for Sweetpotato

Sajjapongse (1982) as cited by Bang-as (2004), revealed that a temperature of 24^{o}C or more with good sunshine and warm night is the optimum condition for proper growth and development of sweetpotato. Growth is restricted by cool weather and the temperature below 10^{o}C is critical for growth. Shading of the crop will result in the reduction of yield. The crop tolerates drought to some extent but growth will be very much reduced. However, supplementary irrigation helps better growth and water supply of about 112 to 15 cm/ha of water is most useful.

Sweetpotato can tolerate drought better than flooding (Ghost *et al.*, 1988). However, the magnitude of yield reduction under both stresses varies from culture to cultivar. Under moisture stress, leaf water potential is decreased even though stomata does not close completely.

Varietal Performance

Farmers' varietal preferences vary depending on their regional or local preferences. Most farmers prefer local varieties in areas planted after rice or as rotation crop to vegetables while other prefer sweetpotato with good herbage. Sensory evaluation is another factor that influences the preferences or a consumer towards a certain variety (Palomar, 1988).

A study conducted by the Northern Philippine Root Crops Research and Training Center (1990) reported introduced clones have storage roots with smooth texture and shape, sweet to a very sweet flavor, and most to slightly dry and less fibrous texture.

Varietal Evaluation

The testing of varieties is much greater important than testing for purity and germination since growers suffer losses from impurity or from low germinations. It is essential to the grower to find the most suited testing varieties. Many of the agricultural experimental stations conduct variety and strain test of some crops and recommend varieties in order to determine whether or not they fit their particular conditions. A variety or strain may vary satisfactory in some conditions (Thompson and Kelly, 1957).

Cagampang and Lantian (1977) suggested that the choice of variety is important. They further observed that the use of improved variety minimized problems associated with water and fertilizer management. On the other hand, growing the wrong variety may mean crop failure of disease infection and adverse climatic condition.

Janick (1972) cited that temperature, moisture and light as well as weather factors must be considered in the physical environment of the plants. These factors determine when and what crops were grown in a certain climatic condition. Moreover,

environmental variability over the years is substantial with the wide diversity of environmental and limited geographical areas.

In addition, Gonzales (1983) reported that most farmers prefer varieties, which are high yielding, early maturing and have good eating quality. Others choose a variety that have vigorous vegetative parts and are favored for animal feeds, cover crops or which serves as control against soil erosion.

Sunil (1990) stated that varietal evaluation is a process in crop breeding program which provide comparison or promising lines developed by breeders. It is only through varietal evaluation that a breeder sees the better performance of the developed lines in terms of yielding quality, adaptability, stress tolerance, insect pest and diseases resistance.

MATERIALS AND METHODS

A total area of 216 m^2 was thoroughly prepared and divided into three blocks (Fig. 1). Each block consist of eleven plots measuring 1 x 6 m each. Twenty cutting per replication per variety was sown in each plot. The different varieties were taken from the Northern Philippine Root Crop Research and Training Center (NPRCRTC).

The varieties were laid out using Randomized Complete Block Design (RCBD) and replicated three times.

The following are the varieties to be evaluated:

Code	Variety	Source
V_1	PSBSP22	NPRCRTC
V_2	Haponita	NPRCRTC
V_3	Pekenegro	NPRCRTC
V_4	SG98-18-01	NPRCRTC
V_5	JK27	NPRCRTC
V_6	Macupag	NPRCRTC
V_7	Hawai	NPRCRTC
V_8	Bengueta	NPRCRTC
V_9	Tres Flores	NPRCRTC
V_{10}	Beniasuma	NPRCRTC
V_{11}	Felipe (Local Check)	Mankayan

Cultural practices such as fertilizer application, irrigation and weeding were uniformly employed in all treatments.

Figure 1. Overview of the production site

Data Gathered

1. Percent plant survival. The number of plants that survived was counted at 30 days after planting and computed using the following formula:

$$\% \text{ Plant Survival} = \frac{\text{No. of Plants Survived}}{\text{Total No. of Plants Planted}} \times 100$$

2. Plant vigor. This was taken at 45, 60, 75 and 90 days after planting (DAP) using the rating scale (Gonzales *et al*., 2004).

Scale	Description	Reaction
5	Plants were strong robust stems and leaves; light dark green in color	Highly vigorous
4	Plants were moderately strong with robust stem and leaves; were light green in color	Vigorous
3	Better than less vigorous	Moderately vigorous
2	Plants were weak with few thin stems and leaves; pale	Less vigorous
1	Plants were weak with few stem and leaves; very pale	Poor vigor

3. Insect infection (beetle/leaf folder). This was recorded by degree of insect damage on the crop at 60, 75 and 90 days after planting. This indicate that the variety is resistant to insect pest using the following scale (Rasco, 1996):

Rating	Description	Reaction
1	No symptoms	Very resistant
3	Scattered spot covering 10-20% leaf surface affected	Resistant
5	Scattered spots covering 21-30$ leaf surface	Moderately resistant
7	Scattered to heavy spotting covering 31-50% at leaf surface affected	Moderately susceptible
9	Heavy spotting covering more than 50% leaf surface defoliation occurring	Susceptible

4. Disease infection (scab). Leaf scab infection of ten sample plants from each variety at random was rated at 60, 75 and 90 days after planting using the following scale (Rasco, 1996):

Rating	Description	Reaction
1	Lesions on leaves and stems coalesced severe leaf deformation and stem twisting	Susceptible
2	Several lesion on leaves and stem deformation	Moderately susceptible
3	Several lesions on leaves and stems. No stem deformation	Moderately resistant
4	Few lesions on leaves and stems	Resistant
5	No symptoms	Very resistant

5. Number and weight of marketable roots (kg) per plot. All storage roots with a diameter of three centimeter and above are free from injuries are counted and weighed at harvest.

6. Number and weight of non-marketable roots (kg) per plot. Storage roots with defect and damage by insect pest or disease and below 3 cm in diameter are counted and weighed at harvest.

7. Total yield per plot (kg). Storage roots from each treatment per replication are weighed at harvest.

8. Farmer's selection. At harvest, ten farmers were invited to select the variety of their choice. The characteristics of the varieties was noted. Farmers were asked the reasons for selecting a certain variety (Soliba *et al*., 2004).

9. Dry matter content. This was taken by weighing at least 20 grams of storage roots and oven dried. The dry matter content was computed as:

% DMC = 100% - % Moisture Content

where:

$$\% \text{ DMC} = \frac{\text{Fresh Weight} - \text{Oven Dry Weight}}{\text{Fresh Weight}} \times 100$$

10. Sugar content. This was taken by extracting the juice from the roots using the digital refractometer.

11. Sensory evaluation. Storage root from different varieties were boiled and evaluation by farmers and consumer according to appearance, sweetness, fibrousness, flesh color, textural moistness and general acceptability. The following are basis in determining the eating quality per variety (Mabesa, 1986):

Appearance: 5 = like a lot; 4 = like a little; 3 = neither like or dislike;
2 = dislike a little, 1 = dislike a lot

Sweetness: 4 = sweet; 3 = moderately sweet; 2 = slightly sweet; 1 = bland

Fibrousness: 4 = very fibrous; 3 = fibrous; 2 = slightly fibrous;
1 = not fibrous

Flesh color: 3 = deeply colored; 2 = moderately colored; 1 = pale colored

Textural moistness: 7 = very dry; 6 = moderately dry; 5 = slightly dry;
4 = neither dry nor wet; 3 = slightly wet
2 = moderately wet; 1 = very wet

12. Computed yield (t/ha). This was computed yield per hectare with the formula:

Computed Yield (t/ha) = Total Yield/Plot x 0.92592

13. Return on cash expense (ROCE). This was composed using the following formula:

$$ROCE = \frac{\text{Net Income}}{\text{Total Cost of Production}} \times 100$$

RESULTS AND DISCUSSION

Percent Plant Survival

All of the eleven sweet potato entries had 100% plant survival at 30 days after planting.

Plant Vigor

Significant differences are observed on the plant vigor of different sweetpotato entries at 45, 60, 75 and 90 days after planting (Table 1). Most of the sweetpotato entries (e.g. PSBSP22, Hawai, Bengueta, etc.) showed increased vigor from 45 to 90 days after planting while Haponita and Felipe had decreased vigor. The decrease in vigor of these entries may be attributed to high incidence of insects (beetle) at 75 to 90 days after planting (Table 2).

Table 1. Plant vigor of sweetpotato entries at 45, 60, 75 and 90 days after planting

	PLANT VIGOR			
ENTRY	45	60	75	90
PSBSP22	4.0[b]	4.0[b]	5.0[a]	5.0[a]
Haponita	4.0[b]	4.0[b]	3.0[b]	3.0[b]
Pekenegro	3.0[c]	3.0[c]	3.0[b]	3.0[b]
SG98-18-01	4.0[b]	4.0[b]	4.0[ab]	4.0[ab]
JK27	4.0[b]	4.0[b]	4.0[ab]	4.0[ab]
Macupag	5.0[a]	5.0[a]	5.0[a]	5.0[a]
Hawai	4.0[b]	4.0[b]	5.0[a]	5.0[a]
Bengueta	4.0[b]	4.0[b]	5.0[a]	5.0[a]
Tres Flores	3.0[c]	3.0[c]	5.0[a]	5.0[a]
Beniazuma	4.0[b]	4.0[b]	5.0[a]	5.0[a]
Felipe	4.0[b]	4.0[b]	3.0[b]	3.0[b]

Rating Scale: 1 – Poor vigor; 2 – Less vigorous; 3 – Moderately vigorous; 4 – Vigorous; 5 – Highly vigorous

PSBSP 22 and Macupag were highly vigorous while most of the entries were vigorous to moderately vigorous. High plant vigor might be an indication of wide canopy and pest resistance.

Reaction to Incidence of Beetle

Most of the sweetpotato entries (e.g. PSBSP22, Pekenegro, JK 27, etc.) maintained resistant to moderately resistant ratings against beetles from 60 to 90 days after planting (Table 2). Haponita, Hawai and Felipe, on the other hand, showed decreasing resistance against beetle.

Table 2. Reaction to beetle incidence of sweetpotato entries at 60, 75 and 90 days after planting

ENTRY	BEETLE INCIDENCE		
	60	75	90
PSBSP22	3.0	3.0[b]	3.0[b]
Haponita	4.0	6.0[a]	6.0[a]
Pekenegro	4.0	4.0[b]	4.0[b]
SG98-18-01	4.0	4.0[b]	4.0[ab]
JK27	3.0	3.0[b]	3.0[b]
Macupag	3.0	4.0[b]	3.0[b]
Hawai	3.0	4.0[b]	4.0[b]
Bengueta	4.0	3.0[b]	3.0[b]
Tres Flores	4.0	4.0[b]	4.0[ab]
Beniazuma	3.0	3.0[b]	3.0[b]
Felipe	4.0	5.0[ab]	5.0[ab]
CV (%)	28.26	30.21	30.54

Rating Scale: 1 – Very resistant; 3 – Resistant; 5 – Moderately Resistant; 7 – Moderately Susceptible; 9 - Susceptible

Haponita and Felipe showed moderate resistance against beetle while the rest of the varieties were resistant. Resistance to insects may be related to the genetic constitution of the varieties (Walter, 1987).

Reaction to Scab Infection

Table 3 shows significant differences on the resistance of the eleven sweetpotato entries to leaf scab at 60, 75 and 90 days after planting. All the entries except Felipe consistently maintained resistant to very resistant ratings against scab from 60 to 90 DAP. Felipe, which is a farmer's variety was susceptible to scab starting at 75 days after planting.

Resistance to leaf scab may be due to the presence of physical barriers in the entry such as thickness of the cuticle, number of stomates and lenticels in the petioles and stem that might be absent in entry Felipe (Rasco and Amante, 2000).

Number of Marketable and Non-Marketable Storage Roots

The average number of marketable and non-marketable storage roots per plot are shown in Table 4. SG98-18-01 significantly produced the highest number of marketable and non-marketable roots compared to Felipe (check). This result implies that SG98-18-01 may be more resistant to scab, thereby producing more roots.

Felipe also had more marketable roots than the other entries such Haponita despite being susceptible to scab.

Table 3. Reaction to scab infection of 11 sweetpotato entries at 60, 75 and 90 days after planting

ENTRY	SCAB INFECTION		
	60	75	90
PSBSP22	5.0[a]	5.0[a]	5.0[a]
Haponita	5.0[a]	5.0[a]	5.0[a]
Pekenegro	4.0[bc]	4.0[b]	4.0[bc]
SG98-18-01	4.0[bc]	4.0[b]	4.0[bc]
JK27	5.0[a]	5.0[a]	5.0[a]
Macupag	5.0[a]	5.0[a]	5.0[a]
Hawai	5.0[a]	5.0[a]	5.0[a]
Bengueta	5.0[a]	5.0[a]	5.0[a]
Tres Flores	5.0[a]	5.0[a]	5.0[a]
Beniazuma	5.0[a]	5.0[a]	5.0[a]
Felipe	4.0[bc]	1.0[c]	1.0[c]
CV (%)	7.46	7.69	12.32

Rating Scale: 1 – Susceptible; 2 – Moderately Susceptible; 3 – Moderately Resistant; 4 – Resistant; 5 – Very Resistant

Table 4. Number of marketable and non-marketable storage roots of 11 sweetpotato entries

ENTRY	NUMBER OF STORAGE ROOTS	
	MARKETABLE (per 6 m^2)	NON-MARKETABLE (per 6 m^2)
PSBSP22	44^{bc}	16^{ab}
Haponita	29^{c}	9^{bc}
Pekenegro	35^{bc}	6^{bc}
SG98-18-01	67^{a}	23^{a}
JK27	44^{bc}	23^{a}
Macupag	47^{b}	11^{bc}
Hawai	47^{b}	7^{bc}
Bengueta	40^{bc}	2^{c}
Tres Flores	31^{bc}	6^{bc}
Beniazuma	32^{bc}	4^{c}
Felipe	40^{bc}	3^{c}
CV (%)	20.60	27.49

Weight of Marketable and Non-Marketable Storage Root

The weight of marketable and non-marketable storage roots of the different entries are presented in Table 5 (Fig. 2). SG98-18-01 produced the highest weight of marketable storage roots but comparable with the marketable roots of most of the entries including Felipe. This result may imply that the storage root of the other entries including Felipe may be larger than the roots of SG98-18-01

Low weight of Haponita, Tres Flores and Beniazuma was due to the low number of marketable storage roots (Table 5).

No significant differences are observed in the weight of non-marketable roots of the different entries.

(a)Haponita

(b) Macupag

(c) SG98-18-01

(d) Hawaii

(e) Bengueta

(f) PSPSP22

(g) Felipe

(h) Tres Flores

(i) JK27

(h) Pekenegro

(i) Beniazuma

Figure 2. Marketable and non-marketable yield of the different entries

Table 5. Weight of marketable and non-marketable storage roots of 11 sweetpotato entries

ENTRY	WEIGHT OF STORAGE ROOTS	
	MARKETABLE (kg/6 m^2)	NON-MARKETABLE (kg/6 m^2)
PSBSP22	13.45[abc]	0.88
Haponita	3.35[c]	0.37
Pekenegro	12.70[abc]	0.67
SG98-18-01	15.80[a]	0.95
JK27	9.42	1.38
Macupag	15.35[a]	0.67
Hawai	14.42[ab]	0.33
Bengueta	15.07[a]	0.97
Tres Flores	4.55[de]	0.97
Beniazuma	8.33[cde]	0.38
Felipe	15.07[a]	0.50
CV (%)	25.46	27.49

Total Yield Per Plot

The total yield per plot of the eleven sweetpotato entries ranged from 4.12 kg to 16.75 kg per plot (Table 6). SG98-18-01 significantly produced the highest total yield but comparable with the yields of most of the entries except Haponita, JK 27, Tres Flores and Beniazuma. Haponita produced the lowest yield.

According to Catipon (1986) there is always a variation on the yield components among varieties evaluated. This could be due to the varying yield potential of the entries and their interaction with the environment.

Table 6. Total and computed yield of 11 sweetpotato entries

ENTRY	TOTAL YIELD ($kg/6m^2$)	COMPUTED YIELD (tons/ha)
PSBSP22	14.33^{a}	23.89^{ab}
Haponita	4.12^{d}	6.86^{d}
Pekenegro	13.37^{abc}	22.28^{bc}
SG98-18-01	16.75^{a}	27.91^{a}
JK27	10.80^{bc}	18.00^{bc}
Macupag	16.02^{ab}	22.69^{ab}
Hawai	14.75^{ab}	24.58^{ab}
Bengueta	16.03^{ab}	26.72^{ab}
Tres Flores	4.92^{d}	8.19^{d}
Beniazuma	8.72^{cd}	14.52^{cd}
Felipe	15.52^{ab}	25.94^{ab}
CV (%)	24.28	24.28

Computed Yield (Tons/Hectare)

The computed yield per hectare of the eleven sweetpotato entries evaluated ranged from 6.86 tons to 27.91 tons/ha (Table 6). SG98-18-01 significantly produced the highest yield but comparable with the other entries including farmer's variety, Felipe. This result may indicate that these entries may be suitably grown in the locality.

This observation confirms the findings of Cagampang (1977) that growing the wrong variety may mean crop failure and loss of profit for farmers.

Dry Matter Content

Table 7 shows the significant differences in the root dry matter of the different sweetpotato entries. Highest dry matter content was obtained from Tres Flores and the lowest was from Bengueta, Pekenegro and Macupag.

The average dry matter content of sweetpotatoes is approximately 30% but varies widely depending on cultivars, location, climate, day length and soil type (AVRDC, 1996).

Table 7. Dry matter and sugar content of the storage roots of 11 sweetpotato entries

ENTRY	DRY MATTER CONTENT (%)	SUGAR CONTENT (^{o}Brix)
PSBSP22	30de	8.2^{bc}
Haponita	32^{bc}	9.5^{a}
Pekenegro	28^{f}	7.2^{cd}
SG98-18-01	30^{cd}	6.7^{d}
JK27	31^{ef}	6.6^{d}
Macupag	28^{f}	6.4^{d}
Hawai	29^{ef}	7.0^{cd}
Bengueta	28^{f}	6.3^{d}
Tres Flores	36^{a}	9.7^{a}
Beniazuma	34	9.0^{ab}
Felipe	32^{bc}	8.5^{ab}
CV (%)	2.59	9.30

Sugar Content

The sugar content of the sweetpotato roots is presented in Table 7. Tres Flores had the highest root sugar content but comparable with the sugar contents of entries Haponita, Beniazuma and Felipe. Bengueta had the lowest sugar content of roots.

The high and low sugar content of sweetpotato entries might be due to the genetic constitution of each entry (Walter, 1987). Entries with low sugar content might be used for fry processing due to less browning.

Sensory Evaluation

Appearance. The boiled sweetpotato roots of the different entries were liked a little by the panelists. Entry Pekenegro which had purple flesh was liked a lot.

Sweetness. Among the 11 entries, Tres, Flores was sweet while the rest were moderately sweet. Entry Tres Flores had the highest sugar content (9.7^{o}Brix) accounting for its sweetness.

Fibrousness. The boiled roots of entries PSBSP22, Haponita, SG98-18-01, Hawai and Felipe were slightly fibrous while Pekenegro, JK27, Macupag, Bengueta, Tres Flores and Beniazuma were fibrous. Entries that contain high fiber may help to lower the risk of constipation, colon and rectal cancer, heart disease, diabetes and obesity (Lordel, 2008).

Flesh color. Boiled roots of Haponita had purple flesh, Makupag had red flesh, JK27, Tres Flores and Beniazuma had yellow flesh. The other entries had light violet flesh (Pekenegro), light pink flesh (SG98-18-01 and Bengueta), light yellow flesh (Hawai) and white flesh (PSBSP22 and Felipe).

Textural moistness. All of the boiled sweetpotato entries were slightly dry except Tres Flores which was neither dry nor wet.

General acceptability. Among the different sweetpotato entries evaluated, Haponita and Tres Flores were liked a lot while the rest of the entries were liked a little. The acceptability of Haponita and Tres Flores may be attributed to their high sugar contents (9.5^{o}Brix and 9.7 ^{o}Brix, respectively).

Farmer's Selection

At harvest, ten farmers were invited to select the entry of their choice (Table 8). Most of the farmers selected SG98-18-01, Macupag and Bengueta due to their high yield and attractive roots (Fig. 3). Entries Haponita and Hawai were also selected for their oblong roots and attractive root flesh color.

Table 8. Farmer's selection

ENTRY	NUMBER OF FARMERS (n = 10)	REASON
Haponita	10	Attracting color (violet flesh) and oblong shape
Hawai	8	Long oblong shape and attractive color (Red)
Bengueta	9	High yield and early maturity
Macupag	8	High yield, good skin texture and attractive color (Red)
SG98-18-01	10	High yield, attractive color (Pink)

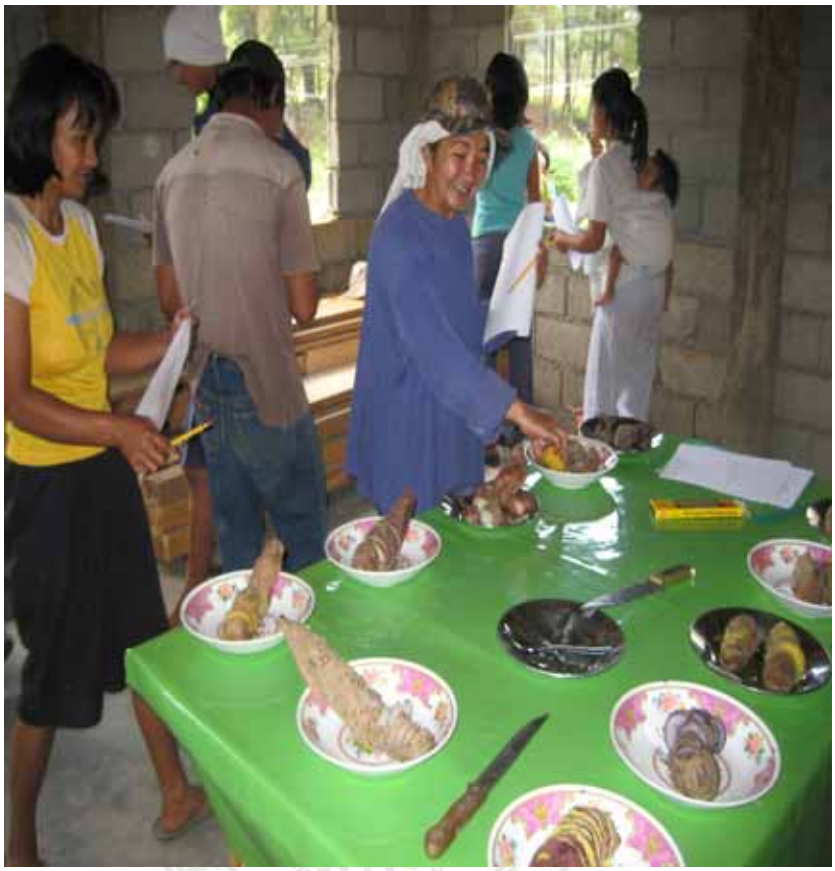

Figure 3. Farmers selecting sweetpotato entries

Entries SG98-18-01, Macupag and Bengueta may give higher profit to farmers due to their high yield. Entries Haponita and Hawai, on the other hand, might be good for coloring of food and drinks.

Return on Cash Expense (ROCE)

The return on cash expense of the eleven sweetpotato entries ranged from 34 to 427% (Table 9). SG98-18-01 having the highest total yield had the highest ROCE of 427% while Haponita had the lowest ROCE of 34%. The farmer's variety, Felipe, entries Macupag and Bengueta also had high ROCE. The high percentage of ROCE in these entries might be due to the presence of large tubers which contributed to the increased weight of the entries.

The low return on cash expense (ROCE) might be due to the low number and weight of storage roots of Haponita.

Table 9. Return on cash expense of 11 sweetpotato entries

ENTRY	YIELD ($kg/18m^2$)	GROSS SALE (Php)	TOTAL EXPENSES (Php)	NET INCOME (Php)	ROCE (%)
PSBSP22	40.35	605.25	135.00	470.75	349
Haponita	11.25	168.75	135.00	33.75	34
Pekenegro	38.10	571.50	135.00	436.50	323
SG98-18-01	47.40	711.00	135.00	576.00	427
JK27	28.25	423.75	135.00	288.00	213
Macupag	46.05	690.75	135.00	555.75	417
Hawai	43.25	498.75	135.00	363.75	269
Bengueta	45.20	678.00	135.00	543.00	402
Tres Flores	13.65	204.75	135.00	69.75	52
Beniazuma	25.00	375.00	135.00	240.00	178
Felipe	45.20	678.00	135.00	543.00	402

Note: Php 15.00 is the selling price per 1 kg of storage root. Total expenses include planting materials, fertilizer, land preparation, weeding, harvesting and irrigation

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

The study was conducted to identify the best entry based on yield and resistance to pest, determine the profitability of growing the different entries at Sapid, Mankayan, and determine the entries selected by farmers at Sapid, Mankayan.

All eleven sweetpotato entries evaluated had 100% survival rate and had significant differences in most data gathered except non-marketable storage roots.

It was observed that most of the entries were vigorous to highly vigorous and were resistant to beetle and scab. Entries Haponita and Felipe were however moderately resistant to beetle and scab.

Entry SG98-18-01 had the highest number and weight of marketable and non-marketable storage roots while Haponita had the lowest.

Ten farmers selected SG98-18-01 due to its high yield and Haponita due to its attractive color. Hawai, Bengueta and Macupag were also selected by 8 to 9 farmers due to their shape, high yield and root color.

The root dry matter content of the eleven entries ranged from 28 to 32%. Tres Flores had the highest root dry matter while Pekenegro, Macupag and Bengueta had the lowest.

In terms of sugar content of roots, Bengueta had the lowest but comparable with Macupag, JK27 and SG98-18-01.

The boiled roots of Haponita and Tres Flores were liked a lot while the rest were liked.

In terms of ROCE, SG9818-01 gained the highest profit.

Conclusion

Based on the results, SG98-18-01 was the best entry due to its high yield and resistance to pest. PSBSP22, Peke Negro, Macupag, Hawai, Bengueta and Felipe may also be included due to their comparable yields and resistant to very resistant ratings against beetle and scab.

All the entries had above 100% ROCE except Haponita and Tres Flores due to their low yield. SG98-18-01, Macupag, Bengueta, and Felipe had above 400% ROCE. These entries are therefore profitably grown at Sapid, Mankayan.

SG98-18-01, Macupag, and Bengueta were selected by ten farmers due to their high yields whereas Haponita and Hawai were selected due to the purple and red flesh color of the entries.

Recommendation

SG98-18-01, Macupag, Bengueta and Felipe could be grown at Sapid, Mankayan due to their high yield, resistance to disease, and high ROCE. Moreover, these entries were selected by the farmers.

Haponita and Hawai are recommended for processing due to their attractive flesh color and high dry matter content.

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APPENDICES

Appendix Table 1. Plant vigor at 45 DAP

VARIETY	TOTAL	MEAN
V_1	4.0	12
V_2	4.0	12
V_3	3.3	10
V_4	4.0	12
V_5	4.0	12
V_6	4.7	14
V_7	4.0	12
V_8	4.0	12
V_9	3.3	10
V_{10}	3.7	11
V_{11}	4.0	12

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F	
					0.05	0.01
Replication	2	0.182	0.091	3.27*	2.35	3.3
Treatment	10	4.061	0.406			
Error	20	2.485	0.124			
TOTAL	32	6.485				

* - Significant

Appendix Table 2. Plant vigor at 60 DAP

VARIETY	TOTAL	MEAN
V_1	4.0	12
V_2	4.0	12
V_3	3.3	10
V_4	4.0	12
V_5	4.0	12
V_6	4.7	14
V_7	4.0	12
V_8	4.0	12
V_9	3.3	10
V_{10}	3.7	11
V_{11}	4.0	12

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	0.182	0.091	3.26*	2.35	3.37
Treatment	10	4.061	0.406			
Error	20	2.485	0.124			
TOTAL	32	6.727				

* - Significant

CV (%) = 9.02

Appendix Table 3. Plant vigor at 75 DAP

VARIETY	TOTAL	MEAN
V_1	5.0	15
V_2	3.3	10
V_3	3.3	10
V_4	3.7	11
V_5	4.3	13
V_6	5.0	15
V_7	4.3	13
V_8	4.7	14
V_9	4.7	14
V_{10}	4.3	13
V_{11}	3.0	9

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	0.152	0.576	2.93*	2.35	3.37
Treatment	10	14.909	1.491			
Error	20	10.182	0.509			
TOTAL	32	26.242				

* - Significant CV (%) = 17.19

Appendix Table 4. Plant vigor at 90 DAP

VARIETY	TOTAL	MEAN
V_1	5.0	15
V_2	3.3	10
V_3	3.3	10
V_4	3.7	11
V_5	4.3	13
V_6	5.0	15
V_7	4.3	13
V_8	4.7	14
V_9	4.7	14
V_{10}	5.0	15
V_{11}	3.0	9

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	0.788	0.394	3.4*	2.35	3.37
Treatment	10	16.848	1.685			
Error	20	9.879	0.494			
TOTAL	32	27.515				

* - Significant

CV (%) = 16.69

Appendix Table 5. Insect incidence at 60 DAP

VARIETY	TOTAL	MEAN
V_1	3.0	9
V_2	3.7	11
V_3	4.3	13
V_4	3.7	11
V_5	3.0	9
V_6	3.0	9
V_7	3.0	9
V_8	3.7	11
V_9	3.7	11
V_{10}	3.0	9
V_{11}	4.3	13

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	4.606	2.303	0.85^{ns}	2.35	3.37
Treatment	10	8.242	0.824			
Error	20	19.394	0.970			
TOTAL	32	32.242				

* - Significant CV (%) = 28.26

Appendix Table 6. Insect incidence at 75 DAP

VARIETY	TOTAL	MEAN
V_1	3.0	9
V_2	6.3	19
V_3	3.7	11
V_4	4.3	13
V_5	3.0	9
V_6	3.0	9
V_7	3.7	11
V_8	3.0	9
V_9	3.7	11
V_{10}	3.0	9
V_{11}	5.0	15

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F	
					0.05	0.01
Replication	2	3.152	1.576	2.61	2.35	3.37
Treatment	10	34.182	3.418			
Error	20	26.182	1.309			
TOTAL	32	63.515				

CV(%) = 30.21

Appendix Table 7. Insect incidence at 75 DAP

VARIETY	TOTAL	MEAN
V_1	3.0	9
V_2	6.3	19
V_3	3.7	11
V_4	4.3	13
V_5	3.0	9
V_6	3.0	9
V_7	3.7	11
V_8	3.0	9
V_9	4.3	13
V_{10}	3.0	9
V_{11}	5.0	15

ANALYSIS OF VARIANCE

SOURCE	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F VALUE	TABULAR F	
					0.05	0.01
Replication	2	1.697	0.848	2.53*	2.35	3.37
Treatment	10	34.909	3.491			
Error	20	27.636	1.382			
TOTAL	32	64.242				

* = Significant CV (%) = 30.54

Appendix Table 8. Disease incidence at 60 DAP

VARIETY	TOTAL	MEAN
V_1	5.0	15
V_2	5.0	15
V_3	3.7	11
V_4	4.3	13
V_5	4.7	14
V_6	5.0	15
V_7	5.0	15
V_8	5.0	15
V_9	5.0	15
V_{10}	5.0	15
V_{11}	4.3	13

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	0.182	0.091	4.73**	2.35	3.37
Treatment	10	5.879	0.588			
Error	20	2.485	0.124			
TOTAL	32	8.545				

** = Highly significant CV (%) = 7.46

Appendix Table 9. Disease incidence at 75 DAP

VARIETY	TOTAL	MEAN
V_1	5.0	15
V_2	5.0	15
V_3	4.3	13
V_4	4.3	13
V_5	4.7	14
V_6	5.0	15
V_7	5.0	15
V_8	5.0	15
V_9	5.0	15
V_{10}	5.0	15
V_{11}	3.3	10

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	0.061	0.030	6.37**	2.35	3.37
Treatment	10	8.303	0.830			
Error	20	2.606	0.130			
TOTAL	32	10.970				

** = Highly significant CV (%) = 7.69

Appendix Table 10. Disease incidence at 90 DAP

VARIETY	TOTAL	MEAN
V_1	5.0	15
V_2	5.0	15
V_3	3.7	11
V_4	4.0	12
V_5	4.7	14
V_6	5.0	15
V_7	5.0	15
V_8	5.0	15
V_9	5.0	15
V_{10}	5.0	15
V_{11}	1.3	4

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	0.061	0.030	12.81**	2.35	3.37
Treatment	10	38.061	0.806			
Error	20	5.939	0.297			
TOTAL	32	44.061				

** = Highly significant CV (%) = 12.32

Appendix Table 11. Non-marketable number

VARIETY	TOTAL	MEAN
V_1	16	47
V_2	9	26
V_3	6	17
V_4	23	70
V_5	23	68
V_6	11	32
V_7	7	22
V_8	2	7
V_9	6	18
V_{10}	4	11
V_{11}	3	10

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	155.697	77.848	5.22*	2.35	3.37
Treatment	10	1673.212	167.321			
Error	20	640.970	32.048			
TOTAL	32	2469.879				

** = Highly significant CV (%) = 29.39

Appendix Table 12. Non-marketable weight

VARIETY	TOTAL	MEAN
V_1	0.88	2.65
V_2	0.37	1.10
V_3	0.67	2.00
V_4	0.95	2.85
V_5	1.38	4.15
V_6	0.67	2.00
V_7	0.33	1.00
V_8	0.97	2.90
V_9	0.37	1.10
V_{10}	0.38	1.15
V_{11}	0.50	1.50

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	2.542	1.271	1.12^{ns}	2.35	3.37
Treatment	10	3.385	0.339			
Error	20	6.068	0.303			
TOTAL	32	11.995				

^{ns} = Not significant CV (%) = 27.49

Appendix Table 13. Marketable number

VARIETY	TOTAL	MEAN
V_1	44	133
V_2	29	87
V_3	35	105
V_4	67	202
V_5	44	131
V_6	47	142
V_7	47	142
V_8	40	121
V_9	31	93
V_{10}	32	96
V_{11}	40	121

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	565.515	282.758	4.70**	2.35	3.37
Treatment	10	3449.212	344.921			
Error	20	1469.152	73.458			
TOTAL	32	5483.879				

** = Highly significant CV (%) = 20.60

Appendix Table 14. Marketable weight

VARIETY	TOTAL	MEAN
V_1	13.45	40.35
V_2	3.75	11.25
V_3	12.70	38.10
V_4	15.80	47.40
V_5	9.42	28.25
V_6	15.35	46.05
V_7	14.42	43.25
V_8	15.07	45.20
V_9	4.55	13.65
V_{10}	8.33	25.00
V_{11}	15.07	45.20

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	34.026	17.013	6.68**	2.35	3.37
Treatment	10	585.177	58.518			
Error	20	175.292	8.765			
TOTAL	32	794.495				

** = Highly significant CV (%) = 25.46

Appendix Table 15. Sugar content

VARIETY	TOTAL	MEAN
V_1	8.2	24.7
V_2	9.5	28.6
V_3	7.2	21.5
V_4	6.7	20.0
V_5	6.6	19.8
V_6	6.4	19.1
V_7	7.0	21.0
V_8	6.3	18.9
V_9	9.7	29.2
V_{10}	9.0	26.9
V_{11}	8.5	25.6

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F	
					0.05	0.01
Replication	2	0.051	0.025	9.76	2.35	3.37
Treatment	10	50.563	5.056			
Error	20	10.362	0.518			
TOTAL	32					

CV (%) = 9.30

Appendix Table 16. Dry matter content

VARIETY	TOTAL	MEAN
V_1	30	89
V_2	32	97
V_3	28	83
V_4	30	91
V_5	31	93
V_6	28	84
V_7	29	87
V_8	28	85
V_9	36	108
V_{10}	34	101
V_{11}	32	95

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	0.788	0.394	31.01**	2.35	3.37
Treatment	10	194.545	19.455			
Error	20	12.545	0.627			
TOTAL	32	207.879				

** = Highly significant CV (%) = 2.59

Appendix Table 17. Total weight

VARIETY	TOTAL	MEAN
V_1	14.33	43.00
V_2	4.12	12.35
V_3	13.37	40.10
V_4	16.75	50.25
V_5	10.80	32.40
V_6	16.02	48.05
V_7	14.75	44.25
V_8	16.03	48.10
V_9	4.92	14.75
V_{10}	8.72	26.15
V_{11}	15.57	46.70

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	19.493	9.746	6.92**	2.35	3.37
Treatment	10	618.210	1.821			
Error	20	178.590	8.930			
TOTAL	32	816.294				

** = Highly significant CV (%) = 24.28

Appendix Table 18. Yield

VARIETY	TOTAL	MEAN
V_1	23.89	71.66
V_2	6.86	20.58
V_3	22.28	66.83
V_4	27.91	83.74
V_5	18.00	54.00
V_6	26.69	80.07
V_7	24.58	73.74
V_8	26.72	80.16
V_9	8.19	24.58
V_{10}	14.52	43.57
V_{11}	25.94	77.83

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	54.174	27.087	6.92**	2.35	3.37
Treatment	10	1717.014	171.701			
Error	20	495.904	24.795			
TOTAL	32	2267.092				

** = Highly significant CV (%) = 24.28

Appendix Table 19. Scores[1] for appearance of the boiled sweetpotato roots with 11 varieties

JUDGE NO.	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	V_{11}	TOTAL
1	5	4	5	4	3	5	4	5	4	4	4	47
2	5	5	5	4	5	2	5	5	5	5	1	47
3	5	5	5	2	2	5	4	2	5	5	5	44
4	4	5	5	3	5	4	4	5	5	5	1	46
5	5	4	5	3	4	5	3	2	5	5	5	46
6	3	4	4	4	4	3	4	4	4	4	4	42
7	4	4	5	4	4	5	5	4	4	4	4	48
8	4	5	5	4	3	4	3	4	4	4	4	44
9	4	4	4	4	5	4	5	5	4	4	4	47
10	4	4	5	4	4	5	4	4	5	5	4	47
TOTAL	43	44	48	36	39	42	41	40	45	45	36	458
MEAN	4.3	4.4	4.8	3.6	3.9	4.2	4.1	4.0	4.5	4.5	3.6	

[1]Range of scores: 5, like very much to 1, dislike very much.

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F 0.05	TABULAR F 0.01
Replication	2	13.855	1.385	1.82[ns]	2.35	3.37
Treatment	10	2.873	0.319			
Error	20	68.327	0.759			
TOTAL	32	85.055				

[ns] = Not significant CV (%) = 20.93

Appendix Table 20. Scores[1] for sweetness of the boiled sweetpotato roots with 11 varieties

JUDGE NO.	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	V_{11}	TOTAL
1	4	3	4	2	2	3	2	4	4	3	3	34
2	4	4	4	3	4	3	4	5	3	4	3	41
3	3	3	4	3	2	2	2	2	2	2	4	29
4	3	4	4	3	4	3	2	4	4	4	4	39
5	4	2	4	3	4	2	2	4	4	4	4	37
6	3	3	1	2	3	2	2	2	3	3	3	26
7	3	2	4	2	3	4	2	4	4	4	3	35
8	2	2	4	3	3	2	3	4	4	4	3	34
9	2	4	4	3	4	4	3	4	3	3	4	39
10	4	3	1	3	1	3	3	4	3	3	3	34
TOTAL	32	32	34	27	30	28	25	37	34	34	34	346
MEAN	3.2	3.2	3.4	2.7	3.0	2.8	2.5	3.7	3.4	3.4	3.4	

[1]Range of scores: 4, sweet to 1, bland.

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F
Replication	10	12.873	1.287	238*	1.95
Treatment	9	18.036	2.004		
Error	90	48.764	0.542		
TOTAL	109	79.673			

* = Significant CV (%) = 20.93

Appendix Table 21. Scores[1] for fibrousness of the boiled sweetpotato roots with 11 varieties

JUDGE NO.	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	V_{11}	TOTAL
1	4	2	3	3	2	3	2	4	4	3	2	32
2	1	2	2	2	2	2	2	2	2	1	1	19
3	2	1	1	1	1	2	1	1	1	1	1	13
4	2	1	1	1	1	2	1	2	1	1	1	14
5	4	1	2	3	1	2	1	3	2	1	3	23
6	1	3	2	2	3	3	2	3	2	3	3	27
7	2	2	3	3	4	3	4	3	4	4	3	35
8	3	4	4	3	4	3	3	3	4	4	3	38
9	3	3	3	3	3	4	3	4	3	4	2	35
10	1	2	4	2	3	3	2	2	3	4	2	28
TOTAL	23	21	25	23	24	27	21	27	26	26	21	264
MEAN	2.3	2.1	2.5	2.3	2.4	2.7	2.1	2.7	2.6	2.6	2.1	

[1]Range of scores: 4, very fibrous to 1, not fibrous.

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F
Replication	10	5.600	0.560	1.15^{ns}	1.95
Treatment	9	65.127	7.236		
Error	90	43.673	0.485		
TOTAL	109	114.673			

^{ns} = Not significant CV (%) = 20.93

Appendix Table 22. Scores[1] for flesh color of the boiled sweetpotato roots with 11 varieties

JUDGE NO.	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	V_{11}	TOTAL
1	2	3	1	2	3	3	2	2	2	3	2	25
2	3	3	3	1	3	2	2	3	3	3	3	29
3	1	3	2	1	3	3	2	2	2	2	1	22
4	2	3	2	1	3	3	2	1	3	2	2	24
5	1	3	2	3	1	2	2	3	3	2	2	24
6	2	1	2	2	2	2	2	1	3	2	3	22
7	2	3	3	2	2	3	3	3	3	3	2	29
8	2	3	1	2	1	2	2	3	3	6	2	27
9	2	3	4	2	4	3	2	2	2	4	3	31
10	2	3	3	2	3	3	3	3	3	3	2	40
TOTAL	19	28	23	18	25	26	22	23	27	30	22	263
MEAN	1.9	2.8	2.3	1.8	2.5	2.6	2.2	2.3	2.7	3.0	2.2	

[1]Range of scores: 4, very fibrous to 1, not fibrous.

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F
Replication	10	13.691	1.369	2.60*	1.95
Treatment	9	9.100	1.011		
Error	90	47.400	0.527		
TOTAL	109	70.191			

* = Significant CV (%) = 30.35

Appendix Table 23. Scores[1] for textural moisture of the boiled sweetpotato roots with 11 varieties

JUDGE NO.	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	V_{11}	TOTAL
1	6	3	6	6	5	6	7	7	6	6	6	64
2	3	2	2	2	2	2	2	2	2	2	3	24
3	3	6	5	2	6	5	5	5	5	5	5	52
4	3	5	3	5	6	5	5	6	3	5	5	51
5	6	7	7	6	6	6	5	2	5	6	5	61
6	2	6	3	4	2	3	1	1	2	2	2	28
7	6	7	6	6	6	6	7	7	6	6	7	69
8	6	6	3	5	6	5	7	7	6	6	7	63
9	7	4	6	4	4	5	6	5	5	5	4	54
10	6	7	4	6	6	6	6	5	6	6	5	64
TOTAL	48	53	45	46	49	49	51	47	44	49	49	530
MEAN	4.8	5.3	4.5	4.6	4.9	4.9	5.1	4.7	4.4	4.9	4.9	

[1]Range of scores: 7, very dry to 1, very wet.

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F
Replication	10	6.794	0.676	0.56^{ns}	1.95
Treatment	9	194.000	21.556		
Error	90	109.600	1.216		
TOTAL	109				

^{ns} = Not significant CV (%) = 20.93

Appendix Table 24. Scores[1] for general acceptability of the boiled sweetpotato roots with 11 varieties

JUDGE NO.	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	V_{11}	TOTAL
1	4	4	5	4	3	5	4	4	3	4	3	43
2	4	4	4	4	4	5	5	4	5	5	4	48
3	2	5	5	4	4	4	4	4	4	5	5	46
4	4	5	5	4	5	5	4	4	5	5	5	51
5	5	5	4	2	4	3	1	5	5	4	5	43
6	2	5	1	3	4	5	3	2	5	2	4	36
7	5	4	4	4	5	5	4	5	5	4	4	49
8	5	5	3	3	5	3	4	5	5	4	4	46
9	4	4	5	5	4	5	5	4	5	5	5	51
10	4	4	4	4	4	4	4	5	5	4	4	46
TOTAL	39	45	40	37	42	44	38	42	47	42	43	456
MEAN	3.9	4.5	4.0	3.7	4.2	4.4	3.8	4.2	4.7	4.2	4.3	

[1]Range of scores: 3, deeply colored to 1, pale colored.

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARE	F VALUE	TABULAR F
Replication	10	9.218	0.922	1.34^{ns}	1.95
Treatment	9	16.445	1.827		
Error	90	62.055	0.689		
TOTAL	109	87.718			

^{ns} = Not significant CV (%) = 30.35