

**SCREENING OF SWEET POTATO VARIETIES
BY SUBSISTENCE FARMERS
IN BASEY, SAMAR, PHILIPPINES:
A CASE OF TRADITIONAL EXPERIMENTATION
IN UPLAND AGRICULTURE**

R. de Pedro, Jr., C. Lightfoot,
D. Apura, M. Acaba and J. Cabiling

Instructor, Department of Agricultural Engineering and Applied Mathematics, Visayas State College of Agriculture, Baybay, Leyte, Philippines; Agronomist, Cornell University, Ithaca, New York, U.S.A.; Site Researcher, Site Leader, and former Site Economist, Farming Systems Development Project - Eastern Visayas Site Research Management Unit, Basey, Samar, Philippines.

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ABSTRACT

Seventeen varieties of sweet potato [*Ipomoea batatas* (L.) Lam] were grown and evaluated by subsistence upland farmers of Basey, Samar, Philippines. The 14 local and three improved varieties were described by leaf shape and color as well as by the color of their storage root skin and flesh. The farmers' screening criteria consisted of storage root size; taste and yield; harvest duration; maturity period; vine growth; and resistance to weevils.

The upland farmers prefer sweet potato varieties which are early maturing, high yielding, resistant to weevils, with sweet dry taste and rapid vine growth, and which allow prolonged sequential harvesting with good storage root yield on the creeping vines.

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KEY WORDS: Sweet potato. Traditional experimentation. Subsistence upland farmers. Evaluation criteria. Varietal description. Upland agriculture.

The potential of coopting to improve formal programs of farmers' traditional experimentation technology generation, particularly

to save analytical costs and time in conducting evaluation of potential innovations, is not yet clearly understood (Kirkby and Matlon, 1984). A systematic study by technically-trained scientists together with social scientists on traditional methods in a small sample of farming systems would be useful. Researchers would need to know how farmers look at and evaluate technology, particularly in subsistence agriculture.

In this study, the researchers joined the farmers to find out the sweet potato varieties they grew, to identify the screening criteria they used, and to note how they assessed the three improved varieties; namely BNAS-51, VSP-1, and VSP-2 that they received through the Farming Systems Development Project in Eastern Visayas.

An informal survey similar to the reconnaissance survey outlined by Shaner et al. (1982) was employed to gather specific information directed at a specific group of people. The survey was conducted in Barangay Balante and Villa Aurora in Basey, Samar, Philippines. The respondents were limited to upland farmers who grew local sweet potato [*Ipomoea batatas* (L.) Lam] varieties and also received the improved varieties, BNAS-51, VSP-1, and VSP-2. The informal survey did not use a questionnaire but instead used the following lines of inquiry: farm characteristics, identification of local sweet potato varieties, and farmers' criteria for screening.

The 12 farmers who received the improved varieties and also grew

local varieties formed the experimental group. The area and ownership status of the farms cultivated by upland farmers as well as the time spent on the farm and the main source of income of the farmers were gathered and tabulated. The characteristics of the locally grown sweet potato varieties were also noted. The most common and quantifiable criteria for screening sweet potato varieties; namely maturity period, storage root size and yield, harvest duration, vine growth, and weevil damage were recorded. Other important criteria such as taste of storage roots and shape of leaves which did not lend themselves to empirical measurements were determined through farmers' responses.

Table 1 shows the characteristics of the farms and the farmer respondents. The size of the upland farms cultivated ranged from 0.25 to 7.00 ha. Eight out of 12 upland farms were tenanted. Farming supplemented by off-farm jobs provided most of the farmers' cash income.

Most of the farmers' time was spent on upland operations. Those who do not own lowland farms spend some time in the lowland areas as hired laborers during planting and harvesting seasons for rice. The usual planting months for lowland rice are November or December for the first crop, and June or July for the second crop. Harvesting dates fall either on April

Table 1. Area and ownership status of the farms cultivated by upland farmer respondents, time spent on the farm, and main source of income of the farmers in Barangay Balante and Villa Aurora, Basey, Samar, Philippines.

Farmer	Area Cultivated (ha)	Ownership Status	Time Spent (%)	Main Source of Income
1	0.75	Owned	66	Farming
2	3.00	Owned	90	Farming/ gathering coconut toddy
3	0.25	Tenanted	98	Farming/ hired labor
4	0.75	Tenanted	90	Farming/ gathering coconut toddy
5	1.00	Tenanted	70	Farming
6	0.50	Tenanted	85	Farming/ hired labor
7	0.25	Tenanted	25	Farming
8	1.00	Part-owned	90	Farming/ gathering coconut toddy
9	7.00	Owned	75	Farming
10	0.50	Tenanted	90	Farming/ hired labor
11	0.75	Tenanted	90	Farming/ hired labor
12	0.75	Tenanted	50	Farming/ hired carpenter

or May and October or November, respectively.

The cultivated upland farms are planted to various combinations of corn, upland rice, taro, sweet potato, cassava, vegetables, banana, peanuts, and mungbean. Sweet

potato is planted in small upland field parcels either as a monocrop or relay crop for rice and corn. Farmers usually plant either sweet potato or banana before the land is fallowed.

Fourteen local sweet potato varieties were identified (Table 2). However, most farmers grew only four of these local varieties; namely Kadulaw, Karingkit, Kasima, and Inanahaw. Each variety possessed unique characteristics and was different from other varieties. Mature leaves were red and/or green, heart-shaped or irregularly tri-lobed,

digitate or triangular. The color of the storage root skin and flesh was generally white, yellow or orange, and occasionally red.

The farmers described the different varieties almost similarly but made numerous variations in their evaluation (Table 3). The team found that the farmers' top staple and marketed varieties (Karingkit

Table 2. Characteristics of sweet potato varieties grown by upland farmer respondents in Barangay Balante and Villa Aurora, Basey, Samar, Philippines.

Variety	Mature Leaf		Storage Root	
	Shape ¹	Color	Skin Color	Flesh Color
Kaapog	Irregular B	Red	White	White
Kangisi	Irregular A	Red and green	Red	White
Kasima	Heart	Dark red	Red	Dark yellow
BNAS-51	Heart	Red and green	White	Yellow
Kadulaw	Irregular A	Red and green	White orange	White orange
Kabusag	Irregular B	Green	White	White
VSP-1	Heart	Green	Yellow orange	Light yellow
VSP-2	Irregular C	Red	Orange	Orange
Inalegria	Heart	Red	Red	Light yellow
Inanahaw	Heart	Red	White	Light yellow
Kaulpot	Irregular A	Green	Light yellow	Light yellow
Kasapad	Heart	Green	Light yellow	Light yellow
Binasaynon	Irregular B	Dark red	Red	White
Karingkit	Irregular A	Green	White	Yellow
Bano	Heart	Green	White	Yellow
Kamanon	Irregular A	Light red	Orange	Orange
Kagiding	Irregular C	Red	White	White

¹Heart = Ovate, Irregular A = Lobed, Irregular B = Triangular, Irregular C = Digitate.

Table 3. Characteristics of sweet potato varieties screened by upland farmer respondents in Barangay Balante and Villa Aurora, Basey, Samar, Philippines.

Variety	Taste ¹	Maturity Period (month)	Yield Class ²	Vine Growth ³ (month)	Harvest Duration (month)	Storage Root Diameter (cm)	Response to Weevils ⁴
Kaapog	NS/D	4-7	2-3	2-3	7-8	4-8	RES, SUS
Kangisi	S/D, W	3-5	2	1-3	2, 7-8	4-8	RES, SUS
Kasima	S, NS/D, W	3-4	1-3	1-3	4-8	6-10	RES, SUS
BNAS-51	S	4-5	2	2	7-8	6	SUS
Kadulaw	S/D	3-5	1-2	1-3	7-8, 12	6-10	RES
Kabusag	S/D	7	2	1	12	6	RES
VSP-1	S/W	2-3	2-3	1-2	1	5-6	RES, SUS
VSP-2	S/W	2-3	2-4	0	1, 2	4-8	SUS
Inalegria	S	2	3	2	2	3-4	SUS
Inanahaw	NS/D	4-6	2	2	12	6-8	RES
Kaulpot	S/D	2-3	2	1	7-8	5-6	SUS
Kasapad	S, NS/D	3-4	2-3	1-2	2	4-6	SUS
Binasaynon	S/W	3-5	2-3	1	5-8	6-8	SUS
Karingkit	S/D	4-7	1	2	12	10	RES
Bano	NS/D	4-5	2	1	8	6	RES
Kamanon	NS/D	3-5	2	2	2-8	5-6	RES, SUS
Kagiding	S/D	4-6	2	2	4	6	SUS

¹ S = sweet, NS = not sweet, D = dry, W = wet.

² 1 = high yield, 3 = medium yield, 3 = low yield, 4 = poor yield.

³ Time to cover ground surface.

⁴ RES = not easily attacked by weevils, SUS = easily attacked by weevils.

and Kadulaw) are dry but sweet, high yielding with 10-cm diameter storage roots. These varieties also exhibit rapid vine growth and cover the ground in 1 to 2 months. In addition, they permit extended harvest periods up to one year because the storage roots are not easily attacked by weevils. This characteristic ensures an adequate supply of storage roots to satisfy home consumption needs during calamities and food shortages.

The local sweet potato varieties have different maturity periods (Table 3). They produce lateral vines that form storage roots throughout the vegetative and reproductive phases. The long maturity period of local varieties is preferred by farmers because it allows them to maintain available supplies of cuttings almost throughout the year. This eliminates the need to maintain small plots of sweet potato grown exclusively as source of cuttings for the next planting, thereby enabling the farmers to save additional labor cost.

From the standpoint of farmers, the improved varieties have the following disadvantages: 1) VSP-1 and VSP-2 do not produce storage roots from lateral vines; 2) VSP-2 requires additional weeding because it does not quickly and extensively

cover the ground to crowd out most weeds due to its bushy form, and thus provides the soil surface less protection against erosion; 3) VSP-1 and VSP-2 storage roots have characteristic sweet wet taste which makes them valuable only as snack items; 4) BNAS-51, VSP-1 and VSP-2 like most traditional varieties are easily attacked by weevils. However, farmers like the short maturity period and high yield of the improved varieties. They also prefer sweet potato varieties with rapid vine growth, production of storage roots by lateral vines, and resistance to weevils in addition to the aforementioned characteristics.

In general, the foregoing results imply that the conventional objectives of breeding for high yield, short maturity period and single harvest are less appropriate to the project's target group of upland farmers. Indeed, farmers prefer high yielding varieties with short maturity period and prolonged sequential harvesting, with good root production on the vines and resistance to weevils. They seek rapid vining varieties to suppress weeds and reduce soil erosion. Nevertheless, they are prepared to compromise taste and yield for short maturity at times of calamity.

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