

COST AND RETURN ANALYSIS OF VARIOUS SWEET POTATO VARIETIES/CULTIVARS

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ABSTRACT

The high yielding varieties/cultivars used in four experimental stations were BNAS-51, Catanduanes 3, Daja, Ig-328, Ig-498, Kabiti, Kadja, Kinabakab, Lo-323, Tinipay, VSP-1, VSP-2 and VSP-3. Of the 13 entries, VSP-1 (a variety developed by ViSCA) yielded 19.7 t/ha. The other ViSCA varieties, VSP-2 and VSP-3, yielded 18.6 and 15.3 t/ha, respectively.

Cost-return analysis indicated that ViSCA sweet potato (VSP) varieties yielded a return to land and management ranging from P13,785 to P22,438 per hectare when grown under experimental field conditions. Under farmers' field conditions, these varieties yielded a net return ranging from P3,085 to P7,927 per hectare only. Compared with other major crops, net returns of VSP varieties grown in farmers' fields (with no commercial fertilizers) were lower than those obtained from mungo, peanut and lowland rice. However when these varieties were planted in experimental stations (with fertilizer and other inputs), the net returns of the VSP varieties were more than twice of the other crops (rice, mungo and peanut).

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KEY WORDS: Cost and return. ViSCA sweet potatoes (VSPs). Profitability.

INTRODUCTION

The economic potential of sweet potato farming is now widely recognized. This is partly evidenced by the

increasing number of researchers working on this commodity as well as the growing interest of many funding agencies supporting sweet potato research and development. Some sweet

potato scientists have already identified and/or developed sweet potato varieties with characteristics presumably desired by producers and consumers such as high fleshy root yield and resistance to pests and diseases.

However, high yield and pest/disease resistance are not the only bases for rational farmers' decision to venture into sweet potato production. Among the more important questions that the farmers should answer before they engage in sweet potato farming include the following: (1) Is it profitable to engage in sweet potato production? (2) If profitable, how does its profitability compare with other crops/enterprises?

METHODS

The data for the experimental field conditions pertained to cropping seasons in 1982 and 1983, and were gathered from four cooperating stations, namely: (1) ViSCA, Baybay, Leyte; (2) Bohol Experiment Station, Ubay, Bohol; (3) Albay Experiment Station, Tabaco, Albay; and (4) Romualdez Experiment Station, Babatngon, Leyte. The high yielding varieties/cultivars included in the analysis were BNAS-51, Catanduanes 3, Daja, Is-328, Is-498, Kabiti, Kadja, Kinabakab, Lo-323, Tinipay, VSP-1, VSP-2 and VSP-3.

The physical characteristics and other general conditions of the experimental areas were: (1) farm topography was generally flat to undulating, or below 8% slope; (2) recommended cultural practices like clean culture and fertilization ranging from 30-30-30 to 45-45-45 kg NPK per hectare were adopted; and (3) land was previously planted to other crops like lowland and upland rice, corn, mungbean, peanut, cassava and other root crops.

The data under farmers' field conditions covered the period from May 1984 to February 1987 and were gathered from three locations, namely: Ormoc, Matalom, and Julita, Leyte. The entries included were VSP-1, VSP-2, VSP-3, VSP-4, and VSP-5. The topography in the Julita location was below 8% slope while the Ormoc and Matalom locations were moderately sloping to rolling, i.e. above 8% but below 15% slope. The soil types in these locations are: Ormoc - Guimbalaon clay*; Matalom - Maasin clay*; and Julita - Palo clay loam*. In addition, the general conditions in these areas could be described as: (1) farmers' practice like no fertilizer application was followed and (2) land was previously planted to other crops like upland rice, corn, mungbean, peanut, cassava and other root crops.

*For detailed description of these soil types, consult Barrera, A., Aristorenas, I. and Tingzon, J.A. 1954. Soil Survey of Leyte, Philippines, Manila, Bureau of Printing.

RESULTS

Cost-Return Analysis Under Experimental Field Conditions

The average yield and value of sweet potato production are presented

in Table 1. VSP-1, a variety developed by ViSCA, yielded the highest among the 13 entries (19.7 t/ha). The other ViSCA varieties, VSP-2 and VSP-3, yielded 18.6 and 15.3 t/ha, respectively.

Table 1. Average production per hectare and value of selected sweet potato varieties/cultivars grown for two cropping seasons and in different experiment stations, 1982-1983.

Variety/Cultivar	Yield (t/ha)	Value ¹ (P)
BNAS-51	9.8	15,624.40
Catanduanes 3	13.1	21,695.59
Daja	12.3	19,223.79
Ig-328	16.3	26,869.32
Ig-498	14.5	24,286.16
Kabiti	16.2	25,652.36
Kadja	11.9	18,379.62
Kinabakab	14.5	24,311.01
Lo-323	19.2	31,126.53
Tinipay	15.3	24,952.39
VSP-1	19.7	32,673.50
VSP-2	18.6	29,890.52
VSP-3	15.3	24,398.04

¹Based on the prevailing market price in the area at the time of survey.

Table 2 presents the cost and computed net returns of the 13 entries. Three kinds of net returns are presented in the table. Net return A reflects the earnings of land, labor, capital and management; net return B measures the earnings of land, labor, and management while net return C indicates the return to land and management. Some

farmers (especially the small ones) may use net return A as a measure of profit while the commercial farmers may adopt net return C. The data revealed that the entry with the highest net return was VSP-1, which gave P22,438 per hectare as its return to land and management.

Table 2. Value of production and net return per hectare of selected sweet potato varieties/cultivars grown in the different experiment stations, 1982-1983 (average of dry and wet seasons).

Variety/ Cultivar	Value of Production ¹ (P)	Expenses (P)			Net Return (P)		
		Supplies and Materials	Imputed Interest to Capital	Labor	A (return to land, labor, mgt. and capital)	B (return to land, labor and mgt.)	C (return to land and mgt.)
BNAS-51	15,624.40	3,620.31	344.92	5,577.47	12,004.10	11,659.18	6,081.72
Catanduanes 3	21,695.59	4,051.39	366.55	5,723.16	17,644.20	17,277.66	11,554.50
Daja	19,223.79	3,900.76	361.78	5,746.05	15,323.03	14,961.25	9,215.20
Ig-328	26,869.32	4,145.54	370.06	5,723.16	22,723.78	22,353.73	16,630.57
Ig-498	24,286.16	4,064.50	367.04	5,723.16	20,221.66	19,854.63	14,131.47
Kabiti	25,652.36	4,370.14	379.38	5,746.05	21,282.22	20,902.84	15,156.79
Kadja	18,379.62	3,884.91	361.19	5,746.05	14,494.72	14,133.53	8,387.48
Kinabakab	24,311.01	3,976.85	354.09	5,563.86	20,334.16	19,980.08	14,416.22
Lo-323	31,126.53	4,860.09	397.76	5,746.05	26,266.44	25,868.69	20,122.64
Tinipay	22,952.39	3,867.90	354.20	5,577.47	21,084.50	20,730.30	15,152.83
VSP-1	32,673.50	4,285.50	372.12	5,577.47	28,388.00	28,015.88	22,438.42
VSP-2	29,890.52	4,115.58	368.93	5,723.16	25,774.94	25,022.51	19,682.86
VSP-3	24,398.04	4,506.52	383.62	5,723.16	19,891.53	19,507.91	13,784.76

¹Taken from the last column of Table 1.

Cost-Return Analysis Under Farmers' Field Conditions

Table 3 shows the average production per hectare of the five ViSCA sweet potato varieties which ranged

from 5.5 t/ha for VSP-3 to 8.8 t/ha for VSP-5. In 1984, VSP-4, although a new variety, was already tested in the farmers' fields as cultivar V7-27. The other new variety, VSP-5 was tried in the farmers' fields only in 1986.

Table 3. Production per hectare of ViSCA sweet potato varieties/cultivars grown in the different farmers' fields, 1984-1987.

Variety/ Cultivar	1984 Yield ¹ (t/ha)	1984-1985 Yield ² (t/ha)	1986-1987 Yield ³		Average	
			Ormoc (t/ha)	Mata- lom (t/ha)	Yield (t/ha)	Computed Value ⁴ (P)
VSP-1	3.3	7.9	6.6	6.1	6.0	8,942.73
VSP-2	5.5	8.9	5.3	3.5	5.8	8,673.13
VSP-3	3.3	7.6	6.7	4.6	5.5	8,281.98
VSP-4	7.1	8.3	11.8	7.7	8.7	13,104.93
VSP-5	-	-	13.4	4.1	8.8	13,177.18

¹Average of three locations (Ormoc, Matalom and Julita) during the May-October 1984 period.

²Average of two locations (Matalom and Julita) during the September 1984-March 1985 period.

³Data during the September 1986-February 1987 period.

⁴Based on farm gate price of P1.50/kg.

Cost and return analyses of the five entries are presented in Table 4. Three kinds of returns were also computed. Among the five ViSCA varieties, VSP-5 obtained the highest net return C of P7,927.18 per hectare whereas VSP-3 got the lowest net return C (P3,084.98).

A wide production gap between the experimental and farmers' field conditions was noted and this could be attributed to the differences in cultural

practices. As indicated earlier, the crops in the farmers' field conditions were not applied with fertilizer while those in the experimental farms were treated with 30-30-30 to 45-45-45 kg NPK per hectare.

Profitability of Sweet Potato Compared With Other Major Crops

The technical data of selected crops were gathered from secondary

Table 4. Value of production and net returns per hectare of ViSCA sweet potato varieties/cultivars grown in different farmers' fields, 1984-1986.

Variety/ Cultivar	Value of Production ¹	Expenses (P)			Net Return (P)		
		Supplies and Materials ²	Imputed Interest to Capital ³	Labor ⁴	A (return to land, labor, mgt. and capital)	B (return to land, labor and mgt.)	C (return to land and mgt.)
VSP-1	8,942.73	3,500.00	247.00	1,450.00	5,442.73	5,195.73	3,745.73
VSP-2	8,673.13	3,500.00	247.00	1,450.00	5,173.13	4,926.13	3,476.13
VSP-3	8,281.98	3,500.00	247.00	1,450.00	4,781.98	4,534.98	3,084.98
VSP-4	13,104.93	3,500.00	250.00	1,500.00	9,604.93	9,354.93	7,854.93
VSP-5	13,177.18	3,500.00	250.00	1,500.00	9,677.18	9,427.18	7,927.18

¹Taken from the last column of Table 3.

²Based on 33,000 cuttings at P0.10/cuttings plus other supplies worth P200.00 per hectare.

³Total cash requirements multiplied by 15% per annum (or 5% for 4 months).

⁴Total man-days from land preparation to harvesting multiplied by P25.00.

Table 5. Costs and returns of selected crops in the Philippines grown in various locations.

Crop	Gross Income			Expenses (P)			Net Return (P)		
	Yield (kg)	Value ⁵ (P)	Supplies and Materials	Imputed Interest to Capital	Labor	A (return to land, labor, mgt. and capital)	B (return to land, labor and mgt.)	C (return to land and mgt.)	
Rice, lowland ¹	2,650	7,950	590	117	1,750	7,360	7,243	5,493	
Rice, upland ²	1,720	5,160	232	74	1,250	4,928	4,854	3,604	
Corn, HYV ²	1,230	3,690	240	75	1,250	3,450	3,375	2,125	
Corn, traditional ²	617	1,851	138	70	1,250	1,713	1,643	393	
Mungo ²	540	6,400	600	92	1,250	5,800	5,708	4,458	
Mungo ³	800	9,600	1,158	134	1,525	8,442	8,308	6,783	
Peanut ⁴	1,300	10,400	2,110	187	1,625	8,290	8,103	6,478	

¹Technical data were taken from rice farms in Gabas, Baybay, Leyte as reported by Hermoso (1985).

²Technical data were taken from farms in San Isidro, Leyte as cited in SIRSDP Annual Report (1984).

³Technical data were taken from The Philippines Recommends for Mungo, 1977 (PCARR, 1977).

⁴Technical data were taken from The Philippines Recommends for Peanut, 1978 (PCARR, 1978).

⁵Based on 1986 prices.

sources and their cost and return analyses are summarized in Table 5. Secondary data was used because (1) there was no budget to conduct a simultaneous experiment for other crops and sweet potato, (2) farmers traditionally use the same farm for growing sweet potato, peanut, corn, rice and mungbean and (3) PCARRD (1986) disclosed that soil texture requirements for sweet potato and peanut are similar and their soil pH tolerance (4.3 to 8.3) are more or less similar to those of corn, mungbean and rice.

The profitability of sweet potato farming under experimental and farmers' field conditions were compared with other crop enterprises using Tables 2, 4 and 5. The high yielding ViSCA sweet potato varieties yielded a net return to land and management

ranging from P13,785 to P22,438 per hectare when grown in experimental fields (Table 2). However under farmers' fields, these varieties gave a net return ranging from P3,085 to P7,927 per hectare (Table 4). On the other hand, the net return C for the other major crops like rice, corn, peanut and mungo ranged from P393 to P6,783 per hectare (Table 5).

Findings revealed that when VSP-1, VSP-2 and VSP-3 were grown in farmers' field (with no commercial fertilizers), their net returns were lower than those obtained from mungo, peanut and lowland rice. However when these varieties were planted in the experimental stations (with fertilizers and other inputs), the net returns were more than twice those of other crops (rice, mungo, and peanut).

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