

The Philippine Journal of Plant Industry

(FORMERLY THE PHILIPPINE JOURNAL OF AGRICULTURE)

Vol. 60 No. 1

January - March 1995

DEVELOPMENT OF PSB-Sy 1 AND PSB-Sy 3, NEW HIGH YIELDING SOYBEAN VARIETIES

*Remedios B. Almodiente and Marianita U. Pinoy**

ABSTRACT

The Philippine Seedboard approved for commercial production two (2) high yielding soybean varieties, namely: PSB-Sy 1 and PSB-Sy 3 in June, 1990 and August, 1993, respectively. The first variety is popularly known as La Carlota Soy 1 while the second as La Carlota Soy 2. These varieties were developed at the Bureau of Plant Industry, La Granja National Crop Research and Development Center, La Carlota City. PSB-Sy-1 or La Carlota Soy 1 is a cross between Clark 63 and AGS 129. PSB-Sy3 or La Carlota Soy 2 was developed from AGS 129 and TK 5.

PSB-Sy 1 had a mean yield of 2,851 kg/ha during the wet and 1,937 kg/ha in the dry season. Across locations, it outyielded the check variety UPLSy 4 by 16.33% and 11.49% in the wet and dry seasons, respectively. The seed contains 21.59% fat, 23.56% protein and 33.87% carbohydrates. It is accepted by Nestle in its product processing like Nestle Twin.

PSB-Sy 3 yielded 2,421 kg/ha and 2,041 kg/ha across locations during wet and dry seasons. It exceeded the yield of the national check PSB-Sy 1 by 22.26%. The seed contains 33.76% protein, 31.38% carbohydrates and 19.69% fat.

The new varieties are moderately resistant to bacterial pustule and soybean rust diseases. They can be grown in all regions of the country and yield best in regions with types 3 and 4 climate and early dry season planting. They are recommended as rotation crops for corn and for post rice cropping in regions 2 and 4.

*/Senior Agriculturist and Research Assistant, respectively, at the BPI, La Granja National Crop Research and Development Center, La Carlota City.

INTRODUCTION

Soybean (*Glycine Max* (L.) Merr.) is an important legume crop in the Philippines. Its principal uses are for food in various forms, as sources of oil, raw material for certain industrial product and for poultry and livestock feeds.

At present, the national average yield of soybean is 0.99 t/ha which is far below the potential yield of 1.5 to 2.0 t/ha of the recommended varieties. The reasons for this wide gap are due to the different constraints in soybean production such as poor seed longevity, susceptibility to insect pests and diseases, lack of inputs and low level of crop management (Pandy, 1985). In the Philippines, soybean production is still lagging behind the domestic demand because the potential of the crop as a commercial commodity has not been fully tapped. The country still spends million of dollars annually to import raw grains and soybean products.

The area planted to soybean in 1991 and 1992 were 2,979 and 3112 hectares, respectively with a total production of 3,241 mt in 1991 and 3,676 mt in 1992. The importation of soybean in 1991 and 1992 had amounted to 63,246.87 and 51,893.00 mt valued at \$ 15,932,719.00 and \$11,405,682.00, respectively.

A number of soybean varieties had been developed locally to reduce the importation of its products. Farmers are also encouraged to use improved varieties and recommended cultural practices so that maximum yield can be achieved.

REVIEW OF LITERATURE

Soybean yield can be increased almost two-fold with better plant stand, water, nutrients and in insect management after rice during the dry season (Abon *et al*, 1985).

Borajevic (1973) stated that if hybridization program is based on the concept of character rather than the parents, 50 to 100 cross combinations and 2,000 to 3,000 F₂ plants per cross would be adequate.

Almodiente, Pinoy: Development of PSB-Sy1 and PSB-Sy3, New High Yielding Soybean Varieties

It was also reported that the modified pedigree (Single Seed Descent) method of selection compared well with the most desirable bulk breeding method in terms of maintaining superior lines even if it was time consuming but the least influenced by natural selection (Empig and Fehr, 1971).

Luedders *et al* (1973) stated that in the evaluation of lines selected from the six population advanced by the pedigree method in the F₆ and F₇ generations, highly significant differences in yield were observed among selections within method in all six population.

According to Singh (1972), almost 100 percent of the soybean varieties in the United States were selections from advanced segregating generations. He also stated that before 1950, only 22 percent of the cultivated soybean in the United States and Canada were developed by hybridization.

Results of the General Yield Trial (GYT) conducted at BPI, La Granja during the 1986 and 1987 wet and dry seasons showed that soybean line LGSY01-24 outyielded the check variety UPLSy 2 with yields of 3.39 and 1.32 t/ha during the wet and dry seasons, respectively. The check variety yielded 3.24 t/ha (WS) and 0.70 t/ha (DS) (Almodiente, 1988).

OBJECTIVES

The objective of the soybean varietal improvement program is to develop high yielding, early and uniform maturing, non-shattering and pest and disease resistant varieties adapted to local agro-climatic condition along with acceptable eating and processing qualities.

METHODOLOGY

Eleven (11) introduced soybean varieties were used as parental sources, namely: AGS 129, AGS 66, G2105, AGS66, AGS 17, G5229,

AGS 7, G38, G2120, AGS 62 and G 3473. These were crossed with the local Seedboard varieties such as UPLSY 2, Clark 63, TK 5 and BPI L114.

Twenty one (21) cross combinations were developed and 105 lines were selected and evaluated. After series of evaluation, 50 promising lines were selected and evaluated for two (2) seasons in the Preliminary Yield Trial including the check varieties. Twenty five (25) promising lines were selected from the PYT and further evaluated in the General yield trial during the 1986-87 wet and dry seasons.

A randomized complete block design with three (3) replications was used in all plantings. Each plot measuring 5 m consisted of 4 rows spaced 60 cm apart. Seeds were drilled uniformly in the furrows and thinned to 20 plants/linear meter two weeks after emergence.

Necessary cultural care and management were employed during the growth and development of the crop. Selection and purification were done simultaneously and the most promising selections were entered in the National Cooperative Testing or NCT for regional yield trial.

Legume Technical Working Group. The entries that consistently surpassed the yield or other characteristics of the standard checks were recommended to the Philippine Seedboard for approval as commercial varieties while those inferior to the check were dropped from the trial after four (4) seasons. The regional yield trial was conducted based on the guidelines of the Upland Crop National Cooperative Trial (UCNCT) of the Philippine Seedboard. Six (6) soybean lines developed in the Center were entered in regional yield trial from 1987 to 1992 and the most promising entries were LGSy 01-24 (1987-1989) and LGSy 03-9 (1991-1993). They were evaluated together with other entries from UPLB, IPB and BPI Economic Garden for two wet and two dry seasons at the different testing stations particularly Los Banos, Isabela, Bohol, Bukidnon, Davao, Tupa and Negros Occidental.

RESULTS AND DISCUSSION

1. Yield performance of soybean lines LGSy 01-24 and LGSy 03-9.

Tables 1 and 2 show the average yield of LGSy 01-24 in seven testing stations. The promising line exhibited the highest average yield of 3,650.7 kg/ha during the wet season and 2,983.8 kg/ha during the dry season in La Granja. Across locations, LGSy 01-24 obtained a mean yield of 2,851 kg/ha in the wet season and 1,937 kg/ha in dry season which is 16.18% and 10.85% higher over the check variety UPLSY 4 (Table 3).

Yield and performance of LGSy 03-9 during the wet and dry season is presented in Table 4 and 5. In wet seasons test, LGSy 03-9 produced the highest average yield of 3,509.5 kg/ha in La Granja and 2,670.5 kg/ha during the dry season in Ilagan. In the dry seasons test, LGSy 03-9 produced the highest mean yield of 2,043 kg/ha which is 22.26% higher over the check variety (Table 6).

Table 1. Average yield (kg/ha) of soybean line LGSY 01-24 in the Regional Yield Trial (RYT) compared to the check variety (UPLSY 4) at different locations for two (2) wet seasons (1987 and 1988).

Locations/Stations	LGSY 01-24		Average		UPLSY 4 (National Check)		Average
	1987	1988	1987	1988	1987	1988	
DA Ilagan	a	2950.0 (3)	2950.0	a	2527.0 (7)	2525.0	
DA Bohol	b	1540.0 (13)	1540.0		2070.0 (4)	2160.0 (8)	2115.0
DA Tupi		3001.6 (2)	2333.0 (8)	2667.3	2557.7 (4)	1721.0 (13)	2148.3
BPLGNCRDC		4129.5 (4)	3172.0 (4)	3650.7	4605.8 (2)	3925.0 (1)	4265.4
BPLBNCRDC		3108.1 (1)	2026.0 (7)	2567.0	1660.1 (6)	1735.0 (11)	1697.55
BPLDNCRDC		3112.5 (1)	b	3112.5	2404.5 (5)	1400.0 (11)	1902.25
CMU		2233.6 (5)	3489.0 (3)	2861.3	a	a	
Mean		3117.1 (1)	2585.0 (3)		2663.2 (3)	2245.0 (11)	

Table 2. Average yield (kg/ha) of soybean line LGSY 01-24 in the Regional Yield Trial (RYT) compared to the check variety (UPLSY 4) at different locations for two (2) dry seasons (1987-88 and 1988-89)

Locations/Stations	LGSY 01-24		Average		UPLSY 4 (National Check)		Average
	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89	
DA Ilagan		2625.0 (4)	2210 (7)	2150.0	3750.0 (1)	2300.0 (2)	3025
DA Bohol	a	1743.0 (12)	1208.0	1180.0 (2)	1395.0 (6)	1877.5	
DA Tupi		1651.9 (3)	2648.0 (7)	1882.4	999.6 (5)	1786.0 (12)	1392.8
BPLGNCRDC		2983.8 (2)	b	2983.8	2507.8 (6)	b	2507.7
BPLBNCRDC		4151.1 (6)	2208.0 (3)	1044.0	516.1 (4)	1988.0 (1)	1252.0
BPLDNCRDC		726.0 (8)		726.0	813.0 (6)	b	813.0
CMU		1634.9 (2)		1634.9	a	a	
Mean		1672.8 (2)	2202 (6)		1627.7 (3)	1867.2 (1)	

Almodiente, Pinoy: Development of PSB-Sy1 and PSB-Sy3, New High Yielding Soybean Varieties

Note: 16 entries were evaluated in two dry season trials. Number in parenthesis denotes ranking of entry in the trial.

a. Entry not tested in location
b. Data obtained to poor stand in the location.

Table 3. Comparative Performance of Soybean line LGSY 01-24 across locations during the wet and dry seasons (1987-89)

ENTRY	BEAN YIELD				% OVER		DRY SEASON	
	WET SEASON	1987	1988	MEAN	CHECK	1987-88	1989	
LGSY 01-24	3117.1 (1)	2585 (3)	2851 (1)	16.18	1672.8 (2)	2202		
UPLSY 4 (national ck.)	2663.2 (3)	2245.3 (11)	2454 (11)		1627.3 (3)	1867		
BPLSY 4 (Regional ck.)	2475	1934	2205		881	144		

Table 4. Average yield (kg/ha) of soybean line LGSY 03-9 in the Regional Yield Trial (RYT) compared to the check variety (UPSB-Sy 1) at different locations for two (2) wet seasons (1991 and 1992).

Locations/Stations	LGSY 03-9		Average		PSB Sy 1 (National Check)		Average
	1991	1992	1991	1992	1991	1992	
DA Ilagan		2191.0 (1)	3022 (4)	2606.5	a	3995 (2)	3995
DA Bohol		1933.0 (8)	2935 (4)	2434.0	2180 (8)	3500 (6)	2840
BPLGNCRDC		3016.0 (1)	4003 (2)	3509.5	2833 (3)	3782 (4)	3307.5
BPLBNCRDC		1780.0 (5)	2390 (4)	2085.0	2017.6 (2)	2817 (1)	2417.3
BPLDNCRDC	a	730 (3)	730		a	680 (5)	680.0
USM		2000.0 (7)	b	2000	2081.0 (6)	b	2081.0
CMU	a	2868 (7)	2868		1153.5 (9)	2980 (5)	2066.75
Mean		2184 (3)	2658 (4)		2053.0 (6)	2959 (2)	

Table 5. Average yield (kg/ha) of soybean line LGSY 03-9 in the Regional Yield Trial (RYT) compared to the check variety (UPSB SY 1) at different locations for two (2) dry seasons (1991-92 and 1992-93).

Locations/Stations	LGSY 03-9		Average		PSB Sy 1 (National Check)		Average
	1991-92	1992-93	1991-92	1992-93	1991-92	1992-93	
DA Iligan	3065 (1)	2279 (5)	2670.5		b	1800 (7)	1800
DA Bohol	1720 (5)	1540 (4)	1630.0	2377.5(6)	1325 (8)	1851.2	
BPLGNCRDC	b	2166 (1)	2166		b	1225 (6)	1225
BPLBNCRDC	1791.4(5)	1316 (7)	1553.7	1700.7(7)	1498(4)	1599.3	
USM	1970.0(2)	b	1970.0	2421.2(5)	b	2421.2	
CMU	a	2452(4)	2452.0	532.3(1)	2070 (7)	1301.1	
Mean	2135.9 (1)		1951				

Note: Ten entries were evaluated in 1991-92 and 1992-93 dry seasons. Number in parenthesis denotes ranking of entry in the trial.

a. Entry not tested in the location

b. Data omitted due to poor stand in the location

Table 6: Comparative Performance of Soybean line LGSY 03-9 across locations during the wet and dry seasons (1991-1993).

ENTRY	BEAN YIELD							
	WET SEASON		MEAN	% OVER :	DRY SEASON		MEAN	% OVER :
	1987	1988			1987-88	1988-89		
LGSY 03-9	2184 (3)	2658 (4)	2421 (4)	(3.39)	2136 (1)	1951 (2)	2043 (1)	22.36
PSBSY 1 (national ck.)	2053 (6)	2959 (2)	2506 (3)		1758 (8)	1584 (7)	1671 (6)	

2. Agronomic characteristics

In Table 7, soybean line LGSy 01-24 flowered in 33 days after emergence both in wet and dry seasons. It matured in 95 days in the wet season which was ahead by one (1) day than the check variety UPLSy 4. Both test line and the check variety matured in 89 days during the dry season. LGSy 01-24 produced 64 and 45 pods/plant during the wet and dry seasons which were 12.28% and 18.42% more than the check variety UPLSy 4 (57 and 38 pods/plant). During the wet and dry seasons the test line grew 10 cm and 13 cm shorter than the check variety.

Similarly, seed size was also affected by season. In the weight of 100 seeds, LGSy 01-24 had 16.2 and 15.6 gm which were lighter by 11.73% and 8.33% than the check variety during the wet and dry seasons, respectively. By visual observation, LGSy 01-24 exhibited better seed quantity over the check variety.

All entries were affected by bacterial pustule and soybean rust in varying severities both in wet and dry seasons. The test line and the check variety were rated moderately resistant to bacterial pustule and soybean rust during the testing periods.

In Table 8, LGSy 03-9 and check variety PSBSy 1 bloomed 34 days after emergence in the wet season. As to the dry seasons test, the check variety bloomed 30 days after emergence which was earlier by 2 days than LGSy 03-9. The check variety matured in 98 days after emergence during the wet season which was earlier by one (1) day over the test line (99 days). In the dry season, the test line matured in 85 days after emergence and was earlier by two (2) days than the check variety (87 days). LGSy 03-9 obtained more number of pods in both wet and dry seasons with 50 and 38 pods per plant compared to 46 and 31 pods/plant in the check variety. It also exhibited taller plants than the check variety by 18.5 and 16.0 cm in the wet and dry seasons, respectively.

In both wet and dry seasons, LGSy 03-9 obtained heavier weight of 100 seeds (16.6 and 15.0 gm) compared to check variety (16.4 and 14.9 gm). Also, the test line produced better quality seeds. A

moderate infection of bacterial pustule and soybean rust in both the test line and check variety were observed and thus their effects to the normal development of the crop were negligible.

Table 7: Agronomic Characteristics and Disease Rating of Soybean line LGSY 01-24 across locations (1987-88 and 1988-89).

ENTRY	:Days to : :Bloom		:Days to : :Bloom		:Days to : :Mature		:Days to : :Mature		:No. of : :Pod/plt		:No. of : :Pod/plt		:Plt Height: Plt Height:		:Wt of : :100 seeds:100 seeds:	
	WS	DS	WS	DS	WS	DS	WS	DS	WS	DS	WS	DS	WS	DS	WS	DS
LGSY 01-24	33	33	95	89	64	45	88	47	16.2	15.6						
UPLSY 4 (national ck.)	34	35	94	89	57	38	98	60	18.1	16.9						
BPISY 4 (Regional ck.)	34	34	93	82	43	22	83	49	17.8	15.5						

a/ Mean of two wet two dry season

2/ Disease Rating:

1/ Seed Quality Rating:

- 1.0 - 1 to 20% shriveled, cracked or discolored seeds
2.0 - 21 to 50% shriveled, cracked or discolored seeds
3.0 - 51% up shriveled, cracked or discolored seeds

- 0 - Immune; no symptoms at any part of the plant
1.0 - highly resistant; less than 1% of plants covered with lesion
2.0 - Moderately resistant; 1-10% of plants covered with lesion
3.0 - Intermediate: 11-30% of plants covered with lesion
4.0 - Moderately susceptible: 30-60% of plants covered with lesion
5.0 - highly susceptible: more than 60% of plants covered with lesion.

Table 8: Agronomic Characteristics and Disease Rating of Soybean line LGSY 03-9 across locations (1991-92 and 1992-93) a/

ENTRY	:Days to : :Bloom		:Days to : :Bloom		:Days to : :Mature		:Days to : :Mature		:No. of : :Pod/plt		:No. of : :Pod/plt		:Plt Height: Plt Height:		:Wt of : :100 seeds:	
	WS	DS	WS	DS	WS	DS	WS	DS	WS	DS	WS	DS	WS	DS	WS	DS
LGSY 03-9	34	32	99	85	50	38	91	57	16.6							
PSBSY 1 (national ck.)	34	30	98	87	46	33	72.5	41	16.4							

a/ Mean of two wet and two dry season

2/ Disease Rating:

1/ Seed Quality Rating:

- 1.0 - 1 to 20% shriveled, cracked or discolored seeds
2.0 - 21 to 50% shriveled, cracked or discolored seeds
3.0 - 50% up shriveled, cracked or discolored seeds

- 0 - Immune; no symptoms at any part of the plant
1.0 - highly resistant; less than 1% of plants covered with lesion
2.0 - Moderately resistant; 1-10% of plants covered with lesion
3.0 - Intermediate: 11-30% of plants covered with lesion
4.0 - Moderately susceptible: 30-60% of plants covered with lesion
5.0 - highly susceptible: more than 60% of plants covered with lesion.

CONCLUSION AND RECOMMENDATIONS

The results of the tests have come up with two (2) high yielding soybean varieties, PSB-Sy 1 which outyielded the check variety UPLSy 4 during the wet season and accepted by Nestle for its product processing, and PSB-Sy 3 which gave higher yield than the check variety PSB-Sy1 during the dry season. Both varieties can nutritionally supply sufficient amount of fats, protein and carbohydrates.

The development of these varieties will redound to less importation and improve nutrition in the country.

Breeding centers/stations should continue their programs such that high yielding soybean varieties will be available to the farmers to improve production and meet the local demand.

BIBLIOGRAPHY

ALMODIENTE, R.B. and A.D. DELFIN. 1988. Development of Improved Varieties of Soybean thru Germplasm Collection, Hybridization and Selection. 8th Regional Integrated R & D Review and Planning Workshop. LGARC, La Carlota City April 13-15, 1988.

ABON, CC., R.K. PANDY and J.A. IRABAGON. 1985. Studies on Cultural Management of Soybean (*Glycine max* L.) Planted under Lowland Rice Based Cropping System. Paper presented at the 16th Annual Scientific Meeting of the Philippines at CLSU, Muñoz, Nueva Ecija.

BOROJEVIC, S. 1973. Methodological Considerations in the Breeding of High Yielding Wheat Varieties. Proc. of the Fourth FAO/Rockefeller Foundation Wheat Seminar. Teheran, Iran.

BUREAU OF AGRICULTURAL STATISTICS. 1991 and 1992.

Almodiente, Pinoy. Development of PSB-Sy1 and PSB-Sy3. New High Yielding Soybean Varieties

EMPIG, L.T. and W.R. FEHR. 1971. Evaluation of Methods of Generation Advances Bulk Hybrid Soybean Population. Crop. Sci. 11:51-54.

LUEDDERS, V.O., L.A. DUCLOS and A.L. MATSON. 1973. Bulk Pedigree and Early Generation Testing Breeding Method Compared in Soybean. Crop Sci. 13:363-364.

SINGH, B.B. 1972. Conventional Breeding Methods in Soybean. G.B. Pantmangar University of Agriculture and Technology. Pantmangar, Naunital, India. World Soybean Research 1974.

Appendix 1. Proximate and physical analysis of soybean line LGSY 03-9 (Wet Season, 1992)^{1/}.

Entry	Protein %	Crude fat %	Carbohydrates %	Ash %	Moisture %
LGSY 03-9	33.76	19.69	31.38	5.41	9.76
PSBSY 1 (Nat. ck)	35.35	19.17	31.25	5.23	9.00

^{1/} Analyzed by the BPL, Laboratory Services Division. Manila.

Appendix 2. Nomination Form for LGSY 01-24

Crop: Soybean

Variety Name:

- 1) Seedboard Name : PSBSy 1
 2) Common Name : La Carlota Soy 1
 3) Experimental Name : LGSY 01-24

Historical Background:

- 1) Pedigree : Clark 63 x AGS 129
 2) Breeding : BPI-La Granja National Crop Research and Development Center, La Carlota City, Negros Occidental
 3) Researchers : Remedios B. Almodiente, Nestor J. Almodiente
 4) No. of NCT Trials: Evaluated in 4 seasons (2 years) with a total of 25 trials (12 wet and 13 wet trials)
 5) Year Released by : 1990
 the PSB

Varietal Description:

	Dry Season	Wet Season
1) Bean Yield (kg/ha)	1937	2851
2) 100 seed weight (gm)	15.7	16.2
3) Maturity (DAE)	89	95
4) Plant Height (cm)	47	88
5) Reaction to:		
Soybean Rust	MR	
Bacterial Pustule	MR	
6) Chemical Analysis:		
Protein (%)	32.56	
Oil (%)	21.59	
Carbohydrates (%)	33.87	

Almodiente, Pinoy: Development of PSB-Sy1 and PSB-Sy3. New High Yielding Soybean Varieties

7) Agro-climatic Adaptation

The variety can be grown in all soybean regions in the country and yields best in regions with type 3 and 4 climate and early dry season planting (September-October) for Type 1 climate; recommended in rotation to corn, early and uniform maturity

8) Desirable characteristics

It has higher bean yield exceeding the National check UPLSY 4 by a mean of 16.33% in 13-trials during the wet and by 11.49% in 12 trials during the dry season; nutritional and eating qualities comparable to the check UPL-Sy 4; acceptable by Nestle Philippines in its product processing.

Appendix Table 5. Nomination Form for LGSY 03-9

Crop: Soybean

Variety Name:

- 1) Seedboard Name : PSB-Sy 3
 2) Common Name : La Carlota Soy 2
 3) Experimental Name : LGSY 03-9

Historical Background:

- 1) Pedigree : AGS 129 X TK 5
 2) Breeding : BPI-La Granja National Crop Research and Development Center, La Carlota City, Negros Occidental
 3) Researchers : Remedios B. Almodiente, Nestor J. Almodiente and Francisco G. Doloso
 4) No. of NCT Trials: Evaluated in 4 seasons (2 consecutive years) with a total of 18 trials (9 wet and 9 dry trials)
 5) Year Released by : 1993
 the PSB

Varietal Description:

	Dry Season	Wet Season
1) Bean Yield (kg/ha)	2041	2421
2) 100 seed weight (gm)	15.0	16.6
3) Maturity (DAE)	85	99
4) Plant Height (cm)	57	91
5) Reaction to:		
Soybean Rust	MR	
Bacterial Pustule	MR	
6) Chemical Analysis:		
Crude Protein (%)	33.76	
Crude Fat (%)	19.69	
Carbohydrates (%)	31.38	

7) Agro-climatic Adaptation

The variety can be grown in all soybean regions of the country and yields best in regions with types 3 and 4 climate and early dry season planting (September-October) for Type 1 climate. It is also recommended in rotation to corn and for post-rice cropping in regions 2 and 4.

8) Desirable characteristics

This variety is non-lodging, moderately resistant to shattering, yields are higher (exceeding the National check PSBSy 1 by 22%) and beans can be utilized both as food and feed.

Appendix 4: Proximate analysis of Soybean line LGSY 01-24 I/across locations during the wet and dry season (1987-1989)

ENTRY :	Protein :	Crude fat :	Carbohydrates :	Ash :	Moisture :
% :	% :	% :	% :	% :	% :
LGSY 01-24	32.56	21.59	33.87	5.86	6.12
UPLSY 4	35.32	19.42	32.35	5.72	7.19
(national ck.)					
BPSY 4	36.71	21.51	26.98	6.09	8.71
(regional ck.)					

I/ Analyzed by the BPI, Laboratory Service Division 1987.

UTILIZATION OF SWEET POTATO (*IPOMOEA BATATAS* LINN. POIR) FLOUR FOR OTHER FOOD PURPOSES

Edna B. Montais and Teresita Ramirez *

ABSTRACT

Sweet potato tubers of the red skin-white flesh variety were processed into flour and starch. Flour was produced by chopping peeled and unpeeled tubers and dried at 50°C in a dehydrator and at a solar simulator. Starch was likewise processed and subjected to various drying conditions. The flour and starches were further determined for its physico-chemical and rheological characteristics. Preliminary preparation of polvoron using 30, 40 and 50% sweet potato flour were highly acceptable, hence, the level of concentration was increased to 50, 65 and 80%. Sensory evaluation results showed that the product using 80% sweet potato flour was the most acceptable as compared to the other treatments and the control which was 100% wheat flour. Brownies prepared from 50, 65 and 80% levels were also acceptable.

INTRODUCTION

Sweet potato is one of the major rootcrops grown in the country. It is usually consumed after boiling or steaming, baking or frying. Sometimes the tubers are cooked with syrup and used as a basic ingredient in the popular native delicacy "halo-halo".

However, aside from the fact that the crop is grown in the country and is available throughout the year, no major staple processed product is done commercially. Besides, only the good shaped tubers command a good market price leaving the rest classified as of non-commercial value which constitutes the bulk of post-harvest losses estimate at 35 to 95%.

* / Agriculturist II and Chemical Laboratory Technician, respectively, Laboratory Services Division, Bureau of Plant Industry, Manila.