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WET SEASON TRIALS WITH SOUTHERN PEAS (*VIGNA SINENSIS*) AND LIMA BEANS (*PHASEOLUS LUNATUS*)

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INTRODUCTION

The principal fresh-shelled legume in Trinidad and Tobago, Pigeon Pea, is available in quantity only from about November to March. Further, there is no other commonly eaten fresh-shelled legume, although dry beans and peas are eaten in large amounts. Snap beans, and certain *Vigna* sp. in the snap stage (known locally as Bodi) are eaten all year around, but their protein content is low compared with shelled legumes. There is therefore a gap in the production of legumes for shelling from about May to November each year, which period more or less coincides with the wet season from June to December. Bacterial Blight is an ever-present and still uncontrollable wet season disease of Common beans (*Phaseolus vulgaris*) in the country, so that trials have concentrated on Southern Peas (*Vigna sinensis*), and Lima Beans (*Phaseolus lunatus*) to fill this gap.

MATERIALS AND METHODS

Two trials were conducted from June to September, 1967 and from September, 1967 to January, 1968 on an acid Cunupia fine Sandy Clay Soil at the Central Experiment Station at 50 feet above Sea Level.

The following legumes were tested in the first experiment: Henderson Baby Lima and Nemagreen Baby Lima Beans; California No. 5 Blackeye, Local Blackeye, Gub-Gub (Local Cream), and Texas Cream No. 40, the latter four cultivars being all bush *Vigna* sp. The trial was laid out in a randomized complete block design with 4 blocks; plot size was 10 feet × 30 feet.

The second trial included four varieties: Texas Cream No. 40, Gub-Gub (Local Cream), California No. 5 Blackeye, Local Blackeye. The trial was laid out in a randomized complete block design with 6 blocks; plot size was 18 feet × 30 feet.

Land preparation for the two trials was essentially the same. Major deep drains were made 32 feet apart to produce a large bed of the same width. Secondary beds were then made on top of this large bed by making narrow furrows about 6 inches deep at intervals of 72 inches, leaving secondary flat-topped beds of about 60 inches, 12 inches of land space being allowed for the furrow. On these beds three rows of the beans or peas were planted at a spacing of 22 inches between rows. Lima Beans were planted 3 inches apart in the row and Southern Peas 6 inches apart in the row.

In the first experiment weeds were controlled by hand hoeing at 5 and 7 weeks after sowing. In the second experiment Amiben at 4 pints per acre was sprayed as a pre-emergence herbicide, and hand hoeing was done at 7 weeks. About two weeks after sowing a surface side dressing of fertilizer was given at the rate of 400 lb. of

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13–13–20 per acre. Pests (principally Chrysomelid Beetles) and diseases were controlled by regular weekly spraying of a mixture of Dithane M 45 at 1 1/3 tablespoons per gallon and Toxaphene E.C. 6 at 8.5 ml. per gallon. No irrigation was applied in the first trial, but in the second trial two sprinkler irrigations were given and 14 and 17 days after sowing.

The Lima Beans were harvested at the mature-green stage, while the Southern Peas were harvested at the mature-green and yellow-pod stages. Samples were taken throughout the harvest period and shelled for determination of the percentage weight of shelled peas obtained from a sample of peas in pod (shellout percentage).

TABLE I

Nineteen sixty seven Wet season rainfall for 14-day periods at El Carmen, and 30-year monthly average rainfall at Piarco*; inches.

1967 Rainfall at El Carmen, Centeno		30-Year Average Rainfall, Piarco	
Period	Rainfall inches	Period	Rainfall inches
June 4–17	1.45		
June 18-July 1	6.92	June	10.23
July 2-15	6.93		
July 16-29	3.02	July	9.24
July 30–Aug. 12	7.61		
August 13–26	2.39		
Aug. 27–Sept. 9	2.51	August ...	9.17
Sept. 10–23	0.93		
Sept. 24–Oct. 7	2.11	September ...	6.79
Oct. 8–21	1.50		
October 22–Nov. 4	1.54	October ...	5.63
November 5–18	3.34		
Nov. 19–Dec. 2	6.49	November ...	8.01
Dec. 3–16	2.89		
Dec. 17–30	0.81	December ...	6.23

*Piarco Meteorological Station, about 2 miles West of El Carmen.

RESULTS AND DISCUSSION

For the first trial the rainfall was somewhat greater than the long term average, and for the second trial November had higher rainfall than the long term average, while October and December had less than average (Table 1).

The yields, shellout percentages and calculated yield of shelled beans or peas are shown in Table 2. Both Lima Bean varieties yielded well for this season. Harvesting began at 9 weeks after sowing for Henderson (about 4 weeks after flowering was first observed), and at 10 weeks for Nemagreen; harvesting continued over a period of 4½ weeks for Henderson, and 3½ weeks for Nemagreen.

The local Blackeye yielded less than imported California Blackeye No. 5 in the first trial, but yielded more than it in the second trial; these differences were significant at the 5 per cent level. The principal advantage of the California Blackeye No. 5 was that the harvest period was shorter than that of the local Blackeye, 1½ weeks compared with 4½ weeks in the first trial, and 3 weeks compared with 4 weeks in the second trial.

The imported Texas Cream No. 40, on the other hand, gave higher yields than the local Gub-Gub Cream in both trials. The yield of the Gub-Gub in the June–

September trial was extremely low, and in both trials harvesting began 3 weeks later than with the Texas Cream No. 40. In the first trial both cream varieties were harvested over a period of 11 days, but in the second trial the harvest period for Gub-Gub was 16 days compared with 23 days for Texas Cream No. 40. Harvesting began about 2 weeks after flowering was first observed for the *Vigna* sp.

TABLE 2

Unshelled yield, shellout precentage and calculated shelled yield for cultivars of Lima beans (*Phaseolus lunatus*) and Southern Peas (*Vigna sinensis*) harvested in the mature green to yellow pod stage in the wet season: yield =lb/ac.

Cultivar	First Trial June-September			Second Trial September-January		
	Yield unshelled lb/ac	Shell-per cent	Culcalated shelled Yield lb/ac.	Yield unshelled lb/ac.	Shellout per cent	Calculated shelled Yield lb/ac.
Henderson Baby Lima ...	2498	43	1074	—	—	—
Nemagreen Baby Lima ...	2588	50	1294	—	—	—
California Blackeye No. 5 ...	2272	76	1727	2384	71	1693
Local Blackeye	1671	66	1103	2920	68	1986
Texas Cream No. 40 ...	1925	68	1309	2379	66	1570
Local Cream Gub-Gub. ...	475	50	237	1573	67	1054
lsd. o.05	265	—	—	87	—	—

Anova First Trial Yield Unshelled				Anova Second Trial Yield Unshelled			
Scource	df.	M.S.	F	Scurce	df.	M.S.	F
Blocks ...	3	27.11	—	Blocks ...	5	37.52	—
Treatments ...	5	64.59	4.96**	Treatments...	3	196.65	10.32**
Error ...	15	13.03	—	Error ...	15	19.06	—
Total ...	23	—	—	Total ...	23	—	—

The shellout percentages obtained here compared very well with shellout percentages reported by Hover (1957) for the Southern U.S.A.

Both the local Blackeye and the Gub-Gub cream are traditionally grown as dry pea dry season crops from January to April in the Oropouche lagoon area after the rice crop. Production during the period now being reported is therefore out of season, so to speak, for these *Vigna* varieties. Lorz (1955), Blackhurst, Paterson and Singletary, and Ezedinma (1966) have reported that Southern Peas may be affected by dry length, some varieties more than others. It is possible that the local Southern Peas, are sensitive to day length, the Gub-Gub Cream much more so than the Blackeye. If this is the case, they produce better under short day in the early dry season.

As regards plant habit, the two imported cultivars had erect compact bushes with pods carried well above the foliage. The local Blackeye is however a comparatively large plant with pods borne among the leaves, while the Gub-Gub is an ever larger bush, but the pods are carried above the foliage. The imported varieties therefore had a more desirable shape for ease of picking.

The method of land preparation with wide main beds and subsidiary 3-row beds seems to have worked well and provided the required surface drainage necessary for this season. Trials are now in progress to mechanize the preparation of the subsidiary beds.

CONCLUSION

The production of mature-green legumes for shelling in the wet season would alleviate the shortage of this vegetable which exists for this period of the year on the fresh market. Moreover, local processing companies have indicated an interest in this kind of vegetable; recent tests showed that mature-green shelled Blackeye and Cream Peas made excellent fresh frozen products. These preliminary trials may pave the way for local production for both purposes.

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