

CO 2, CO 3, CO 4 and CO 5, the Four Economic Strains of "Garden Lab Lab" (*Lab Lab niger* var. *typicus*)

by

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Introduction: In *Lab Lab niger* (*Dolichos Lab Lab*), a highly self-fertilised crop, two cultivated varieties exist namely variety *typicus*, popularly known as "kitchen garden lab lab" or "avarai" and variety *lignosus*, popularly known as the "field lab lab" or "mochai". Both are grown for distinct purposes under different cultural practices. The variety *lignosus* has strong and characteristic smell due to presence of oil glands. Its pods are tough and unpalatable while the seeds are used as pulse. The variety *typicus* has no oily flavour and its pods are fleshy with soft texture (Rangasamy Ayyangar and Nambiar 1935). Some of them are very soft and shrink considerably on drying. The tender pods are very much relished and used as vegetable. Pureline breeding was resorted to for evolving promising economic selections in the variety *typicus* (kitchen garden lab lab)

Materials and Methods: Three hundred types of "garden lab lab" exhibiting variation in morphological characters collected from within the State as well as outside were grown and studied at the Millets Breeding Station, Coimbatore from 1935 onwards. As a result of detailed studies, six promising pure lines namely DL. 244, DL. 250, DL. 259, DL. 269, DL. 453 and DL. 692 were isolated as economic purelines (Ayyengar and Nambiar 1941).

In 1963, forty six purelines (including the promising six purelines already selected) were studied and screened for yield as well as for quality of tender pods. Among them four purelines viz., DL. 250, DL. 269, DL. 453 and DL. 692 with economic pod characters were fixed for conducting yield trials. The above four purelines replicated six times were studied under yield trials for three successive years from 1964, in comparison with a local popular type as standard. The main objective was to fix the purelines which yielded the maximum quantity of tender pods. Being highly season bound, the crop had to be raised only during the South West Monsoon period (July-August). Twenty to thirty days before sowing pits of 60 cm cube were dug out with a spacing of 3 metres either way and the pits were filled up with a made-up soil (farm yard manure, tank silt and red earth in 2:2:2 proportions). Also, 115 g in each of super phosphate and ammonium sulphate were applied as basal dressing to each pit. Each pit constituted one plot and each selection was replicated six times. Six seeds were sown in each pit

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TABLE I. Important characters of the four "Kitchen garden lab lab" purelines

Particulars	DL. 250	DL. 269	DL. 453	DL. 692	Local
Collected from	Coimbatore	Coimbatore	Coimbatore	Ganjam	Perianaickenpalayam
Season	July-August to Feb.	July-August to Feb.-Mar.	July-August to Feb.-Mar.	July-Aug. to March	July-Aug. to March
Duration in days	210 to 220	230	215 to 220	230	225
Habit	Trailing	Trailing	Trailing	Trailing	Trailing
Pigmentation	Light purple, leaves green with light purple veins	Green with purple wash and purple nodes, leaves light green with light purple veins	Purple throughout, leaves green with purple veins	Light green throughout	Green throughout
Inflorescence	Raceme with long stalk	Raceme with long stalk	Raceme with long stalk	Raceme with long stalk	Raceme with long stalk
<i>Flower :</i>					
i) Corolla	Purple	Purple	Purple	White	White
ii) Calyx	Light green with purple wash	Green with purple tinge	Purple	Light green	Green
<i>Pods :</i>					
1) Pigment	Light green with purple margin	Green with purple	Deep purple throughout	Light green to white	Dark green throughout
2) Septate or not	Septate	Septate	Septate	Non-septate	Non-septate
3) Fleshyness	Fleshy	Highly fleshy	Fleshy	Fleshy	Fleshy
4) Length (cm)	9.34 ± 0.10	10.68 ± 0.17	10.17 ± 0.13	13.40 ± 0.83	11.21 ± 0.18
5) Breadth (cm)	2.11 ± 0.19	4.84 ± 0.06	3.33 ± 0.31	1.54 ± 0.24	1.55 ± 0.17
6) Mean weight of 100 green pods (gm)	617.2 ± 2.6	1177.8 ± 52.6	743.1 ± 3.0	526.5 ± 8.5	505.2 ± 2.5
<i>Seeds :</i>					
1) Colour	Black	Black	Black	Chocolate	Chocolate
2) Size					
i) Length (cm)	1.07 ± 0.02	1.49 ± 0.03	1.33 ± 0.03	1.30 ± 0.02	1.14 ± 0.02
ii) Breadth (cm)	0.87 ± 0.01	1.04 ± 0.03	1.02 ± 0.02	0.81 ± 0.02	0.80 ± 0.02
iii) Thickness (cm)	0.66 ± 0.02	0.70 ± 0.02	0.73 ± 0.02	0.73 ± 0.02	0.66 ± 0.1
iv) Mean weight of 100 seeds	49.9 ± 0.1	51.2 ± 0.2	43.5 ± 0.3	49.9 ± 0.1	48.5 ± 0.1

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and irrigation given. The seeds germinated in 4 to 6 days and when the seedlings were a month old and well established three vines were left and others pulled out. As the primary shoots started, props were put up and *pandals* erected for proper growth, the six of each *pandal* being 1.44 sq. metres. Plants required copious irrigation throughout their growth period. They flowered during October-November. First picking of tender pods fit for vegetable was taken up within 15 to 17 days of flowering and the subsequent pickings once a week. Final harvest was done towards the end of February. To determine the nutritive value, tender pods from the four purelines as well as the standard were analysed for protein, fat, fibre and moisture contents.

Results and Discussion: The 'garden lab lab' being exclusively grown for the pods, the quality of pod is more important than the yield, the criteria of quality being the absence of fibre, good taste, size and shape of pods. The important characters of the four economic purelines as well as the standard are described in Table 1.

The results of analysis of yield data from the three years are presented in Table 2.

TABLE 2. Yield of four "Kitchen garden lab lab" purelines

Year	Yield of green pods (kg/ha)					Significant or not (P=0.05)	S.E.	C.D.
	DL 250 (CO ₂)	DL 269 (CO ₃)	DL 453 (CO ₄)	DL 692 (CO ₅)	PLS 18			
1964	10760	11600	10550	8465	9525	Sig.	333.3	983.2
As % on control	112.9%	121.7%	110.8	88.8	100.0			
1965	11530	5860	13770	3405	6420	Sig.	560.9	1653.9
As % on control	179.8	91.3	214.5	53.0	100.0			
1966	13320	12590	16240	5400	6525	Sig.	182.5	532.6
As % on control	204.1	192.8	248.8	82.6	100.0			
Mean	11870	10017	13520	6757	7457			
As % on control	165.6	135.2	191.3	74.8	100.0			

Conclusion:

1964.	DL.269	DL.250	DL.453	PLS.518	DL.692
1965.	DL.453	DL.250	PLS.18	DL.269	DL.692
1966.	DL.453	DL.250	DL.269	PLS.18	DL.692

The yield data indicated that DL. 453 has given the maximum quantity of tender pods followed by DL. 250 and DL. 269. Though the four purelines are not equal in their yield pattern, they are distinct types each possessing certain well defined desirable pod characters (*vide* Table 1 and Figures 1 to 4.

The nutritive values of tender pods are given in Table 3.

TABLE 3. *Chemical analysis of green pods*

Purelines	Moisture %	Protein %	Fat %	Fibre %
DL.250 (CO2)	10.46	21.17	3.02	10.01
DL.269 (CO3)	9.22	21.67	4.31	9.00
DL.453 (CO4)	10.73	21.20	2.96	9.40
DL.692 (CO5)	11.16	21.03	2.82	11.50
Control	10.50	20.44	2.77	11.86

It is seen that all the four purelines possess higher protein content than the standard. The highly fleshy pods of DL. 269 contain the maximum fat followed by DL. 250, DL. 453 and DL. 692. The tender pods of DL. 453 and DL. 269 possess less fibre than the rest and the pods were fleshy and soft. The economic qualities of the four are as follows: DL. 453 is the highest yielding pureline with medium duration (215-220 days). The pods are broad, fleshy and medium long and purple in colour. DL. 250, though the pods are smaller in size, is prolific in yield and the crop is shorter in duration than others. DL. 269 produces larger size pods which are soft and fleshy. DL. 269 produces larger size pods which are soft and fleshy. DL. 692, though a late type with shy bearing nature, produces long, white pods in bunches which have a better appearance than the pods of other purelines. DL. 269 and DL. 692, though seem to be shy bearers have attained wide popularity for their soft and tasty pods and have earned good consumers' choice. These



FIG. 1 - CO2

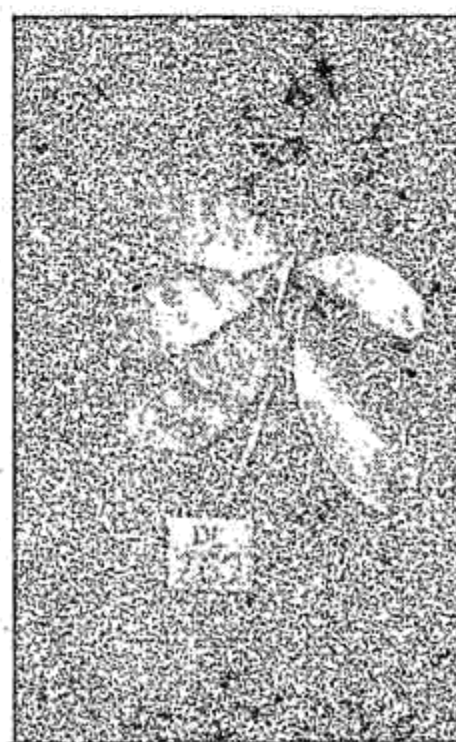


FIG. 2 - CO3



FIG. 3 - CO4



FIG. 4 - CO5

qualities, in addition to yield, have led to the evolution of four purelines of 'kitchen garden lab lab' and have recently been released as improved economic strains. They are DL. 250 as CO2 (*Chinnaavarai*) DL. 269 as CO3 (*Yanaikathu avarai*), DL. 453 as CO4 (*Sivappu avarai*), and DL. 692 as CO5 (*Kozhikkal avarai*) (vide figures 1 to 4).

These strains have been found suitable for growing under irrigation in all parts of Tamil Nadu.

Summary: The four strains of '*Pandal avarai*' (*Lab Lab niger* var. *typicus*) viz., (1) CO2, *Chinna avarai* (2) CO3, *Yanaikathu avarai* (3) CO4 (*Sivappu avarai*) (4) CO5, (*Kozhikkal avarai*), with distinct pod characters confirmed their superiority in yield and quality over the local type in the experiments conducted at the Pulses Section, Coimbatore. These four strains are recommended as the best "kitchengarden lab lab" or "*pandal avarai*" types for general cultivation.

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