

CO(Gb)14 – An extra early duration photo-insensitive high yielding avarai culture

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Abstract: An extra early duration Avarai (*Lablab purpureus* var *typicus* - Garden bean) culture COLT 22/1 was developed by hybridization and pedigree breeding. It is a hybrid derivative of CO 9 x CO 4, an extra early duration, dwarf, erect and high yielding culture. It matures in 70 - 75 days as vegetable crop and 80 - 85 days as seed crop. The culture COLT 22/1 has no tendrils and needs no clipping which saves 50 man days ha⁻¹. The total number of pods from a single plant in all the three pickings vary from 30 - 45 and the mean single plant yield varies from 95-150 g. After first picking of vegetables, the crop can be allowed to mature and can be harvested with in 80 - 85 days for seed purpose. It has recorded an average yield of 7984 kg ha⁻¹ of tender pods as against 6518 kg ha⁻¹ of pods by CO 13 and an increase of 22.49% over CO 13.

Key words: CO (Gb) 14, early duration, photo insensitive.

Introduction

Legumes are rich source of proteins and have multiple uses like food, feed, fuel, nitrogen fixing, soil tilth, soil binder and medicine. *Lablab purpureus* var. *typicus* (L.) is one of the important indigenous legume vegetable of India, grown for its fresh tender pods and green seeds. The crop has high variability and diversity among the pole types and bushy types.

From Tamil Nadu Agricultural University, so far thirteen lablab varieties were released. Among them seven are pole types and six are bushy types with tendril forming tendency. To have short duration and non-traditional types research has been initiated in the Department of Pulses, Tamil Nadu Agricultural University, Coimbatore.

Table 1. Overall performance of Avarai culture COLT 22/1

S.No.	Trials	Green pod yield (Kg/ha)	
		COLT 22/1	CO 13
1	Station trials (9)	10994	8850
2	Special ART (50)	4974	4186
	Overall mean	7984	6518
	Percentage of increase	22.49	--

Table 2. Performance of Avarai culture COLT 22/1 in station trials

Year	Season	Green pod yield (Kg/ha)	
		COLT 22/1	CO 13
1	<i>Rabi</i> 2003	11240	9580
2	<i>Summer</i> 2004	11680	10240
3	<i>Kharif</i> 2004	11420	8960
4	<i>Rabi</i> 2004	10300	7680
5	<i>Summer</i> 2005	12010	9870
6	<i>Kharif</i> 2005	11570	9160
7	<i>Rabi</i> 2005	9450	7950
8	<i>Summer</i> 2006	11030	8420
9	<i>Kharif</i> 2006	11250	8790
	Mean	10994	8850
	Percentage of increase over Co 13	24.2	

Table 3. Performance of Avarai culture COLT 22/1 in special ART

S.No.	District/ Location	Green pod yield(Kg/ha)	
		COLT 22/1	CO 13
	<i>Kharif</i> 2005		
	Coimbatore		
1	Sundakkamuthur, Perur	13194	4167
2	Madukkarai	8100	4010
3	Thaneerpandal, Thondamuthur	9722	7638
4	Veerapandi, P. N. Palayam	2639	2951
5	Athipalayam, S.S. Kulam	8620	6320
6	Peranaickanpudur, Avinashi	1750	2554
7	Chinnapudur, Annur	1476	2412
8	Ottarpalayam, Annur	1040	902
9	P. Vadugapalayam, Palladam	1500	2800
	Mean	5337.89	3750.44
	Percentage of increase over CO13	42.33	
	Salem		
10	Chennagiri	1041	1527
11	Pallakadu, Naduvalur	6110	5000
12	Kilakkadu, Karumandurai	1736	2083
13	Siruvachur	7986	8072
14	Kal igoundampalayam	10460	8965
15	Veerappampalayam	11667	9513
16	Sikkanampatti	6650	5200
17	Kadayampatti	1684	1056
18	Ramireddipatti	1720	1054
	Mean	5450.44	4718.89
	Percentage of increase over CO13	15.50	

Table 3. Contd....

S.No.	District/ Location	Green pod yield(Kg/ha)	
		COLT 22/1	CO 13
Dharmapuri			
19	Nallampalii, Dharmapuri	4828	4190
20	Ungaranahalli, Dharmapuri	3936	3318
21	Sunnampatti, Palacode	2562	2762
22	Karimangalam, Palacode	4281	4453
23	Vathalpatti, Pennagaram	5483	3686
24	Ragadahalli, Harur	8541	2013
	Mean	4233.0	2917.43
	Percentage of increase over CO13	45.09	
Krishnagiri			
25	Nallur, Hosur	4140	3850
26	Karapalli, Hosur	4260	4110
27	Mugalur, Hosur	4350	4160
28	Bargur	2500	3750
29	Krishnagiri, Mungil pudur	1575	1913
	Mean	3365.0	3556.60
	Percentage of increase over CO13	-5.20	
Summer 2006			
Coimbatore			
30	Kuniamuthur, Perur	12650	10000
31	K.Pongampalayam, Karamdai	9105	10200
32	Chevrur, Avinashi	10400	6590
33	Mangalam, Tirupur	7260	7015
34	Anupathi, Palladam	2700	3100
35	Pethanaicanoor, Palladam	4201	4861
36	Periyavadavalli, Udumalpet	6940	7640
	Mean	7608	7058
	Percentage of increase over CO13	7.79	
Salem			
37	Kombaipatty, Salem	5972	1215
38	Ammampalayam, Attur	2378	2257
39	Devannagoundanur, Sankari	3800	3900
40	Amaram, Mettur	4600	4650
41	Mettur	4650	4700
42	Omalur	4965	4548
43	Tharamangalam, Omalur	4025	3202
	Mean	4341.43	3496.0
	Percentage of increase over CO13	24.18	

Table 3. Contd....

S.No.	District/ Location	Green pod yield(Kg/ha)	
		COLT 22/1	CO 13
	Dharmapuri		
44	Pananhoppu	4101	3550
45	Nallampalli	5382	4111
46	Yelmichagal	2313	2352
47	Ponneri	2360	2562
48	Pennagram	2178	2465
49	Natch imaypatti	2400	2800
50	Maniampadi	2780	3130
	Mean	3073.43	2995.7
	Percentage of increase over CO13	2.57	
	Grand Mean	4974	4186
	Percentage of increase over CO13	18.87	

Table 4. Morphological description of the culture COLT 22/1

Sl.No.	Characters	Description
1	Plant habit	Dwarf, bushy, without tendrils
2	Stem colour	Green
3	No. of branches	3-4
4	Leaf	Simple, trifoliolate, medium size
5	Inflorescence	Terminal raceme
6	Flower colour	White
7	Pods	Green, flat, medium
8	Pod length	7.5-9.0 cm
9	Pod breadth	1.5-2.0 cm
10	No.ofpods/plant	30-35
11	No.of seeds/pod	3-4
12	Seed colour	Reddish brown
13	100 seed weight	34-36g
14	Seed to 50% flowering	40 - 42 days
15	Seed to vegetable	70-75 days
16	Seed to seed	80-85 days

Table 5. Incidence of major disease in COLT 22/1

S. Entries	<i>Kharif</i> 2004		<i>Kharif</i> 2005		<i>Rabi</i> 2005		<i>Kharif</i> 2006	
	Root rot (%)	Anthracnose (1-5 Grade)	Root rot (%)	Anthracnose (1-5 Grade)	Root rot (%)	Anthracnose (1-5 Grade)	Root rot (%)	Anthracnose (1-5 Grade)
1. COLT 22/1	5(R)	3 (MS)	8 (R)	3 (MS)	5(R)	1(MR)	6(R)	3(MS)
2. CO 13	7 (R)	5 (HS)	10 (R)	5 (HS)	8 (R)	3 (MS)	9 (R)	5 (HS)

Table 6. Incidence of spotted pod borer (*Maruca*) in COLT 22/1.

S.No. Entries	<i>Kharif</i> 2004 (<i>Maruca</i> Damage)*		<i>Rabi</i> 2005 (<i>Maruca</i> Damage)*		<i>Kharif</i> 2006 (<i>Maruca</i> Damage)*	
	Flower webblings (No/plant)	Pod damage (%)	Flower webblings (No/plant)	Pod damage (%)	Flower webblings (No/plant)	Pod damage (%)
1 COLT 22/1	15-18	15-20	5-10	15-20	2-5	5-10
2 CO 13	16-18	18-22	8-15	15-20	5-8	7-14

* Tolerent/compensatory ability

Table 7. Organoleptic evaluation of COLT 22/1 (Score in 9 point scale)

S.No.	Characteristics	COLT 22/1	CO 13
1	Colour and appearance	7	9
2	Flavour	8	8
3	Tecture	6	9
4	Taste	7	8
	Overall acceptability	7	9

Table 8. Protein and fibre content of COLT 22/1

S.No.	Entries	Protein (%)			Crude fibre (%)
		Green pod	Seed	Green Bean	Green pod
1.	COLT 22/1	6.74	21.8	11.2	3.01
2.	CO 13	6.24	23.7	10.9	2.86

Materials and methods

The avarai culture COLT 22/1 was developed by hybridization and pedigree breeding. It is a hybrid derivative of CO 9 (a mutant bushy type) x CO 4 (a pole type). From the segregating progenies a dwarf, short duration culture was isolated and studied further. The culture was tested in station trials during *kharif* 2004, *rabi* 2004-05 and summer 2005. It was promoted to special ART in four districts *viz.*, Salem, Dharmapuri, Coimbatore and Krishnagiri during *kharif* 2005 and summer 2006. Field screening was also carried out for reaction to pest and diseases.

Results and discussion

The overall performance of avarai culture was presented in table 1. In the station trials conducted from *rabi* 2003 to *kharif* 2006, the culture recorded a mean green pod yield of 10994 kg/ha which was 24.2 % increase over the check variety CO 13 (Table 2). In special ART conducted during *kharif* 2005 and summer 2006 in Salem, Dharmapuri, Coimbatore and Krishnagiri districts. This culture recorded a mean pod yield of 4974 kg/ha which was 19 % increase over the check variety CO 13 (4186 kg/ha) (Table 3). The over all performance of COLT 22/1 is 7984 kg/ha compared to the check CO 13 (6815 kg/ha).

The morphological description of the avarai culture is presented in table 4. It has shown tolerance /compensatory ability against spotted pod borer. Under field condition, this culture is moderately resistant to anthracnose and resistant to root rot. The reaction against pest and diseases for the avarai culture COLT 22/1 along with the check CO 13 are presented in table 5 and 6.

The results on organoleptic evaluation of the green pods also revealed the overall acceptability (Table 7). The avarai culture recorded an average yield of 7984 kg/ha of tender pods as against 6518 kg/ha of pods by CO 13 and increase of 22.49 % over CO 13. This has more consumer preference due to its good taste and flavour. The protein content of tender pods, green beans and seeds are 6.74, 11.2 and 21.8 percentages respectively and fibre content of green pods showed its superiority (Table 8).

By virtue of all the above special features of this new avarai culture COLT 22/1, it was released by Tamil Nadu Agricultural University as a new variety CO(Gb) 14 for general cultivation in the districts *viz.*, Salem, Dharmapuri, Coimbatore and Krishnagiri.