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CO. 4 A NEW HIGH YIELDING DROUGHT TOLERANT COWPEA VARIETY

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A high yielding selection CoVu. 1 isolated from the exotic germplasm type 'Russian Giant' suitable for rainfed as well as irrigated conditions was released as Co. 4 during 1983. It matures in 85 days. The plant type is erect with a tendency for lower branches for spreading. The seeds are greyish brown on cooking. Under rainfed conditions, on an average the grain yield of 916 kg/ha is obtained registering an yield increase of 20.2, 50.4 and 17.7 per cent over the ruling varieties Co 3, C. 152 and Co. 2 respectively. Under irrigated conditions, Co. 4, Cowpea has recorded a mean grain yield of 1572 kg / ha registering increased grain yield of 32.7, 37.5, and 49.9 per cent over Co. 3, C. 152 and Co. 2 respectively. Besides, this variety possess field resistance to stemfly and tolerance to wilt, rootrot and mosaic diseases.

In Tamil Nadu, Cowpea (*Vigna Unguiculata* (L) Walp.) is gaining more popularity and is currently grown over an area of about 75000 ha in all the Districts of Tamil Nadu with the exception of Nilgiris. This crop is grown in Tamil Nadu as a forage-cum-grain crop Co. 1 (Veerasamy, *et al.*, 1972) Vegetable-cum-grain crops - Co. 2 (Mahudeswaran *et al.*, 1973) and also purely for grain purpose-Co. 3, (PV. Marappan *et. al* 1980) C 152 and KM1. The major area under this pulse crop in Tamil Nadu is located in Madurai (18600 ha), Dharmapuri (12570 ha), Salem (7370 ha) Ramanathapuram (5452 ha), totalling nearly 49000 ha.

Cowpea is highly nutritious possessing 24-30 percent protein and methionine (5-7 mg/g of protein an important sulphur containing amino acid (Table 10). An intensive breeding programme was pursued in the cowpea crop at the Department of Agricultural Botany, School of Genetics, AC & RI, Tamil Nadu Agricultural University, Coimbatore to identify a genotype superior to Co. 3. The screening of germplasm of inter and external state and exotic origin and other materials has resulted in the identification of CoVu. 1 This CoVu. 1 is a selection from a type of Russian origin. It was systematically purified and tested against Co. 3 and C. 152.

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It was evaluated in the Dept. of Agrl. Botany. School of Genetics. Coimbatore (1980-1982) in 9 trials under rainfed conditions, University Research Stations (1980 and 1981) in three trials under irrigation and in 54 trials in farmer's fields (1980-1982) both under rainfed (19 Trials) and irrigated (37 trials). It was entered in the All India Coordinated Trials and tested in seven locations of Peninsular Zone.

RESULTS AND DISCUSSION

In the overall performance, the culture CoVu. 1 has given 916 kg /ha under rainfed culture as against 778, 762 and 609 kg / ha respectively for Co. 2, Co. 3 and C. 152 registering 18, 20, and 50% yield increase Under irrigation this culture recorded 1572 kg/ha as against 1185 kg/ha for Co. 3 and 1143 kg / ha for C. 152, and 1049 kg/ha for Co. 2 registering 33, 38 and 50% increase. Thus this culture CoVu. 1 was found to be superior to Co. 2., Co. 3 and C. 152 in yield (Table 1).

In the nine yield trials conducted at Tamil Nadu Agricultural University, Coimbatore under rainfed con-

Table 1. COWPEA - Co Vu. 1. Overall performance of grain yield (Kg/ha)

S. No.	Particulars	Rainfed					Irrigated				
		No. of trials	CoVu1	Co.3	Co.152	Co.2	No. of trials	Covu.1	Co.3	C.152	Co.2
1.	Yield trials CVT	7	889	—	651	—	—	—	—	—	—
2.	Yield trials TNAU Coimbatore	9	879	816	587	—	—	—	—	—	—
3.	Multi-location Trials	—	—	—	—	—	3	1295	1120	1143	894
4.	Adaptive Research Trials	19	989	707	590	778	37	1295	1120	—	1300
	Total	35					40				
	Mean		916	762	608	778		1572	1185	1143	1046
	% increase over			20.2	50.4	17.7			32.7	32.5	49.9
5.	Large Scale demonstration (1.00 ac)		1025								

Table-2 Cooking test results Mean Score Grade

Variety	Colour & Appearance	Flavour	Taste	Doneness	Overall Rank
CoVu.1	2.88	3.12	3.16	3.20	1
Co 3	2.96	2.84	2.04	2.60	3
C.152	2.68	2.80	2.92	2.84	3

Grade 4 : Highly acceptable 3 : Moderately acceptable 2 : Acceptable 1 : Not acceptable

Organoleptic test on Green pods

	Raw pod		Cooked Pod		
	Colour	Appearance	Colour	Appearance	Taste
CoVu.1	76.66	70.00	85.00	84.35	85.00
Co 2	69.33	70 00	85.00	84.33	91.00

*It is superior in flavour taste and doneness. In colour and appearance it was adjudged as almost equal to CO 3 and C.152.

Table 3. C owpea- Nutritional Aspects

Name of the variety	Protein (Percent dry matter)	Methionine (mg/g) protein
CoVu.1	30.00	7.40
Co.3	28.59	7.76
C.152	27.81	4.78
KM.1	28.90	6.92

Teble 4 Incidence of pests and diseases in CoVu. 1 and other ruling varieties

S. No.	Particulars	Percent		Susceptibility		
		CoVu.1	Co.3	Co.152	KM 1	Co.2
	DISEASE					
1.	Rootrot	0.00	0.00	0.9	2.1	0 1
2.	Mosaic	9.2	11.1	13.6	15.8	9.8
	PEST					
1.	Stemfly	4.5	27.9	16.3	51.2	24.0

ditions CoVu. 1 has given grain yield of 879 kg/ha as against 816 kg/ha for Co. 3 and 587 kg/ha for C. 152 and 468 kg/ha for KM. 1 (Table 1 and 3).

In the multilocation trials conducted in three University Research Stations during 1980-81 under irrigation culture CoVu. 1 gave a mean grain yield of 1295 kg/ha as against 1143, 1120 and 898 kg / ha respectively for C. 152, Co. 3, and Co. 2 (Table 1 and 4).

The Adaptive Research Trials conducted in farmer's holdings in different districts of the State has shown that in 19 trials under rainfed conditions culture CoVu. 1 has given a mean grain yield of 989 kg/ha as against 778, 707 and 590 kg / ha respectively for Co. 2, Co. 3, and C. 152 and 37 trials under irrigation CoVu. 1 has recorded 1849 kg/ha grain yield as against 1300 kg ha and 1250 kg/ha for Co. 2 and Co. 3 respectively.

Culture CoVu. 1 was included as an entry in the All India Coordinated Varietal Trial in the Penninsular region in twelve locations and of these; seven successful trial results were obtained. The results showed that culture CoVu. 1 has wider adaptability. It recorded mean grain yield of 889 kg/ha as against 651 kg/ha for C 152 (Table 1 and 2).

The organoleptic test for the pulse grains as well as for its green tender pods carried out in the Food Technology Department of the Tamil Nadu Agricultural University revealed the superiority of this culture (Vide Table 2). It is found to be superior in flavour, taste and doneness. In Colour and appearance it was adjudged as almost equal to Co. 3 and C. 152 Regarding the test conducted on green tender pods, it was found to be equally good as that of the Co. 2 vegetable cum grain type

Regarding the incidence of pest and diseases, the scoring made by the Entomologist revealed that CoVu. 1 is free from Rootrot and mildly susceptible to mosaic virus diseases. Regarding Stemfly, CoVu. 1 is least susceptible compared to Co. 3, C. 152, KM. 1 and Co. 2 as well (Vide Table - 4).

Cultivation of this new variety Co. 4 as a pure crop will provide a net income of Rupees 2000 under irrigated condition and Rs. 1400/= per ha under rainfed conditions

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