

CO. 5 A NEW BLACKGRAM VARIETY FOR DRY FARMING

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... attempt to develop a short duration blackgram variety for rainfed cultivation, BP. 3 a pureline selection from Musiri local was isolated. The culture was tested under rainfed, irrigated and rice fallows condition against Co. 3 and Co. 4. It recorded a mean grain yield of 740 kg/ha in comparison to 597 and 532 kg/ha for Co. 4 and Co. 3 respectively under rainfed condition. Under irrigated condition BP. 3 recorded 1273 kg/ha compared to 1044 kg/ha for Co. 3 and 1224 kg/ha for Co. 4. Under rice fallows condition, BP. 3 recorded a mean grain yield of 931 kg/ha as against 715, 710 and 445 kg/ha for ADT. 2, TMV. 1 and ADT. 1 respectively. It is moderately resistant to powdery mildew, leaf crinkle, tip blight and pod borer. This culture is released as Co. 5 for general cultivation in Tamil Nadu.

In Tamil Nadu, blackgram (*Vigna mungo* (L.) Hepper) is grown in 2.1 lakh hectares (20% of the total pulse area) with a production of 0.65 lakh tonnes (22 percent of the total pulse production). It is mainly grown as a catch crop under rice fallows condition in Thanjavur, Tiruchirapalli and Tirunelveli districts. It is also grown as rainfed crop during South West and North East monsoon and to a little extent, raised as irrigated crop during summer. Breeding for improved blackgram varieties in earlier days resulted in the release of Co. 1, Co. 2, Co. 3 and Co. 4 from Coimbatore. Among them Co. 1 and Co. 3 are suited for rainfed condition but with longer duration of 110 and 85 days respectively. Hence an attempt was made to evolve a variety with a duration shorter than Co. 1 and Co. 3. As a result, a variety Co. 5 was released during 1981 for general cultivation in Tamil Nadu.

MATERIALS AND METHODS

A thorough search was made in the available germplasm collections maintained at Millet Breeding Station, Tamil Nadu Agricultural University, Coimbatore. A pureline (BP.3) from Musiri local was identified in 1972 and this progeny was evaluated in 1973 in progeny row trial and in various trials in the subsequent years against the local checks under rainfed, rice fallows and irrigated conditions throughout Tamil Nadu. This culture was also tested under All India Coordinated trials in peninsular zone against the national check T. 9.

RESULTS AND DISCUSSION

The selection B P. 3 was tested both under rainfed as well as irrigated condition at Coimbatore campus and other University centres from 1975 onwards. Under rainfed condition it recorded a mean grain yield of 794

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kg/ha as against 603 and 660 kg/ha recorded by Co. 3 and Co. 4 respectively (Table 1). Under irrigated condition, it gave a mean grain yield of 1273 kg/ha as against 1224 and 1044 kg/ha recorded by Co. 4 and Co. 3 respectively. The increase was in the order of 21.9 percent over Co. 3, and 4.0 percent over Co. 4 (Table 2).

When this selection was tested under rice fallow condition (Paddy Breeding Station, Coimbatore), it recorded mean grain yield of 931 kg/ha as against 445, 715 and 710 kg/ha recorded by ADT. 1, ADT. 2 and TMV. 1 respectively, with an increase of 109.2, 30.2 and 31.1 per cent over ADT. 1, ADT. 2 and TMV.1 respectively (Table 3).

Table 1. Mean performance of BP. 3 Blackgram under rainfed condition

Particulars	No. of Trials	Grain Yield kg/ha			
		BP. 3	Co. 3	Co. 4	T. 9
University Centres	9	794	603	660	
Co-ordinated Trials	15	636	422	482	532
Adaptive Research Trials	37	766	609	—	—
Overall mean		746	597	532	532
Duration		73	85	70	65
Per day productivity kg/ha		10.2	7.0	7.6	8.2

Table 2. Mean performance of BP. 3 Blackgram under irrigated condition

Entry	Yield kg/ha.	Duration days	Per day productivity kg/ha.
BP. 3	1273	75	17.0
Co. 3	1044	85	12.2
Co. 4	1224	70	17.4

Table 3. Mean performance of BP. 3 Blackgram under rice fallows

Entry	Yield kg/ha.	Duration days	Per day productivity kg/ha.
BP. 3	931	73	12.7
ADT. 1	445	80	5.5
ADT. 2	715	80	8.9
TMV. 1	710	70	10.1

This selection was also tested at 37 locations in different districts of Tamil Nadu at farmers' holdings under rainfed condition. It gave a mean yield of 766 kg/ha as against 617 kg/ha recorded by Co. 3 with an increase of 25.8 percent over Co. 3 (Table 4).

The selection BP. 3 was tested under All India Co-ordinated Trials in South and South East zone during 1979-1982. It recorded a mean grain yield of 636 kg/ha as against 472 and 532 kg/ha recorded by Co. 3 and T. 9, with an increase of 47.2 and 19.5 percent over Co. 3 and T. 9 respectively (Table 5).

Table-5 Morphological characters of EP. 3, Co. 3 and Co. 4 Blackgram

Character	BP. 3	Co. 3	Co. 4
Plant height (cm)	35.0	31.0	30.0
No. of branches/plant	2.0	1.6	2.0
Clusters/plant	11.1	10.7	12.7
Pods/plant	34.1	30.0	31.7
Seeds / pod	7.9	7.5	7.5
Pod length (cm)	5.8	5.4	5.6
Hairiness of pod	Hairy	Hairy	Glabrous
100 grain weight (g)	5.1	4.5	5.0
Grain colour	Black dull	Black dull	Black dull
Grain size	Bold	Bold	Bold

The morphological description of this selection is presented in Table 5. It matures in 70-75 days as against 85 days of Co. 3. Plants are erect in habit with bolder grain with dull black colour. It is moderately resistant to tip blight, powdery mildew and leaf crinkle virus. It is also moderately resistant to pod borer (Table 6).

This variety is highly acceptable to the farmers and consumers. Being

earlier than Co. 3 by 10 to 15 days and higher yielding than Co. 3 and Co. 4, it is preferred by the farmers and hence released as Co. 5 blackgram for general cultivation.

The authors are grateful to the pathologists and entomologists (AIC PIP) for screening this culture at various stages for its reaction to the major diseases and pests.

Table 4. Performance of BP. 3 Blackgram in Farmers' holding (Rainfed)

Season	Location	Yield kg/ha.	
		BP. 3	Co. 3
1975-77	Telungupalayam	600	700
	Madukkerni	500	525
	Erode	813	635
	Thondamuthu	500	500
	Madukkarai	1000	813
	Pappanaickenpalayam	825	825
	Madukkarai	605	440
	Pudupalayam	880	760
	Alandurat	938	770
	Perur	1500	1000
	Sanganur	1125	850
	Sulur	1125	850
	Avarampalayam	1241	910
	Perianaickenpalayam	1115	900
1977-78	Chingleput	990	770
	Mamandur	450	350
	Salem	685	640
	Tenkasi	400	420
	Tirunelveli	300	250
	Sankaranakudi	310	240
	Vellore (NA)	405	348
	Anamalai	710	575
	Karambakudi	400	275
	Marukkadam	775	680
	Veerapandi	920	720
	Pachapatty	691	444
	Katchiperumai	247	394
	Tiruraiyur	301	312
1978-79	Theethampatti	700	625
	Karambakudi	900	625
	Manikendan	691	494
	Madukkarai	775	638
	Veerapandi	916	816
	Kamachipuram	1175	815
	Pudukkottai	700	625
	Kinathukadavil	775	668
	Erode	950	600
	Mech	166	617

Table 6. Performance of BP 3, Blackgram under All India Coordinated Trials (1978-1982)

Year	Season	AICPIP Centre	Yield kg/ha.		
			BP. 3	Co. 3	Co. 5
1978	Kharif	Coimbatore	326	300	220
1979	Kharif	Coimbatore	369	252	213
		Berhampur	333	—	—
		Pattambi	675	—	—
		Coimbatore	1170	745	1039
		Pattambi	875	—	—
		Akola	305	—	—
1981	Rabi	Pattambi	1056	—	919
		Lam	1000	—	722
		Coimbatore	675	—	450
		Vamban	376	—	448
		Pajyur	777	—	276
1982	Rabi	Pattambi	663	—	615
		Coimbatore	405	—	420
		Mean	636	432	532
		% Increase		47.2	19.5

Table 7. Reaction to diseases and pests

Disease/Pest	BP. 3	Co. 3	Co. 4
Tip blight	11.0 (MS)	8.0 (MR)	13.0 (MS)
Powdery Mildew (Grade)	2.0 (MR)	2.0 (MR)	4.0 (S)
Leaf Crinkle (%)	7.0 (MR)	1.0 (R)	9.0 (MR)
Pod borer	5.9 (MR)	4.6 (R)	2.5 (R)

MS : Moderately susceptible

MR : Moderately Resistant

R : Resistant

S : Susceptible