SHORT COMMUNICATION

IC 259084 – A New Early Maturing Productive Genotype of Cowpea

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Key words: Cowpea, Genotype, Disease resistance

Cowpea is a dual purpose pulse crop of arid and semi-arid regions of India and world. Its grain is consumed by humans, while vegetative part is the principal component of cattle feed. It is thus an indispensable component of farming system. The productivity profile is very low mainly because of lack of disease resistant productive varieties in cowpea.

Cowpea germpalsm (169 genotypes) received from NBPGR, New Delhi were evaluated in RCBD with two replications during rainy seasons of 2004 and 2005 at the Department of Genetics and Plant Breeding, University of Agricultural Sciences (UAS), Dharwad. Each genotype was planted in two rows with check entries GC-3 and C-152. The observations on disease incidence was taken at three different stages of crop duration. Disease scale (0-9) was used to assess the disease and its incidence (Mayee and Datar 1986). Out of 169 lines, the most elite 20 genotypes were selected based on their productive characters and disease resistance (Lesly *et al.*, 2005) for further hybridization programmes. The performance of these genotypes are given in Table 1 and Table 2 in comparison with checks.

From this evaluation, among the 20 genotypes, the most promising genotype IC259084 was identified as an early maturing genotype with productivity of 1855 kg/ha. It took less than 62 days of physiological maturity (Table 3).Its yield level was 10% higher than state check C-152 and National Check GC-3. It grows to a height of 42 cms, flowers within 45 days after sowing. The duration of flowering and maturity is 10 to 18 days lesser than C-152 and GC-3. Its flower colour is mauve-purple. Thus it has the ability to escape terminal drought. The productivity components like number of clusters per plant and number of pods per plant are higher in IC259084 variety than the checks. The key morphological features of IC259084 are provided in Table 4. Diseases are another

Table 1. Means of productive characters of elite cowpea lines with checks

Genotype	Plant height	Days to flowering	Clusters/ plant	Pods/ plant	Pod length	Seeds/ pod	100 seed weight	HI	Yield/ plant
IC97767	39.0	68.0	12.0	20.0	15.5	14.0	12.6	0.27	23.5
IC97829	41.5	77.0	12.0	20.0	12.5	12.0	10.5	0.21	11.5
IC202778	42.5	73.5	5.5	7.5	13.5	11.0	14.9	0.18	12.8
IC202779	44.5	70.0	5.0	6.0	14	11.0	19.8	0.19	13.3
IC202781	40.5	70.5	4.0	4.5	14	11.0	19.8	0.10	8.3
IC202782	41.5	73.0	8.5	6.0	11.5	11.0	9.4	0.23	10.9
IC202786	49.5	74.0	5.5	7.5	11.5	10.5	19.1	0.11	10.2
IC202797	42.5	78.5	11.5	13.0	12	11.0	17.0	0.29	25.3
IC214836	37.5	72.0	6.0	12.0	15.5	13.0	12.1	0.17	12.1
IC219607	37.5	65.0	8.5	10.0	12	10.5	10.7	0.19	11.1
IC243353	37.5	69.5	5.0	10.5	13	11.5	11.1	0.20	12.1
IC259081	38.0	67.0	8.5	16.0	18	11.0	13.6	0.24	20.1
IC259085	53.5	69.5	10.5	15.5	13	11.0	11.1	0.19	19.5
IC202784	40.0	72.0	6.5	8.5	13	11.0	21.0	0.19	14.5
IC68786	41.5	64.5	8.0	18.5	12.5	10.9	10.9	0.25	23.5
IC259084	42.1	44.7	12.6	17.2	13.1	11.4	14.4	0.23	27.4
EC394805	39.5	69.0	5.5	14.0	14.5	8.5	20.0	0.20	12.9
Goa local	46.0	71.0	6.9	15.0	14.5	12.7	12.8	0.24	20.5
Bailahongal local	47.3	74.5	11.6	17.5	13.0	10.6	10.7	0.22	17.8
V118	50.0	56.5	15.0	25.5	14.5	10.0	13.9	0.17	11.8
C152	47.5	52.5	8.5	13.5	12.5	10.5	10.5	0.25	16.4
GC3	47.4	60.7	12.2	15.0	12.5	11.5	14.1	0.23	13.8

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Table 2. Disease resistance and other characters of elite cowpea lines with check

Genotypes	Growth	Physiological	Disease Resistance				Seed characters		Intra Cluster Distance	
	Habit	Maturity	YMV	Rust	BLB	PM	Colour	Size	Season 1	Season2
IC 97767	IS	72.5	R	R	R	MR	Dark Brown	M	23.72	24.74
IC 202797	IB	81	HS	R	MR	MR	Brown	L	28.68	27.39
IC 243353	D	76.5	HS	HS	HS	S	Brown	M	0.00	25.88
IC 259081	IB	75.5	HS	MR	HS	S	Dark Brown	M	20.31	30.53
IC 259085	D	76	HS	S	S	S	Cream	M	27.76	27.75
IC 97829	IB	85	R	HS	S	MR	Brown	M	24.69	0.00
IC 202778	D	79	HS	S	MR	MR	Brown	L	28.36	25.41
IC202782	D	81	S	MR	M	MR	Cream	M	23.33	22.75
IC 214836	IB	81	HS	S	MR	S	Ash	M	22.13	26.80
IC 219607	IB	76.5	S	R	MR	S	Cream	M	24.94	27.47
IC 68786	IS	71.5	HS	R	MR	S	Cream	M	23.55	25.97
IC 202779	D	73	S	S	HS	S	Brown	L	28.68	26.33
IC 202781	IB	79	HS	S	S	MR	Brown	L	22.13	29.77
IC 202786	D	81	HS	MR	S	MR	Brown	L	26.27	24.59
IC 202784	IB	79.5	S	MR	S	MR	Brown	L	28.24	26.99
IC 259084	D	62.0	R	MR	MS	MR	Cream	M	28.24	28.99
EC 394805	IS	81	S	S	MR	S	Brown	L	25.81	25.97
Goa Local	IS	77	S	MR	S	MR	Brown	L	25.47	25.18
Bailahongal local	IB	77	MR	S	S	MR	Brown	M	0.00	25.97
V118	D	65.5	S	MR	MR	S	Cream	M	0.00	28.99
C152	IB	74	HS	HS	MR	S	Brown	M	24.86	28.22
GC3	D	85.5	S	S	S	MR	Cream	M	24.86	28.22

D:Determinate, IB:Inderminate bushy, IS indeterminate spreading, S:Susceptible, HS:Highly susceptible, R:Resistance, MR:Moderately resistance L:Large, M:Medium, S:Small YMV: Yellow mosaic virus, BLB: Bacterial Leaf Blight, PM: Powdery mildew

Table 3. Mean performance of cowpea genotype IC259084 along with check varieties during 2004 and 2005

	Plant height	Days flower Initiation	Days flower termination	Physio logical Maturity	No.of Branches/ plant	No.of Clusters/ plant	No.of Pods/ plant	Pod length	Seeds/ pod	Test weight	Harvest index	Yield Kg/ha	% increase over check
IC259084	42.07	44.75	58.0	62.0	4.1	12.67	17.23	13.14	11.43	14.47	0.23	18.55	10.77
C-152	47.16	52.50	66.0	71.5	4.4	9.35	15.55	13.77	11.65	12.16	0.25	16.44	
GC-3	47.62	60.75	74.5	80.75	4.95	12.27	15.55	12.65	11.60	14.10	0.23	15.33	

Table 4. Key morphological features and disease reaction of cowpea genotype IC259084

Genotype	Seed colour	Seed size	Plant type	Flower colour	Rust	Yellow Mosaic Virus	Bacterial Leaf Blight	Powdery Mildew
IC 259084	Creamish white with black eye	Medium	Determinate	Mauve purple	Moderately resistant	Resistant	Moderately susceptible	Moderately resistant
C-152	Brown	Medium	Semi determinate	Mauve purple	Highly susceptible	Highly susceptible	Moderately resistant	Susceptible
GC-3	Cream	Medium	Indeterminate	Mauve purple	Susceptible	Susceptible bushy	Susceptible	Moderately

challenge to cowpea production. Rust and mosaic virus are most destructive diseases. IC259084 is highly resistant to mosaic virus, moderately resistant to rust and powdery mildew and moderately susceptible to bacterial leaf blight compared to other two checks. The plant type of IC259084 is determinate which is a highly desirable attribute in this crop. The seeds are creamish white in colour with black eye spot and are medium sized with 100 seed weight of 14.47 gms.

References

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