

## Performance of Redgram (*Cajanus cajan*) Genotypes In *Rabi* Season

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The performance of redgram genotypes in *Rabi* season was studied under rainfed conditions. Duration was reduced by 19, 24 and 16% in short, medium and long duration varieties respectively, compared to their normal duration in *Kharif* season. In the case of height also, reduction upto 45% was recorded. Seed size and pod number were reduced. Yellow mosaic virus was recorded in *rabi* which was not prevalent in *kharif*. Variety LRG-30 gave the highest yield of 12.84 q/ha.

Redgram is an important pulse crop in Andhra Pradesh, cultivated over an area of 1.95 lakh ha with an annual production of 45,000 tonnes. It is essentially a *kharif* season crop raised under rainfed conditions. The sowings commence with the onset of monsoon during June-July. There is considerable scope to grow this crop during *rabi* season (October to February-March) also on black soils under rainfed conditions. In rice fallows, greengram and blackgram are grown after the harvest of first rice crop. These crops are highly susceptible to virus and powdery mildew diseases. The yield obtained is only 2 to 3 q/ha. Greater outturn may be obtained if a suitable variety of redgram is evolved for growing under these conditions. Redgram varieties differ in their duration, flowering and branching habit. The long duration varieties mature early in *rabi*, growth is not luxurious and so more plants can be planted per unit area. Thus investigation was undertaken to study the behaviour of different genotypes of redgram in *rabi* and to fix up a suitable variety.

### MATERIAL AND METHODS:

In *rabi*, 1978-79, a trial was conducted at Agricultural Research Institute, Rajendranagar, with 15 varieties. Each variety was sown in 8 rows of 5m length, 45cm apart with a plant spacing of 10 cm. The soil was heavy black clay. The net plot size was 5 × 2.7m. Sowing was done on 20th November after giving a soaking irrigation. This was followed by another irrigation 7 days later to promote even germination. Fertilizers at 20 kg. N and 40 kg. P<sub>2</sub>O<sub>5</sub> /ha were applied at the time of sowing.

Observations were recorded on branching, height of the plant, flowering, habit of the plant, days to maturity, pods per plant, 100 seed weight, incidence of yellow mosaic virus and yield.

The varieties were also evaluated in *kharif* season in randomised block design with four replications. The net plot size was 7.5 m<sup>2</sup> Sowing was done on 11th July, 1978.

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### STUDY OF GENETIC STOCK :

One hundred lines of germplasm differing in maturity, height, branching habit were also raised during *Rabi* season of 1978-79 to study their behaviour. Each type was raised in a single row of 5 m length with a spacing of 45 cm between rows and 10 cm between plants in a row. Sowing was done on 20-11-1978 after a soaking irrigation. Another irrigation was given a week later. Data on plant height branching habit, flowering habit, days to maturity, incidence of pests and diseases were recorded. Spraying of Endosulfan at 0.07% was done twice in both the experiments to control pod borers.

### RESULTS AND DISCUSSIONS:

Variety LRG-30 recorded the highest yield of 1284 kg/ha followed by LRG-36 (1157 kg/ha) and LRG-26 (1127 kg/ha) (Table I) These varieties matured in 170-175 days in the *kharif* season (Table II). Compared to early maturing varieties like HY-1 and C-53, medium duration varieties performed better in *rabi*. However, the duration was very much reduced in *rabi*. LRG-30 matured in 125 days in *rabi* compared to 170 days in *kharif*. Similar reduction in duration was seen in the other varieties also. The varieties were short in stature in *rabi*. The reduction in the height was 46% in case of LRG-30. The indeterminate types like LRG-30, ST-1 and PDM-1 flowered and matured like determinate types. Reduction in grain size and pods/

plant was also recorded during *rabi* season. Yellow mosaic virus was recorded upto 22% in *rabi* while this disease was not prevalent in *kharif*. The highest incidence of 21.5% was recorded in HY-3-C and 20% in LRG-6. The incidence was lowest (9.9%) in LRG-30, ST-1 and PDM-1.

These observations show that redgram can be successfully grown in *rabi* under rainfed conditions in heavy soils with high moisture retentive capacity. Medium duration varieties which mature in 170-180 days in *kharif* are best suited for *rabi*. Flowering and branching habits have no influence on yield during *rabi* as all the types behaved like determinate types and had short stature. Seed size was reduced by about 10% in *rabi* compared to *kharif*. Yellow mosaic virus which was not observed during *kharif* was noticed in *rabi* to a great extent and this may be a limiting factor in spreading *rabi* cultivation of redgram.

Selection LRG-30 was the highest yielder in both *kharif* and *rabi*. The incidence of yellow mosaic virus was also low (9.9%) in LRG. 30. Hence LRG. 30 is considered good for cultivation in *rabi*.

### ACKNOWLEDGEMENT;

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TABLE-I Performance of redgram genotype in *rabi*

Genotype	Habit	Height (cm)	Flowering habit	Days to maturity	Pods/ plant	100 seed weight (g)	Incidence of YMV%	Yield (kg/ha)
LRG-30	Semi-spreading	79	Determinate	125	138	6.0	9.9	1284
LRG-36	-do-	73	-do-	128	177	5.8	12.7	1157
LRG-26	-do-	84	-do-	130	119	6.0	11.9	1127
PDM.1	-do-	89	-do-	127	86	7.2	15.8	1000
ST-1	-do-	63	-do-	125	82	7.9	17.0	988
A-148	-do-	74	-do-	130	110	8.9	16.4	882
HY-4	Semi-erect	108	-do-	128	132	8.5	18.1	855
LRG-1016	Semi-spreading	74	-do-	132	152	7.0	18.2	852
LRG-6	-do-	94	-do-	130	174	6.9	20.2	778
C.159	-do-	79	-do-	134	62	8.0	19.5	778
Muktha	-do-	71	-do-	134	105	6.5	16.4	744
C-53	-do-	73	-do-	130	54	8.0	17.9	701
HY-1	Spreading	67	-do-	132	92	10.0	19.0	595
HY-2	Semi erect	59	-do-	130	115	10.0	10.9	333
HY-3 (c)	Erect	56	-do-	140	42	13.5	21.5	278
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TABLE II Performance of Redgram Genotypes in *Kharif*

Sl. No.	Genotype	Habit	Height (cm)	Flowering habit	Days to maturity	Pods/plant	100 seed weight (g)	Yield in (kg/ha)
LRG-30		Semi spreading	146	Indeterminate	170	470	8.0	2315
LRG-36		-do-	168	-do-	174	530	7.0	1883
LRG-26		-do-	147	-do-	170	360	8.0	2052
PDM-1		-do-	145	-do-	170	283	8.0	2052
ST-1		-do-	133	-do-	160	353	8.0	2022
A-148		-do-	190	-do-	175	305	8.8	908
HY-4		Semi erect	129	-do-	155	79	11.4	183
LRG-1016		Semi spreading	139	-do-	165	280	7.0	1512
LRG-6		-do-	151	-do-	165	465	7.0	1543
C.159		-do-	130	-do-	160	120	9.0	1317
Muktha		-do-	155	-do-	170	200	7.9	543
HY-1		Spreading	95	-do-	135	80	11.2	700
C.53		Semi spreading	135	-do-	155	70	9.0	1194
HY-2		Semi erect	148	-do-	160	124	13.3	743
HY-3(C)		Erect	160	Determinate	180		16.0	344
				CD				643