



## Performance of Blackgram Cultivars During Rabi in Nizambad District, Andhra Pradesh

**Key words :** Blackgram, temperature, Yield .

Blackgram (*vigna mungo* (L) *Hyper*) is an important pulse crop which contains high quality vegetable protein and satisfactory amounts of minerals and vitamins. It is cultivated throughout the year in almost all parts of India. It contributes 13% to total pulse production. This crop is having wider adoptability and is suitable for mixed cropping. It is cultivated as pure crop in *kharif* or in rice fallows (*rabi*) or as a mixed crop with another pulse (pigeonpea) or millet (sorghum) in loamy to clay and black cotton soils in rainfed situations of Andhra Pradesh.

It is grown during *rabi* after rice in many mandals of Nizambad district. The association between temperature and yield and yield attributing characters is important to decide proper sowing time of Blackgram. Sowing time a non monetary input is the single most important factor to obtain optimum yield (Samanta *et al.*, 1999) In Nizambad district during *rabi* temperature falls down some time even to less than 10<sup>0</sup> C.

A field trial was laid out in Randomized Block Design with 11 entries during *rabi* 2007-08 and *rabi* 2008-09 at RS & RRS, Rudrur, Nizambad. Minimum and maximum temperatures during crop growth periods were recorded. Each entry was replicated three times with recommended agronomic practices. The spacing adopted was 30 X 10 cm.

Growing degree days were calculated with the equation  $GDD = (T_{Max} + T_{Min} / 2 - T_t)$  where  $T_{max} + T_{min} / 2$  is the minimum threshold temperature for a crop. The threshold temperature varies with different plants and for the majority ranges from 4.5 to 12.5<sup>0</sup>C, there being higher values for tropical plants and lower value for temperate plants according to Mavi (1986). Base temperature for Black gram was taken as 10<sup>0</sup>C.

During October sowings in 2007-08 the mean minimum temperature recorded is 14.7<sup>0</sup>C and the mean maximum temperature recorded is

30.94<sup>0</sup>C due to which less number of growing days (228.2) and early maturity (91 days) and resulting in less mean yield (1018 kg/ha). December sowings during 2008-09 the mean minimum temperature recorded is 17.36<sup>0</sup>C and the mean maximum temperature recorded is 32.14<sup>0</sup>C due to which more number of growing degree days (247.5) and late maturity (106 days) and resulting in more mean yield (1413 kg/ha). It might be due to the high temperatures increased the duration thereby effective heat units or growth units due to which the plant accumulates the higher food products which ultimately increased the yields. Sinha *et al* (1989) also reported that as mungbean being a warm season plant produces higher yields at the optimum mean temperature range of 25 - 30<sup>0</sup>C and Wang *et al.* (2006) reported that minimizing the exposure of chickpea to abiotic stresses increased the seed yield.

Similar results were reported by Miah *et al.* (2009) that under Bangladesh conditions higher seed yield was obtained from 2<sup>nd</sup> March sowings might be due to suitable temperature prevailing accompanied by higher soil moisture content due to sufficient rainfall in April which enhanced the vegetative as well as reproductive growth of the crop.

During both the years, cultivars LBG 735 and LBG 734 performed well and registered higher yields, significantly better than rest of the cultivars tested. There was no change in the yield level of cultivar LBG 752 during both the years and this can be considered as a poor yielder. LBG 709c did not fare well during 2007-08 (October sowing), but it gave reasonably good yields during 2008-09 (December sowing).

It is apparent from the results that December sowing is ideal for blackgram in Nizamabad district of A.P and cultivars LBG 734 and LBG 735 with good yield potential are suitable for this agro-climatic situation.

Table Performance of blackgram cultivars during *RABI* in Nizamabad.

S.No	Entry no.	RABI 2007-08					RABI 2008-09				
		Plant height (cm)	No.of Branches/ /plant	No.of clusters/ plant	No.of pods/ plant	Seed yield (kg ha <sup>-1</sup> )	Plant height (cm)	No.of Branches/ /plant	No.of clusters/ plant	No.of pods/ plant	Seed yield (kg ha <sup>-1</sup> )
1	LBG716	40	6	8	27	853	49	9	14	40	1071
2	LBG723	39	7	9	29	1023	50	7	10	32	1513
3	LBG728	44	7	9	30	1125	53	8	14	42	1717
4	LBG729	42	6	10	39	1156	45	8	9	32	1989
5	LBG734	37	6	9	30	1308	49	8	11	35	2085
6	LBG735	38	6	7	30	1338	47	8	14	44	2146
7	LBG756	42	6	8	23	813	40	7	15	36	878
8	LBG741	44	7	8	23	754	43	8	10	26	1081
9	LBG748	38	6	8	23	822	55	8	10	31	1051
10	LBG749	47	6	8	27	868	52	11	11	38	1166
11	LBG752	31	5	6	16	624	47	9	10	22	923
12	LBG645 c	44	7	9	28	938	54	9	12	37	1022
13	LBG709 c	43	7	10	34	746	49	11	13	38	1725
	SEM+	4	0.8	1.1	2.9	0.23	3.0	0.9	0.6	1.9	0.33
	C.D. (0.05)	NS	NS	2.26	6.03	0.87	6.1	1.9	1.2	3.9	0.68

DOS =24-10-2007  
 DOH = 22-01-2008  
 Crop duration = 91 days

DOS =03-12-2008  
 DOH = 18-03-2009  
 Crop duration = 106 days

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Regional Sugarcane and Rice Research Station  
Rudrur, Nizamabad  
Andhra Pradesh

**N K Gayathri**  
**G E Ch Vidyasagar**

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