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PERFORMANCE OF K-8 SORGHUM IN SOUTH TAMIL NADU

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ABSTRACT

The sorghum variety K-8 is a short duration high yielding variety suitable for rabi season in the southern districts of Tamil Nadu. Its average grain yield is 2440 kg/ha which is 23.3 per cent more than K-5. Grain and straw are good in quality and hence valuable as a food and feed crop. It is non-lodging and resistant to terminal drought. It is moderately resistant to major pests and diseases.

In Tamil Nadu, sorghum is grown in an area of 6.9 lakh ha. Sorghum varieties/hybrids cultivated in central, northern and north-western districts in kharif season are not suitable for cultivation in rabi season in the southern districts and viceversa. K5, IS.3541, K tall etc., are some of the rabi sorghum varieties/hybrids specifically adapted to southern region. The hybrid, K tall is noted for its vigour and earliness but it is highly susceptible to lodging, causing considerable loss in production. Further, it is very difficult to produce hybrid seed in the area of cultivation itself. Other varieties under cultivation are not comparable to K tall. It was under these circumstances and in order to find out a short duration variety with yield potential comparable with the hybrid K.tall, breeding work was taken up in the Agricultural Research Station, Kovilpatti and this resulted in identification of K 8 as a highly suitable variety for the southern districts of Tamil Nadu.

MATERIALS AND METHODS

Introduction of high yielding varieties and cultures from various sources did not yield the desired result. Therefore, concerted effort was taken to evolve high yielding cultures through recombination breeding. Evaluation of breeding lines culminated in the identification of a culture KS 6312, a derivative of the cross IS.12611 x SC.108. The superior performance of this culture was confirmed through a series of yield trials at various stages. This culture was also screened for drought, major pests and diseases. Organo-leptic tests were also conducted.

RESULTS AND DISCUSSION

In the state trials, that included the research station, multi-location and adaptive research trials, KS 6312 recorded a mean grain yield of 2440 Kg per hectare registering 23.3 per cent increase over K 5 (1978Kg/ha), the check variety (Table 1). In the research station trials laid out during rabi season under rainfed condition since 1983, KS 6312 produced a mean grain yield of 3088 Kg/ha as against 2564 Kg/ha by K 5. Similarly, in multilocation and adaptive research trials conducted in 34 location in seven southern districts in rabi season, KS.6312 recorded a mean grain yield of 1994 Kg and 2237 Kg/ha registering 25.4 and 25.6 per cent increase over K 5 respectively. It has given a mean straw yield of 8.8 t/ha with 10 per cent increase over K 5. In the All India Co-ordinated trals conducted in late kharif and rabi seasons during 1987 in four southern states, KS 6312 designated as culture SPV 893 produced a mean grain yield of 2170 Kg / ha registering a

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Table 1: Performance of KS 6312 in State and All India co-ordinated trials

Particulars	No.of trials	Grain yield kg/ha		% increase over K.5	Straw yield t/ha		% increase over K.5
		KS 6312	K.5		KS 6312	K.5	
Kovilpatti State Trials Station Trials	5	3038	2564	20.4	10.1	9.6	5.2
Multilocation - Regional Stations	5	1994	1590	25.4	9.3	8.3	12.0
Adaptive Research Trials	34	2237	1781	25.6	6.9	6.2	11.2
Mean	-	2440	1978	23.3	8.8	8.0	10.0
All India Trials Late Kharif 1987	6	2517	1497	68.1	7.7	13.5	-
Rabi 1987	6	1822	1215	50.0	3.1	2.2	41.0
Mean	-	2170	1356	59.1	5.4	7.9	-

Table 2: Morphological and quality characters of KS 6312 and K 5

Characters	KS 6312	K 5
Plant height (cm)	175	190
Plant Pigmentation	Tan	Pale-green
Leaf Colour	Dark green	Pale-green
Leaf sheath colour	Reddish purple	Brown
1000 Grain weight (g)	22.4	20.2
Husk %	9.7	10.3
Days to maturity	95	90
Grain protein %	15.0	14.5
Forage crude protein	12.6	8.4
Total soluble solids %	11.7	15.5

Table 3: Reaction of KS 6312 and K5 to drought and pests

Particulars	KS 6312	K 5
Drought resistant Parameters		
Leaf wilting/rolling (1-5 scale)	2.0	3.0
Regeneration capacity (1-5 scale)	1.0	3.0
Leaf water potential %	87.8	78.8
Dry matter production per plant (g)	183.3	121.7
Root length (cm)	28.7	23.5
Green leaf area per plant (g)	213.3	192.7
Lodging at harvest %	0.0	10.5
Pests : (Maximum in three years)		
Shootfly %	9.7	11.9
Stemborer %	6.5	10.1
Earhead bug (No/earhead)	20.7	43.4

phenomenal yield increase of 59.1 per cent over the local with a mean yield of 1356 kg/ha. KS 6312 is a short duration variety coming to harvest in 95 days. It is a tan plant type, remaining green even at maturity. It is non-lodging and tolerant to terminal drought. Grains are pearly white, rich in protein and amenable for preparation of food products like pakoda, porridge and hence, it is highly acceptable in market with a high consumer preference. It is moderately resistant to stem borer and shoot-fly besides being tolerant to leaf spot diseases. (Table 2 & 3).

KS 6312 is very much suitable to be grown as a rainfed crop in rabi season in southern districts of Tamil Nadu. The yield potential for grain and straw is 4800 kg/ha and 15.5 t/ha respectively. In view of the superior performance of KS 6312 in respect of grain and straw production combined with good nutritional and cooking quality, this has been released as K 8, suitable for the southern districts of Tamil Nadu.

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EFFECT OF CABBAGE SEED TREATMENT ON SEED VIABILITY, SEEDLING VIGOUR AND CONTROL OF BLACK ROT

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ABSTRACT

Seeds treated with streptocycline at 100 ppm + captan at 2 g per kg resulted in higher germination and increased seedling vigour besides maximum elimination of seedlings infection of black rot. The growth of *Xanthomonas campestries* pv. *campestries* in seeds was more inhibited when treated with streptocycline at 100 ppm + captan at 2 g per kg.

The black rot of cabbage caused by *Xanthomonas campestris* pv *campestries* is one of the widespread diseases of cabbage in many parts of the world. The seed borne pathogen was well established (Harding, 1904). Seed treatment with 0.1 per cent mercuiric chloride for half an hour was effective in eradicating seed borne infection. Effectiveness of antibiotics in combination with fungicides was reported in many bacterial diseases (Nayak et al., 1976). The present study reports the influence of seed treatment with chemicals, hot water and antagonists on seed viability, seedling vigour and control of seedling infection.

MATERIALS AND METHODS

The Xanthomonas campestries pv. campestries isolated from infected cabbage leaves collected from Ooty and maintained on yeast extract, glucose chalk agar was used for inoculation of cabbage seeds, by soaking them for 6h in bacterial suspension (c.1 x 10^7 cells/ml) prepared from 24 to 48h cultures and dried under shade for 24h. The inoculated seeds were then divided into different lots and treated with fungicides, bactericides, hot water and antagonists.

1. Seed treatment

The seeds were treated with fungicides at 2g per kg by dry seed dressing. The seeds were shaken with the fungicides in a

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