

REFERENCES

- BALASWAMY, K., BASKER REDDY, B., ANAND REDDY, K., BUCHA REDDY, B., and MADAVA REDDY, V. (1986). Effect of plating patterns, mulches and soil moisture regimes on growth and yield attributes of maize (*Zea mays*) L. *Madras agric. J.*, 73: 553-557.
- BATAGLIA, O.C., QUAGGIO, J.A., BRUNINI, O. and CIARELLI, D.M. (1985). Effect of nitrogen fertilizer on osmotic adjustment in maize and sorghum. *Pesquisa Agropecuaria Brasileira* 20: 659-665
- BLUM, A., MAYER, J. and GOZLAN, G. (1982). Infra red thermal sensing of plant canopies as a screening technique for dehydration avoidance in wheat. *Field Crops Rs.*, 5: 137-146.
- DWYER, L.M. and STEWART, D.W. (1985) Water extraction patterns and development of plant water deficits in corn. *Can. J. Plant Sci.*, 65: 921-933
- MTUI, T.A., KANEMASU, E.T. and WASSOM, C. (1981). Canopy temperatures, water use and water use efficiency of corn genotypes. *Agron.J.*, 73: 639-643
- RADIN, J.W., MAUNEY, J.R. and BRUIN, G. (1985). Effects of nitrogen fertility on plant water relations and stomatal response to water stress in irrigated cotton. *Crop Sci.*, 25: 110-115.
- TURNER, N.C.(1975) Concurrent comparisons of stomatal behaviour, water status, and evaporation of maize in soil at high or low water potential. *Plant Physiol.*, 55: 932-936.

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K 10: A GRAIN-CUM-FODDER SORGHUM FOR SOUTH TAMIL NADU

R.SANKARAPANDIAN and A.AMIRTHADEVARATHINAM

Agricultural Research Station, Tamil Nadu Agricultural University, Kovilpatti 627 701.

ABSTRACT

A medium duration (115 days) and medium stature sorghum strain K 10 which is an improvement over K7 has been developed and released during 1991 for rainfed cultivation in *Purattasi Pattam* (September-October) season in south and south central districts of Tamil Nadu. K 10 produced a mean dry fodder (straw) of 11.36 t/ha registering 34.2 per cent increase over K 3 and 14 per cent increase over K 7. It gave a mean grain yield of 1680 kg/ha registering 31.7 per cent increase over K 3 and 18 per cent increase over K.7. It has got better resistance to leaf diseases and pests both at field and controlled conditions.

KEY WORDS : Grain-Fodder Sorghum, K10, TamilNadu

Fodder sorghum is cultivated as a pure crop in an area of 2 lakh ha in Tamil Nadu. The crop is grown with a thick seed rate of 75 to 100 kg/ha in order to get thin stems which will be palatable for animals. The whole plant is cut at maturity after removing ear heads, dried and stalked to be used as dry fodder. Two fodder sorghum strains viz., K3 and K7 are now being extensively cultivated. To improve quality and yield over K 3 and K 7, hybridisation and selection were made at the Agricultural Research Station, Kovilpatti that resulted in release of an improved fodder sorghum strain, K 10 for general cultivation.

MATERIALS AND METHODS

Sorghum strain improvements were made in terms of yield and quality over K 7. A high yielding culture KS 7629 was identified from the derivations of the cross between K 7 and SPV 102. The dry fodder and grain yield performances were confirmed through a series of station trials and adaptive research trials. This culture was also

screened for reaction to major pests and diseases. Quality tests were also conducted.

RESULTS AND DISCUSSION

The performance of K 10 for dry fodder and grain was assessed in 6 Research station trials (1985-89) and 52 Adaptive Research Trials during 1987-89. K 10 produced a mean dry fodder of 11.36 t/ha registering 34.2 per cent increase over K 3 and 14 per cent increase over K 7. As regards grain, K 10 gave a mean yield of 1680 kg/ha registering 31.6 percent increase over K 3 and 18 per cent increase over K 7 (Table 1.)

K 10 is a green and glabrous plant type and has a dull white leaf mid rib. The stalk is thin, juicy and sweet. The panicle is erect, loose and semi-open. Glumes are red in colour and the grains are partly exposed outside the glume; seeds are dull white and lustrous.

K 10 has a high content of crude protein (7.3%) and minerals in straw and high content of

Table 1. Yield performance and reaction to pests and diseases of K 10

Details	No. of trials	KS 7629 (K 10)	K 3	K 7
Straw yield (t/ha)				
Station trials	6	15.75	11.31	13.32
Adaptive Research Trials	52	6.97	5.62	6.61
Mean		11.36	8.47	9.97
% age increase over K3 and K7			34.2	14.0
Grain yield (kg/ha)				
Station trials	6	3212	1738	1858
Adaptive Research Trials	52	1047	755	989
Mean		1680	1247	1424
% age increase over K3 and K7			34.7	18.0
Reaction to diseases				
Field conditions				
Zonate leaf spot PDI		0.0	10.0	5.0 - 20.0
Leaf blight PDI		0.0	0.0	0.0 - 14.0
Downy mildew %		0.0	0.0	0.0
Grain mould PDI		0.0	0.0	0.0
Controlled conditions				
Downy mildew %		10.9	12.9	7.1
Leaf spot %		3.0	3.0	2.0
Reaction to pests				
Under field condition				
Shoot fly %		1.6 - 25.8	1.7 - 26.0	1.5 - 26.8
Stem borer %		0.0 - 4.3	0.0 - 4.7	0.0 - 5.4
Earhead bugs %		0.0 - 11.0	0.0 - 11.4	0.0 - 12.0
Controlled conditions				
Shoot fly damage (dead heart %)		8.34	9.60	25.00
Stemborer (dead heart %)		33.33	34.50	35.00

Table 2. Metric traits and quality characters

Characters	KS 7629 (K 10)	K 3	K 7
Plant height (cm)	260	230	250
Flowering (Days)	65-70	70-80	70-75
Maturity (days)	115	120	105-110
Stalk	Thin juicy and sweet	Thin, pithy	Thin, juicy and sweet
Crude protein (%)	7.3	5.3	6.2
Crude fibre %	25.9	24.2	25.2
Total soluble solids (%)	18.6	7.6	13.4
Calcium %	0.04	0.02	0.01
Magnesium %	0.20	0.17	0.18
Phosphorus %	0.30	0.29	0.28
Potassium %	0.40	0.32	0.30

crude fibre (25.9%) which has enhanced the palatability value. It has a high nutritive value judged in terms of high total soluble solids (18.6%) and other mineral compositions (Table 2).

K 10 is also resistant to leaf blight, downy mildew, zonate leaf spot and grain mould under field conditions and it shows moderate resistance to the above diseases under artificial screening. It is moderately resistant to shoot fly, stem borer and shoot bug both under field and controlled conditions (Table 1).

It is a medium duration strain maturing in 115 days, medium tall (200-250 cm) and suitable for cultivation as a rainfed crop in *Purattasi pattam* (October to January). This strain was released during January 1991 for cultivation in south and south central districts of Tamil Nadu comprising of Madurai, Dindugal, Kamarajar, Pasumpon Thevar Thirumagan, Chidambaranar and Tirunelveli Kattabomman districts.