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APK 1 SORGHUM : A MEDIUM DURATION VARIETY FOR TAMIL NADU

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ABSTRACT

APK 1 sorghum variety (105-110 days) with medium stature is an imporvement over CO 26. APK 1 sorghum was released during 1996 for general cultivation in Tamil Nadu under rainfed and irrigated cultivation. Its average grain yield is 2619 kg/ha which is 19 per cent more than CO 26 (2207 kg/ha). Under irrigated condition, its yield potential is 4400 kg/ha. It is found to be highly suitable for cultivation under rainfed condition druing June-July and Sepetmber-October. It has got field tolerance to major pests and diseases. It has high protein content in both grains and straw. The grains are suitable for feedmix for poultry and the straw as dry fodder for cattle.

KEY WORDS: Grain sorghum, APK 1, Tamil Nadu

Grain sorghum is cultivated as pure as well as mixed crop in an area of 2.2 lakh ha in Tamil Nadu. Of which, 15-25 per cent were grwon under summer irrigated condition. Now-a-days the use of sorghum goes into the industrial uses apart from direct consumption and poultry feed. In Tamil Nadu, the ruling sorghum variety is CO 26 and K 8. These two varieties are high yielders. CO 26 is 115 days in duration and K 8 is thermo-sensitive in nature. In order to reduce duration and to surpass the yiel;d level of both these varieties, hybridisation and selection were done at the Regional Research Station, Aruppukottai which resulted in the release of an improved grain sorghum, APK 1 for general cultivation in Tamil Nadu.

MATERIALS AND METHODS

Sorghum strain improvement was made in terms of yield and quality over Co 26. A high yielding culture SPV 881 which is a hybrid derivative of the cross TNS 30 (SPV 544) x CO 26 (SPV 426) was identified as a high yielder during 1986 at the National Research Centre for Sorghum (AICSIP), Hyderabad. This culture has been tested at All India level as SPV 881 from 1987 onwards and also in Multilocation trials (MLT) and Adaptive Reasearch Trails (ART) in Tamil Nadu. This culture was also screened for reaction to major pests and diseases. Quality and other drought tolerant tests were also conducted.

RESULTS AND DISCUSSION

The performance of SPV 881 for grain and straw yield was assessed in seven stations trials (1987-1994), 12 MLT in other stations during 1990 to 1995. SPV 881 produced a mean grain yeild of 2619 kg/ha registering 19.0 per cent increase over the check CO 26. With regard to fodder, SPV 881 recorded a mean yield of 8.09 t/ha against. 8.31 t/ha by CO 26 (Table 1).

It possesses a tan plant types and the plant remains green even at maturity and it is non-lodging and drought tolerant. It is slightly shorter than CO 26. Grains are white in colour, borne on medium cylindrical semi-compact earheads. Both grains and straw contain high protein than CO 26 (Table 1).

SPV 881 possesses field tolerance to stem borer, midge, downy mildew, leaf spot, charcoal rot and gran mould diseases. It is also moderately resistant to shoot fly and earhead bugs (Table 1). It is a medium duration variety maturing is about 105-110 days possessing medium height (175 cm).

Distinguishing morphological features of APK 1

Pigment of the plant	: Tan
Leaf Size	: Long, board
Midrib colour	: Dull white
Earhead shape	: Medium cylindrical, semi compact
Glume colour	: Tan coloured at early stage and straw coloured at maturity
Glume size	: Three fourth cover the grain
Seed colour	: White
Seed size	: Medium
Awn	: Nil
1' weight	: 18.1 ?

Table 1. Yield performance, reaction to pests and diseases and quality traits of APK 1 sorghum

Details	No. of trials	APK 1 (SPV 881)	CO 26
Grain yield (kg/ha)			
Station trials	7	2177	1578
Other station trials (MLT)	12	3101	2665
Adaptive Research Trials	113	2578	2377
Mean		2619	2207
% over CO 26		19	0
Fodder yield (t/ha)			
Station trials		8.09	8.31
Reaction to pests (under unprotected condition in AICSIP trials			
Shootfly (DH%)	5	12.6 (MR)	19.0 (MR)
Stem borer (DH%)	5	4.7 (R)	16.2 (MR)
Leaf injury (%)	5	9.9 (R)	14.0 (MR)
Artificial condition			
i) Shoorfly (DH%)		47.9 (MR)	50.0 (MR)
ii) Stem borer (DH%)		43.8 (MR)	55.6 (MR)
Natural condition			
Earhead bugs No/ear head	5	35.0 (MR)	58 (MR)
Midge damage %	5	1.2 (R)	2.0 (R)
Reaction to diseases (under unprotected conditons) in AICSIP trials			
Downy mildew %	5	5.2 (R)	5.6 (R)
Ergot %	5	2.7 (R)	2.7 (R)
Grain mould (1-5 scale)	5	2.6 (R)	2.6 (R)
Leaf spot (1-5 scale)	5	1.8 (R)	1.5 (R)
Quality tests Grain			
Grain protein %		9.17	7.26
Crude fibre %		1.82	1.09
Ether extractives		6.55	4.00
Total ash %		10.55	11.64
Dry matter estimate %		8.0	8.74
Tannin %		2.0	2.15
Forage			
Crude protein %		8.78	6.34
Crude fibre %		28.05	30.08
Ether extractive %		5.33	5.33
Total ash %		28.65	27.01
Drought tolerance tests			
Leaf rolling/wilting score (1-5) (1-Poor; 5-Best)		4.2	3.5
Relative water content %		87.55	85.65
Green leaf area at harvest cm^2		312.5	289.7
Root length (cm)		43.5	35.6
Volume of roots (cc)		4.83	4.12
Stomatal count/sq.cm		68.8	76.06
Number of closed stomata		22.5	17.08
Dry matter production (g)		266.7	272.08
Regeneration capacity (1-5) (1-Poor; 5-Best)		3.55	2.85

Note : R = Resistant; MR = Moderately Resistant

Key characters

1. Secodary rachis tends to incurve at flowering
2. Long glume covering 3/4 of the grain

It is suitable for cultivation as a rainfed crop in June-July and September-October seasons (Table 1). It is a photo and thermo insensitive variety and hence can be grown even in summer seasons *viz.* December - January and March - April in all the districts of Tamil Nadu. This strain was released during 1996 as APK 1 for general cultivation for the entire state of Tamil Nadu.

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PPI-I JACK : A NEW HIGH YIELDING, REGULAR BEARING JACK VARIETY FOR TAMIL NADU

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ABSTRACT

A study made at the Horticultural Research Station, Pechiparai to evolve a new jack variety with higher per plant yield, firm flesh, regular bearing tendency, adjustable for commercial planting and suitable for all regions of Tamil Nadu from 14 germplasm collection has resulted in the selection of a promising clone PAH 10, released as PPI-1. It is a clonal selection from Kazhukupala type. This high yielding varitey comes to first fruiting in five years. It out yielded the local variety with 107 fruits, weighing 1818 kg compared to the local variety which gave 75.7 fruits weighing 865 kg. The yield increase over already released jack variety PLR.1 is 204 per cent for fruit number and 305 per cent for fruit weight in the off season. The firm and attractive carpels with sweet and pleasant aroma are the advantages of this variety. This new variety can be propagated in larger number in a short time through budding method standardised at the station.

KEY WORDS : Jack, *Artocarpus heterophyllus,* New Clonal Selection, High Yielding, Regular Bearing

The Jack fruit *(Artocarpus heterophyllus*)is an evergreen tree, producing more yield per tree than any other fruit tree and bears the largest edible fruit (Sinha, 1968). It is one of the most popular fruits in South India and enjoys special favour in home gardens and smaller commercial gardens in the west coast and is also used as one of the shade trees in coffee, areca, cardamom and pepper plantations. Owing to the numberous culinary uses and the fact that it is plentiful in a period when the region is in the grip of heavy monsoon, jack fruit earned the well deserved name of poor man's food. Besides all parts of the plant are economically useful. The outer pericarp of the fruit is a prized cattle feed. The seeds are relished when boiled or roasted. The latex from the bark contains a large amount of resin and is often used to plug holes in earthern coarse or *mhote* buckets. The timber is valuable and is used in construction as well as for furniture. The leaves together for use as dining plates in villages. Besides minerals, fruits contain vitamin A and C. A fruit of such diverse value and uses deserves to be grown widely. Nowadays this tree is grown asa plantation scale in Kerala and parts of Tamil Nadu.

The humid and warm climate of hill slopes upto 1220 m elevation is ideal for its growth. Being cross pollinated and mostly seed propagated, the jack fruit has innumerable types of forms considering the fruit characteristics. Such variations among clones offer scope for improvement of this fruit crop by clonal selection method (Samaddar, 1990).

The varieties grown at present generally bear fruits only once *ie.*, the main season (April - June). Hence, efforts were made at the Horticultural Research Station (HRS), Pechiparai to select and release a jack variety combining superior yield,