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TPS 3-A HIGH YIELDING RICE VARIETY FOR WATER LOGGED (*Ela*)-SITUATION IN KANYAKUMARI DISTRICT

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ABSTRACT

Rice TPS. 3 has been released by the Tamil Nadu Agricultural University from the Agricultural Research Station, Thirupathisaram during 1993 as a location specific variety for cultivation during the *pishanam* season (second season) in water logged (*Ela*) situation of Kanyakumari District. It registered an average grain yield of 6061/ kg/ha. It is a semi-dwarf (99cm) variety with short bold white rice which matures in 135 days. It is resistant to blast under field condition in blast prone areas. It contains high protein (9.15%)

KEY WORDS : Rice, *Ela*, *Pishanam*, TPS.3

High yielding rice varieties play an important role increasing the food production. In Kanyakumari District of Tamil Nadu, rice is cultivated in three situations *viz*,, plains, tail-end areas and "*Ela*" situations. "*Ela*" is a valley surrounded by hillocks. In the valley, about 6 to 12" of water will be standing almost throughout the growing period of rice crops from June to February. On the hillocks, crops liks coconut, banana, tapioca and arecanut, are cultivated. Hence, it is important to have a variety which can withstand water stagnation and give higher grain and straw yield with resistance to major pests and diseases especially blast which is a major disease in "*Ela*" . With this object in view, research work was initiated at the Agricultural Research Station, Thirupathisaram for evolving a high yielding rice variety which can withstand water stagnation and resistant to blast.

MATERIALS AND METHODS

The trials were conducted at the Agricultural Research Station, Thirupathisaram from 1987 to 1991 with the rice cultures received from the rice research stations in Tamil Nadu and from other states of India. Among the rice cultures tested, IET 10522 which is a derivative of the cross RP 31-49-2/ LMN having a duration of 135 days performed well under water logged situation. It was tested throughout Kanyakumari District under Adaptive Research Trials (ART), On-farm trials (OFT) and Minikit trials (MKT) during the *Pishanam* season (second season) of 1991-92. Its reaction to pests and diseases was also tested both under field and artificial conditions.

RESULTS AND DISCUSSION

The performance of the rice culture IET 10522 in comparison with ADT 40, Co 42 and TPS 2 was tested at the Agricultural Research Station, Thirupathisaram from 1987 to 1991 and the results are presented. IET 10522 has registered a mean grain yield of 5253 kg/ha (mean of 5 years) which was 33.7 and 31.0 per cent increase over ADT 40 and Co 42 respectively. When compared with TPS2, it recorded on an average 6513 kg/ha (mean of 2 years) with 29.4 per cent increase over TPS 2.

The culture IET 10522 was tested in 20 locations in Kanayakumari District under ART along with the check TPS 2 and it recorded a mean grain yield of 5827 kg/ha and a straw yield of 12942 kg/ha which was 21 and 31.2 per cent increase over TPS 2 respectively.

It was also tested in 17 location in Kanyakumari District under OFT along with the checks ADT 40 and TPS 2. It registered a mean grain yield of 5342 kg/ha which was 20.5 and 21.8 per cent increase over ADT 40 and TPS 2 respectively

Under MKT in Kanyakumari District , the culture IET 10522 was tested in 75 locations. It recorded the highest mean grain yield of 6249 kg/ha and a straw yield of 12634 kg/ha.

The culture IET 10522 is a semi-dwarf and erect type (99 cm) and matures in 135 days. It recorded an overall mean grain yield of 6061 kg/ha. The increase in yield was 23.2, 31.0 and 21.8 per cent over ADT 40, Co 42 and TPS 2 respectively. The grain is short bold with white rice. The endosperm percentage is 79.4. In organoleptic test

Table 1. Physical and chemical characteristics of rice IET 10522.

Characteristics			
Milling and polishing characteristics			
Endosperm	(%)	79.4	
Husk	(%)	20.4	
White rice	(%)	92.0	
Bran	(%)	7.8	
Cooking characteristics			
Weight increase	(g)	21.6	
Volume increase	(ml)	16.4	
Water absorption	(ml)	24.0	
Actual time taken for cooking	(mts)	24.0	
Chemical characteristics			
Starch	(%)	72.90	
Amylose	(%)	28.41	
Protein	(%)	9.15	
Organoleptic characteristics			
		O.C.	P.C.
Colour and appearance		3.6	3.8
Flavour		3.8	3.8
Donness		3.6	3.6
Taste		3.6	3.6
Overall acceptability		3.6	3.6

it ranked good score of 9.15 per cent, starch 72.9 per cent and amylose 28.41 per cent (Table 1)

IET 10522 was tested for its reaction to major pests and diseases both under field and artificial conditions and was found to be moderately resistant to the brown planthopper, *Nilaparvata lugens* (Stal.) and resistant to blast under field conditions in blast prone areas of Kanyakumari District. Blast is a major disease in the *Ela* situation and the culture IET 10522 was completely free from blast when raised in blast prone areas and gave higher grain and straw yield.

The culture IET 10522 was found suitable for cultivation under water logged *(Ela)* conditions in the *Pishanam* season due to its better adaptability and tolerance to submergence and also for general cultivation during *Pishanam* season in Kanyakumari District in the place of ADT 40, Co 42 and TPS 2.

In view of its good performance in the research station trials, adaptive research trials, on-farm trials and minikit trials, its better adaptability and tolerance to submergence and its resistance to blast in endemic areas of Kanyakumari District, the State Variety Release Committee approved its release as TPS 3 for cultivation in water logged *(Ela)* condition in Kanyakumari District.

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CORRELATION AND PATH CO-EFFICIENT ANALYSIS IN F_2 GENERATION OF BLACK GRAM (*Vigna mungo*)

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ABSTRACT

Correlation co-efficients (genotypic and phenotypic) and path co- efficients were worked out based on the mean values obtained from 20 F_2 Family means of cross combinations derived from a 5x5 diallel set for 15 characters. Significant positive correlation with yield was exhibited by primary leaf area, days to maturity, plant height, branch number, leaf number, total leaf area, pod number, pods per cluster, cluster number and total drymatter production. The above yield components also exhibited significant positive inter- correlations among themselves. Pod number followed by days to maturity and leaf number had positive direct effect on grain yield. Branch number followed by plant height, harvest index and primary leaf area contributed only negative direct effects on grain yield. Sinnificant positive correlation of primary leaf area with total drymatter production and grain yield indicated that this character could be relied on as an indicator of superior genotypes for total dry matter production and grain yield even at the seedling stage itself.

KEY WORDS : Black gram, Correlation, Path Analysis.

Yield is a complex character and the estimates of genotypic correlations between yield and its component characters and *inter se* associations among themselves may provide useful information for the choice of characters in the selection programme to improve seed yield. Hence an