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EVALUATION OF PROMISING NEW WHEAT CULTURES UNDER TAMIL NADU CONDITIONS

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ABSTRACT

Field experiments were conducted at Tamil Nadu Agricultural University, Coimbatore for five years from 1982-1983 to 1986-1987 to identify the best new wheat cultures suitable for Tamil Nadu conditions. The cultures PBN142, AKW 13-3, AKW 42-3, IWP 5049, MACS 2067, NI 8858, NI 8924 and WSM 22-1 produced significantly higher grain yield over the check variety HD 2189.

KEYWORDS : Wheat, Varieties, Grainyield.

In India, wheat is grown over an area of nearly 24 m.ha and involves almost all the states except Kerala. Its cultivation extends from about 9°N (Palani hills in Tamil Nadu) to above 35°N (Srinagar valley in Jammu and Kashmir). This exposes the crop to wide range of agroclimatic conditions such as temperature, humidity and photoperiods prevalent at different altitudes, soil types and physiographic features of the region during the crop season and cropping systems (Tandon and Rao 1986). Hence specific varieties have to be developed for each agroclimatic zone,

due to the regional peculiarities in wheat growth (Agarwal 1986). Therefore, experiments were conducted to identify the suitable cultures for Tamil Nadu conditions. The cultures evolved in different wheat breeding centres all over India were tested.

MATERIALS AND METHODS

Field experiments were conducted under All India Coordinated Wheat Improvement Project at Tamil Nadu Agricultural University,

Coimbatore for five years from 1986-1987 to select suitable new wheat culture for Tamil Nadu conditions.

The experimental field was clayloam, with low, medium and high in available N,P and K respectively. The experiment was laid out in double lattice design with three replications. The treatments comprised of cultures numbering 35, 16, 36, 36 and 36 during 1982-1983, 1983-1984, 1984-1985, 1985-1986 and 1986-1987 respectively. The seeds were sown on 10.12.1982, 14.11.1983, 29.11.1984, 30.11.1985 and 14.11.1986 in respective years. Fertilizers were applied @ 100 : 60 : 40 kg ha⁻¹ NPK respectively. Half of the N and entire P and K were applied as basal. Remaining half of the N was applied on 21st day after sowing. Six irrigations were given at critical growth stages. All other recommended cultural practices were followed. The crops were harvested during the months February and March in respective years.

RESULTS AND DISCUSSION

The data on grain yield of different cultures are presented in Table I. In first year (1982-1983), cultures PBN 142 and AKW 13-3 produced highest grain yield and the yields were significantly higher than the check variety HD 2189. During second year (1983-1984), AKW 42-3 gave higher yield over the check. However,

the yields of all the cultures were low, when compared to the grain yields of cultures tested during 1982-1983. This was due to the unusual high rainfall (159.0 mm) at the harvesting months (February and March) which reduced the grain yield of all the cultures.

In third year (1984-1985), cultures IWP 50449, MACS 2067 and NI 8858 recorded more grain yield over the check variety. During the fourth year (1985-1986), NI 8924 produced the highest grain yield and yield was significantly more than the check variety. In fifth year (1986-1987), WSM 422-1, produced the highest grain yield of 30.2 q.ha⁻¹ and the yield was 56 per cent more than the check variety HD 2189. In general, the grain yields of many cultures were low in 1986-1987, This was due to the high mean temperature (25.4°C). In spite of the yield reduction in other cultures, WSM 422-1 produced a grain yield of 30.2 q.ha⁻¹. Yield reduction due to the rise in temperature was also reported earlier (Asana and Williams 1965). The varieties HD 2189, NI 5439 and HD 4502 were tested during the years 1982-1983, 1984-1985, 1985-1986 and 1986-1987. The variety HD 2189 produced comparatively higher wheat grain over the other two varieties. This indicated the potentiality of HD 2189 under Coimbatore conditions. The better performance of the above mentioned cultures in different years may be due to increased growth and yield attributes.

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Table 1. Grain yield new wheat cultures on (Q.ha⁻¹)

S.No.	1982-1983		1983-1984		1984-1985		1985-1986		1986-1987.	
	Variety	Grain yield	Variety	Grain yield	Variety	Grain yield	Variety	Grain yield	Variety	Grain yield
1.	HD 2189	23.3	HD 2189	5.5	HD 2189	15.7	HD 2189	20.9	HD 2189	19.2
2.	NI 5439	10.9	DWR 88	6.3	NI 5439	16.2	NI 5439	20.9	NI 5439	17.2
3.	HD 4502	21.8	NI 8763	4.7	HD 4502	10.5	HD 4502	16.3	HD 4502	12.1
4.	HI 1078	20.0	AKW 59.2	3.2	WSM 287	11.5	NI 8924	24.5	DWR 39	17.0
5.	PN 103	26.6	DWR 89	2.3	DL 262	11.0	PBN 67	14.6	DWR 133	12.1
6.	MACS 2130	14.9	NI 8351	7.0	PAC 24	17.4	IWP 5085	8.2	MACS 2405	8.7
7.	APAU 1548	17.0	AKW 42.3	9.5	HI 1184	12.8	HD 2278	11.3	NI 9064	14.8
8.	HD 2379	18.9	MACS 2198	5.4	NI 8790	13.7	HD 2347	12.6	PBN 509.6	7.2
9.	HD 2408	22.5	IWP 5056	4.6	DWR 104	11.2	WSM 370	12.4	DWR 136	19.2
10.	APAU 1584	17.2	PBN - 625	5.0	NI 8809	16.1	N 8859	15.6	ISW 7	8.5
11.	DWR 82	25.3	AKW 63-1	5.7	DWR 100	13.4	AKW 399.3	16.6	HD 2503	10.2
12.	MG 513-6	21.5	NI 8668	9.2	MACS 2197	12.7	NI 8892	16.9	MACS 2368	10.4
13.	BYML -1	23.9	NI 8769	9.4	AKW 262.3	11.7	CPAN 2049	12.9	DWR 135	17.3
14.	NI 8533	24.8	HD 4512	5.2	AKW 178	13.1	DWR 124	10.8	Rajapras 91	10.2
15.	DWR 81	21.2	NI 8729	2.4	NI 8858	20.1	HW 1042	11.9	AKW 373-10	14.5
16.	NI 8616	22.4	NACS 2172	4.9	PAC 36	17.2	MACS 2344	11.6	AKW 161	12.2
17.	APAU 1562	15.1			HD 2278	12.8	MACS 2271	19.9	CPAN 2087	20.2
18.	VPAN 1956	17.0			NI 8831	15.2	NI 8960	11.7	NI 9028	18.0
19.	NI 8255	16.3			MACS 2067	21.0	DWR 122	19.8	HD 2434	2.3
20.	DL 245.2	27.0			HD 2411	13.5	DWR 125	7.7	MACS 2410	13.2
21.	DWR 80	15.7			NI 8771	13.6	RHR 2925	5.4	Rajapras 252	11.4
22.	AKW 93-3	21.4			NI 8825	17.0	WSM 377	11.7	DWR 132	23.2
23.	MG 24-61	10.3			PBN 103	15.0	AKW 280	17.6	AKW 369-6	7.7
24.	PBN 142	29.0			NI 8811	8.9	ISW 9	6.6	NI 8949	12.9
25.	DL 95-2	31.8			PBN 108	15.2	NI 8921	13.4	NP 845	18.4
26.	CPAN -6036	23.5			CPAN 1889	9.4	MP 847	21.0	DWR 134	12.2
27.	NI 8620	26.8			MACS 2294	15.6	NI 8235	18.2	DL 895-1	14.1
28.	PBN 144	19.9			MP 822	7.5	MACS 2067	11.8	NI 9170	23.3
29.	NP 703	21.7			NI 8838	13.3	NI 8940	13.2	Rajapras 93	10.3
30.	PBN 55	20.1			NI 8941	15.3	N 8869	13.6	WSM 422-1	30.2
31.	NI 8629	15.2			DWR 101	14.5	DWR 126	15.7	WSM 377	9.0
32.	NI 8128	19.1			PBN 142	17.2	BARC-PKU	19.8	PBN 135	12.4
33.	DEWR 79	23.4			IWP 5049	21.1	PBN 4	19.8	NI 9075	7.8
34.	AKW 13.3	27.6			DWR 102	12.1	CPAN 6086	11.9	NI 9075	8.6
35.	NI 8535	18.4			HD 2367	13.6	DWR 123	13.9	ISW 9071	8.6
36.		2.6			DWR 103	16.2	BARC-PKV 813	13.1	MACS 2569	12.9
CD (5%)				1.4		2.3		2.0		2.7