Improved Wheat Varieties J 1-7 and GAU W-10 (J-24) for Gujarat

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Gujarat grows wheat crop in 5,21,400 hectares with the total production and yield per hectare to be 9,09,500 metric tonne and 1,735 kg, respectively (1973-74). Patel (1965); Patel and Patel (1967) and Joshi, Patel and Shah (1972) reported variety NP-824 to be superior to varieties NP-710, NP-718 and KCN-133 in Gujarat. Patel (1967) reported that variety NP-824 was significantly superior than NP-710. State Department of Agriculture recommended variety NP-824 for general cultivation in Gujarat State in the year 1963. Joshi *et al.* (1972) reported Kalyansona, Safed Lerma and Chhoti-Lerma to be superior over NP-824 in grain yield. Of these Kalyansona having wider adaptability was recommended in the year 1968 for general cultivation in the State. Further Patel *et al.* (1972) reported that strain J-1 evolved at the Wheat Research Station,

TABLE 1

Comparison of important characters of improved wheat varieties evolved at Junagadh with Kalyansona.

	Kalyansona	*Junagadh 1-7 (J 1—7) Selection from J—1*	*Junagadh 24 (GAU W—10) S—308 × WS—217 (J—1 = C—273 × NP—835)*
Description of variety:			
(i) Early growth habit	Errect	Semispreading	Errect
(ii) Tillering capacity	Good	Very Good	Good
(iii) Plant height (cm)	70	90	80
(iv) Colour of stem and foliage	Green	Deep Green	Green
(v) Heading days	55	65	55
(vi) Maturity days	110—112	112—115	110—112
(vii) *Ear Characters:*			
(a) Shape	Oblong	Fusiform	Fusiform
(b) Density	Dense	Medium dense	Medium dense
(c) Awning	Fully-beared	Fully-beared	Fully-beared
(d) Glume colour and pubescence	Brown glabrous	Brown glabrous	Brown pubescent
(e) Threshability	Easy	Medium	Medium
(viii) *Grain characters*			
(a) Colour	Amber	Amber	Amber
(b) Texture	Semihard	Hard	Hard
(c) Size (1000 grain Wt.)	36 gm.	38 gm.	45·5 gm.
(ix) Resistance to shattering	Medium	Very good	Good
(x) Resistance to rusts	Black 40S	15S	10X
	Brown 20S	20S	10R
Protein content (%)	14·2	14·3	14·3

Received on Jan. 21, 1975

TABLE 2

Average grain yield (kg/ha) of J 1—7 and Kalyansona under different trials conducted from 1969-70 to 1971-72.

Trial	*No. of Trials*	*Grain yield kg/ha.*	
		Kalyansona	*J 1—7*
State Uniform Trials	12	3748	3940
Varietal Trials	25	3901	4160
Initial Evaluation Trial (H.F.)	2	2360	3045
Uniform Regional Trial (H.F.)	10	3871	4026
	49	3470	3792

Junagadh outyielded all the varieties tested including Kalyansona at seven stations for two years. But it was not considered for release because of lateness. However, the same strain was utilised in further breeding programme to develop J 1-7.

Junagadh 1-7:

J 1-7 is a selection from J-1 having parentage of C-273 as female and NP-835 as male. Being semi-spreading in nature it has very good synchronous tillering capacity (Fig 1). It is semi-dwarf with deep green foliage. Grains are bolder than that of Kalyansona with amber colour. Comparatively it is more resistant to rust than Kalyansona. Details of morphological characters are given in Table 1.

As regards yield, J 1-7, tested in 49 trials conducted for three consecutive years (from 1969-70 to 1971-72), gave on an average 9·3 per cent higher yield than Kalyansona. Yield figures in kg/ha for different trials given in Table 2 reveal that J 1-7 gave higher yield than Kalayansona under high fertility conditions. Based upon these results variety J 1-7 was released in the year 1971 for general cultivation in Gujarat State.

With the object to improve grain quality and resistance to rust further breeding work was continued and as a result strain J-24 was evolved.

GAU W-10 (J-24):

J-24 is a selection from the cross S-308 × WS-217. It is a semidwarf, early flowering, erect type with green foliage (Fig. 2). Details of morphological characters are given in Table 1. Grains of J-24 are bold as they weigh 46·5 g for 1000 seed as against 36·0 g of Kalyansona. It is resistant to black and brown rusts. Protein content is 14·3%.

Yield data of J-24 and Kalyansona for different trials are presented in Table 3. Under all the trials conducted over locations and years, J-24 gave more yield than Kalyansona. However, it gave significantly higher yield than Kalyansona in seven out of 17 trials. Table 3 reveals that J-24 under ten coordinated trials ranked 4·7 (average rank) as against 10·3 (average rank)

TABLE 3

Grain yield (q/ha) comparison of J—24 with Kalyansona.

	J-24		*Kalyansona*		*SEm*	*C.D.*	*C.V.*
	Yield q/ha	*Rank*	*Yield q/ha*	*Rank*			
(a)*Coordinated Trials*							
1970-71 = IET (HF)							
Junagadh	38·0	1	29·4	11	1·976	5·5	17·5
Vijapur	40·5	3	39·9	4	2·196	6·1	15·2
State Mean	39·3	1	34·7	7			
1971-72 = URT (HF)							
Junagadh	43·5	3	39·8	6	0·961	2·7	6·9
Vijapur	46·5	3	43·2	9	2·364	6·6	14·2
Bardoli	44·5	1	41·4	7	1·293	3·6	8·1
State Mean	44·8	1	41·5	4	0·954	2·6	
1972-73 URT (HF)							
Junagadh	39·7	1	34·6	14	0·771	2·2	5·4
Vijapur	52·2	22	51·3	23	1·744	4·9	7·8
Bhachau	20·2	11	18·2	16	1·054	3·0	13·2
State Mean	37·4	9	34·9	19	0·726	2·0	
1973-74=URT (HF)							
Junagadh	42·4	1	34·0	8	0·884	2·7	
Bardoli	39·6	1	37·8	8	0·991	3·0	
State Mean	41·0	4·7	35·9	10·1			
Mean years	40·6		36·8				
(b) *Other Trials*							
1969-70							
Talaja	35·76		34·51		2·40	6·96	
Pipalia	44·61		43·53		1·86	5·71	
1970-71							
Talaja	28·75		22·42		5·70	N.S.	
1971-72							
Junagadh	59·87		54·67		2·02	5·69	
Bardoli	49·15		42·66		1·60	4·57	
1972-73							
Junagadh	46·6		36·44		1·67	4·32	
Bardoli	37·30		33·49		1·43	4·03	
Mean	43·05		38·25				
Summary Results					% *Increase over Kalyansona*		
Coordinated Trials (10)	40·62		36·77		10·47		
Department Trials (7)	43·05		38·25		12·54		
Grand Mean	41·84		37·51		11·55		



Fig. 1. Variety 'J 1-7'

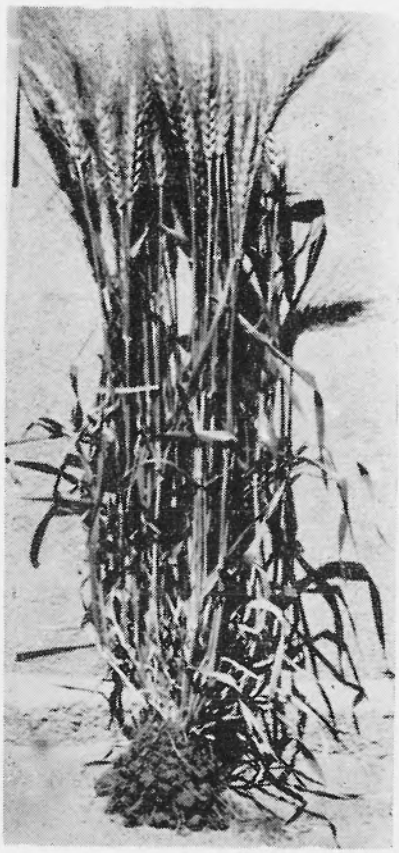

Fig. 2. Variety 'J-24' (GAU W—10)

of Kalyansona and gave 10·47% increased yield over Kalyansona. Under State trials, J-24 gave 12·54% more yield than Kalyansona. Further the results of nine district trials conducted on the Taluka Seed Farms during 1973-74 confirmed the superiority of J-24 which gave 12·5 and 3·9% higher yield than Kalyansona and J 1-7, respectively.

Based upon four years performance J-24 was released by the State variety release committee in the year 1974 under the name GAUW-10 for general cultivation under high fertility and irrigated conditions in the State.

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