



Short Communication

## IPR 98-5 (Utkarsh) — A high yielding rajmash (*Phaseolus vulgaris* L.) variety for north east plains zone of India

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Rajmash (*Phaseolus vulgaris* L.) commonly known as dry bean is an important grain legume at global level. The crop was grown in 25.53 mha and production was 18.74 mton during 2005 (fao.org). The major producers of rajmash are Mexico, Brazil, Kenya and Uganda. In India, rajmash was a minor pulse crop confined to northern and north eastern hills, where it was cultivated as rainy season crop. In hills, it is cultivated mostly as mixed/inter crop and mostly indeterminate/semi-determinate types are preferred. Recently rajmash cultivation was initiated in north eastern plains in winter season. Determinate types with early/medium maturity were released for cultivation as monoculture/intercrop with potato. Limited varieties of rajmash viz., PDR 14, HUR 15, HUR 137 and Amber were available for cultivation in plains. PDR 14 and Amber have red variegated seed and HUR 15 is white seeded. HUR 137 is red seeded variety released fifteen years back. Farmers and consumers have preference for red seeded types with medium seed size (25-40 g /100 seed). IPR 98-5 (Utkarsh) a high yielding rajmash variety was notified for release in north east plains zone ( NEPZ) of India comprising Uttar Pradesh, Bihar, West Bengal, Parts of Assam and Jharkhand in 2005 by Central Varietal Release Committee. Since rajmash varieties require insulation against cold and frost and also high temperature tolerance at pod filling stage hence, IPR 98-5 can be successfully grown in NEPZ.

Lack of diversity and non-availability of determinate types is a major bottleneck in rajmash improvement programmes in India [1]. Rajmash germplasm was introduced from C.I.A.T. Columbia. IPR 98-5 is a selection from EC400431. The growth habit of this variety is semi-determinate upright. This variety possesses very attractive gulf red seeds with medium seed size (34.7 g/100 seeds). Leaf is simple with cordate leaf pinnae. Leaf and stem colour is green whereas petiole colour is white with pink stripes. Pod

colour is green and seed colour is gulf red. It takes 63 days for flowering and matures in 122 days. The average plant height is 70 cm. with 3.6 branches/plant. The pod length ranges from 9.3 to 13 cm. with 6-7 seeds/pod. This variety was tested in AICRP trials in winter season for three years. IPR 98-5 exhibited 17 and 30 % superiority over the checks PDR 14 and HUR 137. The average yield of this variety is 17.26 q/ha. However the zonal yield was 22.05 q/ha during 2001-2002 (Table 1). Despite of extreme cold weather during 2002-2003 and 2003-2004 it exhibited highest yield during these years. The yield potential of this variety is 27.47 q/ha. at one of the location during 2001-2002.

**Table 1.** Performance of rajmash variety IPR 98-5 along with check varieties in north east plain zone during 2001-02 to 2003-04

Variety	Zonal mean			Weighted mean (kg/ha)	Yield superiority % over check	Seed colour
	2001-02	2002-03	2003-04			
IPR 98-5	2002 (3)	1351 (3)	1651 (4)	1726 (10)	-	Gulf red
PDR 14	1873 (3)	1252 (3)	1352 (4)	1478 (10)	17	Variegated red
HUR 137	1516 (3)	1042 (3)	1376 (3)	1311 (9)	30	Red
IPR 96-4	-	1089 (3)	1152 (3)	1121 (6)	54	Variegated red

Note : Data in parenthesis indicate number of locations.

IPR 98-5 was tested against biotic stresses like bean common mosaic virus, leaf crinkle and sclerotinia wilt in coordinated trials (during 2001-2002 and 2002-2003) where it has shown resistance against these diseases (Table 2). Additionally this variety also posses

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**Table 2.** Performance of rajmash variety IPR 98-5 along with check varieties against major diseases in north east plain zone during 2001-03

Variety	Bean common mosaic virus (%)		Leaf crinkle virus (%)		Sclerotinia wilt (%)		
	Vara-nasi	Shillo-ngani	Vara-nasi	Shillo-ngani	Dholi ngani	Shillo-ngani	Kumar Gunj
<b>2001-2002</b>							
IPR 98-5	12.0	-	14.0	-	7.0	-	-
PDR 14	11.0	29.0	12.0	31.0	11.0	-	-
HUR 137	12.0	10.0	14.0	29.0	40.0	-	-
<b>2002-2003</b>							
IPR 98-5	3.0	8.1	6.5	6.7	-	1.5	-
PDR 14	4.5	0.0	4.5	0.0	-	0.0	60
HUR 137	3.5	7.6	4.5	6.3	-	0.0	30
IPR 96-4	-	-	-	-	-	-	60

resistance against nematodes. The cooking quality test results have been shown in Table 3. Seeds were soaked in water for twelve hours for recording the dimensions of the soaked seed. For calculating the cooking time, 200g seeds were soaked in tap water for twelve hours. Soaked seeds were cooked in two litre pressure cooker in adequate tap water. Time was recorded after first whistle from pressure cooker. Cooker was removed from heat source as per time mentioned in the Table 3. Appropriate cooking time was standardized on the basis of fifteen observations for each variety. IPR 98-5 cooked in least time (4-5 minutes) with maximum volume expansion (171%). It has higher protein content (21.3%) in comparison to the checks PDR 14 (20.6%) and IPR 96-4 (20.8%). IPR 98-5 has demonstrated better nutritional and cooking quality. The

**Table 3.** Cooking quality parameters of IPR 98-5

Variety	Dimensions of dry seed		Dimensions of soaked seeds		Water absorption by 100 seeds (g)	Volume expansion (%)	Cooking time (min)
	Seed length (mm)	Seed width (mm)	Seed length (mm)	Seed width (mm)			
IPR 98-5	13.20	4.15	17.85	7.65	58.84	171	4-5
PDR 14	12.95	4.05	16.00	6.45	50.96	156	5-6
HUR 137	14.31	4.20	17.65	6.30	58.50	162	4-5
IPR 96-4	12.48	4.30	16.55	6.70	58.20	129	5-6

variety is substitute for premium Kashmiri rajmash (red seeded types with medium seed size and good cooking quality). This recently notified variety possess high yield with very attractive gulf red seed colour and preferred medium seed size (34.7 g/100 seed wt.). IPR 98-5 is resistant against the major diseases and has good cooking quality. It will prove ideal variety and shall be preferred by all consumers.

#### Reference

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