



## KHRS-21 (KHP-9) — A new high yielding rice variety for lowlands in hill zone of Karnataka

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The hill zone of Karnataka comprises 22 taluks of eight districts. Paddy is the major field crop cultivated mostly as monocrop during *kharif* under rainfed situations viz., uplands, midlands and lowlands (11°56' and 15°46' N latitude and 74°31' and 76°4' E longitude). Rainfall in the zone ranges from 2,363 to 3,466 mm, with an average of 2,915mm. Crop area in the zone is 2.85 lakh ha. with an annual production of 7.23 tonnes. It represents nearly 23% of the rice area in the state.

Intan variety was released during 1976 and became popular in view of its blast tolerance, non-lodging habit (90-100 cm), long duration (160-165 days) and higher grain and straw yield when cultivated by applying the recommended dose of chemical fertilizer (75:75:90 NPK kg/ha). However, it became susceptible to blast during early 80's and DWR 4107 (Hemavathi) was released in 1993 to replace it in area where blast incidence is higher and as supplement in areas where blast incidence is low [1]. In this region, farmers prefer tall varieties of long duration with medium bold grains. Thus, the present investigation was to evaluate the promising rice variety KHRS-21 for low lands in hill zone of Karnataka.

Attempts were made at the Zonal Agricultural Research Station, Mudigere to identify a suitable variety for the region of the selections obtained from the cross between Intan and IET-7191, KHRS-21 was the most promising one. Trials were conducted at different stations (ZARS-Mudigere, ARS-Ponnampet and ARS-Sirsi) during *kharif* season from 1999 to 2003. All the experiments were conducted using RCBD with three replications. Seedlings aged 25-30 days were transplanted at a spacing of 10 cm within rows spaced at 20 cm. Nursery sowing was taken up in 1st week of June and planting of seedlings was done in 1st week of July. Recommended dosage of P and K along with 50% of N (75:75:90 kg NPK/ha) was applied at the time of planting and 25% of N was top dressed twice-once at 30 and again at 60 days after transplanting. KHRS-21

was further tested in farmer's field across four districts of the hill zone along the check Hemavathi in lowland rainfed areas.

The ancillary characters of KHRS-21 in comparison with check varieties are presented in Table 1. KHRS-21 had higher plant height of 115-120 cm, panicle length of 21.3 cm, 1000 grain weight (25.1 g) and medium bold grains when compared with Hemavathi and Intan. The ancillary characters of KHRS-21 showed it to be late in maturity by 5-10 days and taller by 5-10 cms compared to the ruling varieties.

**Table 1.** Ancillary characters of KHRS-21 in comparison with check varieties

Entries	Days to flower	Plant height (cm)	Panicle Length (cm)	1000 grain wt (g)	Kernel colour	Grain type
KHRS-21	135-140	115-120	21.3	25.1	White	M.B.
Hemavathi (Ch)	130-135	110-115	21.3	23.2	White	S.S.
Intan (Ch)	125-130	100-110	20.1	24.9	White	M.S.

The results from different trials conducted for five years from 1999 to 2003 revealed that KHRS-21 recorded higher grain yield and straw yield at different locations (ZARS-Mudigere, ARS-Ponnampet and ARS, Sirsi). By considering overall per cent increase over check, KHRS-21 recorded 32% and 34% higher grain yield compared to Intan and Hemavathi respectively (Table 2). It also recorded 32% and 24% higher straw yield compared to Intan and Hemavathi respectively. As revealed by the data from the trials conducted at different stations, KHRS-21 was better than the other two varieties with higher grain as well as straw yield. Similar observations were recorded by Shadakshari *et al.*, [2, 3].

The variety was tested in farmers fields across four districts of hill zone of Karnataka and recorded 14 per cent increased grain yield over the recommended check Hemavathi (Table 3). In addition it was also tested for blast tolerance at ZARS, Mudigere; ARS,

**Table 2.** Grain and Straw yield performance of KHRS-21 over location and year in comparison with check varieties

Entries	ZARS, Mudigere (1999-2003)	ARS, Sirsi (1999-2003)	ARS, Ponnampet (1999-2003)	% increase over checks		
				Mean	Intan (Ch)	Hemavathi (Ch)
<b>Grain yield (kg/ha)</b>						
KHRS-21	7590	5193	4428	5737	32	34
Intan (Ch)	5822	5076	2193	4363		
Hemavathi (Ch)	6022	4992	1826	4280		
<b>Straw yield (kg/ha)</b>						
KHRS-21	9536	12422	5474	9144	32	24
Intan (Ch)	8264	9234	3346	6948		
Hemavathi (Ch)	8695	10006	3427	7376		

**Table 3.** Performance of KHRS-21 in different districts of hill zone in farm trials

Season/ District	No. of Locations	Grain yield kg/ha		% increase over check
		KHRS-21	Hemavathi (Ch)	
<b>Kharif 2002</b>				
Chikmagalur	9	7380	5920	25
Shimoga	6	6100	5400	13
Hassan	2	3650	3275	12
Coorg	3	5200	4350	19
EEU, Mudigere	4	5925	4818	23
<b>Mean</b>	<b>24</b>	<b>5651</b>	<b>4753</b>	<b>19</b>
<b>Kharif 2003</b>				
Chikmagalur	8	5474	4968	10
Shimoga	8	5651	5210	9
Hassan	2	4310	4220	2
Coorg	4	4533	4100	11
EEU, Mudigere	2	5646	4942	14
<b>Mean</b>	<b>21</b>	<b>5123</b>	<b>4688</b>	<b>9</b>
<b>Grand mean</b>	<b>45</b>	<b>5387</b>	<b>4721</b>	<b>14</b>

Sirsi and Ponnampet and there was no incidence of blast during three years of study.

The variety has all the qualities of an ideal plant type for the zone/region (tall plant stature, long duration, non lodging, medium bold white grains besides high grain and straw yield compared to ruling varieties) and hence is suitable for low lands of the hill zone of Karnataka.

#### References

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