

**RESEARCH ARTICLE :**

# Performance of different rice hybrids in Krishna western delta

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**SUMMARY :** A field experiment was conducted at Rice Research Unit, Bapatla during *Kharif*, 2013 to observe the performance of hybrids under Krishna Western Delta. The experiment was laid out in Randomized Block Design with four replications. The treatments are 5 rice hybrids like DRRH2, DRRH3, KRH2, PA6201 and CRHR32. The results of study revealed that the hybrids exhibited superiority in respect of different growth parameters like plant height, number of tillers per hill, panicle length grain yield and straw yield. Among various tested rice hybrids, maximum grain yield (6408 kg/ha) and straw yield (7178 kg/ha) were recorded in PA6201 which might be due to better growth parameters and yield components of hybrids.

**KEY WORDS:**

Different rice hybrids

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## **BACKGROUND AND OBJECTIVES**

Rice (*Oryza sativa* L.) is one of the world's most important food crops and a primary source of food for more than half of the world population. More than 90 per cent of rice produced and consumed in Asia. It is planted in about 163 million ha annually (FAO, 2013) of the world's cultivated land (Degenkolbe *et al.*, 2013). Among the rice growing countries in the world, India has the largest area under rice crop (about 42.5 million ha, FAO 2013) and ranks second in production next to China. Rice contributes 43 per cent of total food grain production and 46 per cent of total cereal production in India. In India, total area under rice cultivation is decreasing at rapid rate; on the other hand the demand for rice is increasing with the growing population.

India's population is projected to be 1.378 billion by 2030 and in order to meet the domestic demand of increasing population the present day production of about 100 million tons of rice has to be increased to 130 million tons by the year 2030 (Viraktamath, 2011). Therefore, to fulfil the gap between demand and supply, it is required to increase the productivity of rice *i.e.* production per unit area in many folds. On the other hand there is a yield plateauing in high yielding rice in our country like other south-east Asian countries. Introduction of hybrid varieties with high potentiality in yield is the best alternative for increasing the rice production without increasing its cultivated area. Hybrid rice technology has also been proved to be one of the most feasible and readily adoptable

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approaches to meet the domestic demand. The rice hybrids, recently introduced in cultivation, on an average, give 20-30 per cent higher yield over the common high yielding varieties (Prasad, 2012). The present study was conducted to evaluate the performance of rice hybrids as compare to popular high yielding variety of rice during monsoon or *Kharif* season in Krishn western delta.

## RESOURCES AND METHODS

A field experiment was conducted during *Kharif*, 2013 at Agricultural Research Station, Bapatla. The experiment was laid out in a Randomized Block Design with 5 treatments replicated four times. The treatments are 5 rice hybrids like DRRH2, DRRH3, KRH2, PA6201 and CRRH32. All 5 rice hybrids were sown separately in nursery and twenty five days old seedlings were transplanted into main field by adopting a spacing of 20 cm between rows and 15 cm between plants with in a row. Nitrogen was applied as per the treatments in three equal splits in the form of urea. First split of nitrogen was applied as basal dose at the time of planting of the crop remaining two equal splits of nitrogen was broadcasted at maximum tillering and panicle initiation stages. Phosphorus was applied at the rate of 60 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> in the form of single super phosphate as basal and potassium 40 kg K<sub>2</sub>O ha<sup>-1</sup> in the form of muriate of potash was applied in two equal splits as basal dose at the time of transplanting and panicle initiation stage. Irrigation and weed management was done in time to time. The plant height was measured from ground level to the apex of last fully opened leaf during vegetative period and upto the tip of the panicle after flowering. Panicle length of ten randomly selected panicles from each plot was measured from neck node to the tip of panicle and then averaged and expressed in cm. Number of grains of 10

randomly selected panicles from each plot were counted and then averaged as grains panicle<sup>-1</sup>. Samples of grain collected separately at the time of threshing from each plot were dried properly. 1000-grains from each of these samples were taken and their weights were recorded and expressed in grams. The border rows were harvested first and then, the net plot area was harvested and the produce was threshed by beating on a threshing bench, cleaned and sun dried to 14 per cent moisture level. Grain from net plot area was thoroughly sun dried, threshed, cleaned and weight of grains was recorded and expressed in yield per hectare. The data were analyzed statistically following the method given by Panse and Sukhatme (1978) and wherever the results were calculated at 5 per cent level of significance.

## OBSERVATIONS AND ANALYSIS

Plant height was affected significantly by different hybrids. Among different rice hybrids PA 6201 recorded significantly highest plant height (108 cm) which was statistically at par with CRRH 32(104 cm). The lowest plant height (91 cm) was recorded with DRRH 2. Among yield components, productive tillers plays very important role because the final yield is mainly depends on the number of panicles bearing tillers (productive tillers) per unit area. Significantly more number of tillers was produced by PA 6201 hybrid (15) followed by CRRH 32 hybrid (14) which was significantly superior to DRRH 2 and KRH 2 hybrids. Pandey *et al.* (2001) noted that PA6201 gave significantly higher productive tillers per hill. Among the hybrids, PA 6201 showed significantly higher panicle length (23.8 cm) and it was on a par with CRRH32 (23.3 cm). Significantly the lowest panicle length was recorded with KRH2 hybrid (22 cm). The other hybrids were also showed differences in panicle

**Table 1: Growth, yield attributes and yield of different rice hybrids**

Treatments	Plant ht (cm)	No. of productive tillers/plant	Length of the panicle (cm)	No. of grains/panicle	Grain yield (kg/ha)	Straw yield (kg/ha)	Test weight (g)
DRRH2	91	12	22.6	194	5529	6437	22.6
DRRH3	96	13	22.0	165	5183	6020	20.9
KRH2	108	12	22.2	186	5486	6349	23.4
PA6201	96	15	23.8	254	6408	7178	24.6
CRRH32	104	14	23.3	227	5772	6846	23.9
S.E. ±	2.3	0.4	0.5	4.6	122	152	0.2
C.D. (P=0.05)	7.1	1.0	1.2	13.9	378	459	0.6
CV (%)	6.4	6.8	5.5	7.2	7.3	6.2	5.5

length under observation. Such type of variation in physiological parameters among the different varieties might be owing to differences in their parental origin which caused variation in their genetically inheritance for such traits. The present findings corroborate with those of several researchers (Akram *et al.*, 2007 and Awal *et al.*, 2007). Among the five rice hybrids the highest number of grains per panicle was registered in PA6201 hybrid (254) which was on par with CRRH32 hybrid (227) and the lowest number of grains per panicle 165 was registered in DRRH3 hybrid. There is significant difference among rice hybrids. PA6201 recorded maximum test weight (24.6 g) followed by CRRH 32 (23.9 g). The lowest test weight (20.9 g) was recorded with DRRH3. There was significant difference in grain yield of various rice varieties studied. Among the five rice hybrids PA6201 was recorded maximum grain yield 6408 kg/ha, while the lowest grain yield of 5183 kg/ha was recorded in DRRH3. All the growth, yield attributing parameters are responsible for grain yield and biological yield. Similar findings have been reported by Singh and Bharadwaj (2007); Yajie *et al.* (2008) and Choudhary *et al.* (2010). The variety PA6201 produced highest straw yield (7178 kg/ha) but lower straw (6020 kg/ha) in case of DRRH3. All these parameters were found exactly in accordance with physiological parameters responsible for such a deviation. The present results are in accordance with those of Hussain *et al.* (2001) and Somanth Sardhar *et al.* (2008).

### Conclusion:

From this study it was clearly indicated that the maximum growth and yield attributing parameters like highest plant height (108 cm), more number of productive tillers per plant (15), maximum panicle length (23.8 cm), more number of filled grains per panicle (254), maximum 1000 grain weight (24.6g), highest grain yield (6408 kg/ha) and straw yield (7178 kg/ha) was recorded in PA 6201 hybrid followed by CRRH32 hybrid.

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