

## RESEARCH NOTE

# Varietal performance of rice for their yield and its attributes in farmers field of Durg

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Exploratory studies were undertaken from the farmers field of village Hanoda, Durg district, Chattisgarh to evaluate the performance of different prevailing varieties of rice and to find out suitable variety of rice for lowland rice cultivation under agro climatic conditions. The growth and yield attributes of rice varieties varied significantly. The plant height decreased gradually in the following manner, Mahamaya>MTU 1010>Mahsuri >HMT>Danteshwari variety of rice grown. The maximum plant height (87.00 cm) was recorded with Mahamaya variety which was at par with MTU 1010 and Mahsuri varieties (86.87 cm and 84.25 cm) and was significantly higher than the HMT (82.37 cm) and Danteshwari (79.75 cm) varieties of rice grown. The number of tillers per plant increased gradually from 249.63 tillers per sq.m in Mahamaya to 284.13 tillers per sq.m in HMT and then decreased in case of Danteshwari. The data on grain yield revealed that significantly higher grain yield (48.00 q/ha) was recorded with HMT variety of rice grown. The grain yields increased gradually from 41.77q/ha in Mahamaya to 48.00 q/ha in HMT and then decreased to 44.12 q/ha in Danteshwari variety of rice crop.

**Key words** : Rice, Variety, Yield attributes, Yield

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Rice is the staple food crop of people in Chhattisgarh (Singh *et al.*, 2011). Rice is mainly cultivated in the Durg district of Chhattisgarh during *Kharif* season in the state and the crop is sown from the month of June to July depending upon the selection of variety and mainly glutinous varieties of local rice are cultivated by the farmers in the state, therefore, selection of varieties are the most important factor responsible for low production and productivity of the crop besides other topographical and input related constraints. Sowing time and selection of suitable variety are important aspects in rice cultivation.

Crop yield is a complex phenomenon and depends upon several factors. Proper varietal selection has substantial impact on final crop yield. A low yielding variety results in excessive vegetative growth due to very

heavy rains in the region which results in poor grain formation and the maturity coincides with the rainy period and ultimately resulted in reduced grains yield, on the other hand varietal selection of very late sown crop results in poor growth and yield due to reduced vegetative growth, lesser tillering and grain formation. Since the information regarding the suitable variety of rice in the farmers field of Durg, district of Chattisgarh was not available, an explorative survey was carried out. The present documentation was undertaken to find out the performance of the best rice variety in the Durg, district of Chhattisgarh.

The study involved survey and record of all the package of fertilizer and crop management practices followed by the farmer, besides information about the

nutrient availability status of the soils before cropping, nutritional status of the crop at maximum tillering stage including crop productivity and dry matter yield at harvest. The performance of 5 popular varieties grown in Durg district of Chhattisgarh were selected. Soil of the farmers' field was sandy loam in texture, low in available nitrogen (136.0 kg/ha), medium in available phosphorus (19.16 kg/ha), medium in available potassium (175.0 kg/ha) and slightly acidic to neutral in reaction (pH 6.0 to 7.0). Fertilizer dose of N<sup>80</sup>, P<sup>60</sup> and K<sup>40</sup> kg/ha, was applied at the time of sowing. The sowing was done at a spacing of 20cm x 10 cm. The observations were recorded for plant height in cm, number of tillers per square meter, grains per panicle and grain yield in quintals per hectare and test weight (1000 seed) in grams.

The crop growth and yield is a complex phenomenon which depends upon several biotic and abiotic factors influencing the growth and development of the crop. Thus, influences accumulation and partitioning of photosynthates from source to sink. This accumulation and partitioning of photosynthates may vary depending upon the selection of a variety which resulted in differential growth and development of the crop and thus, resulted in differential yields.

The growth and yield attributes of rice varieties varied significantly. Perusal of the data presented in Table 1 indicated that, the plant height decreased gradually in the following manner Mahamaya>MTU 1010>Mahsuri >HMT>Danteshwari varieties of rice grown. The maximum plant height (87.00 cm) was recorded with Mahamaya variety which was at par with MTU 1010 and Mahsuri varieties (86.87 cm and 84.25 cm) and was significantly higher than the HMT (82.37cm) and Danteshwari (79.75 cm) varieties of rice grown. This may be attributed to the strong performance and genetic expression of the variety once favourable climatic conditions and availability of more water due to excessive rainfall, which coincides with the active growth

period of the crop as compared to successive dates of sowing is available. Significantly higher number of tillers (284.13/ sq.m) were recorded in HMT which was at par with Mahsuri and MTU1010 (279.38 and 264.88/sq.m). The number of tillers per plant increased gradually from 249.63 tillers per sq.m in Mahamaya to 284.13 tillers per sq.m in HMT and then decreased in case of Danteshwari. This may be attributed to the facts that varietal differences recorded more vegetative growth and reduced number of tillers/ sq.m and also the HMT and Danteshwari attained less growth and development, which resulted in poor source to sink partitioning of the photosynthates and thus, resulted in formation of lesser number of tillers/ sq.m as compared to the Mahsuri and MTU1010 .

The data on grains per panicle revealed that significantly higher grains per panicle (95.37/ panicle) was recorded with HMT variety which was at par with Mahsuri and MTU1010 (93.37 and 89.87 grains/ panicle). The grains per panicles increased gradually from 81.12/ panicle in Mahamaya to 95.37/ panicle in HMT varieties and then decreased to 86.25/ panicle in Danteshwari variety of rice grown.

The data on grain yield revealed that significantly higher grain yield (48.00 q/ha) was recorded with HMT variety of rice grown. The grain yields increased gradually from 41.77q/ha in Mahamaya to 48.00 q/ha in HMT and then decreased to 44.12 q/ha in Danteshwari variety of rice crop. These differences in the grain yield may be attributed to the optimum growth and development of yield attributing characters of the crop as a result of better utilisation of favourable agro- climatic conditions, which ultimately resulted in the form of increased grains yields.

The maximum test weight (28.49g) was recorded with HMT variety of rice grown, which was at par with Mahsuri and Danteshwari varieties of rice grown. The test weight increased gradually from 26.97g in Mahamaya to 28.49g in HMT and then decreased to 27.48g in

| Sr. No.       | Date of sowing | Plant height (cm) | Tillers/sq.m | Grains/panicle | Grain yield (q/ha) | Test weight (g) |
|---------------|----------------|-------------------|--------------|----------------|--------------------|-----------------|
| 1.            | Mahamaya       | 87.00             | 249.63       | 81.12          | 41.77              | 26.97           |
| 2.            | MTU 1010       | 86.87             | 264.88       | 89.87          | 46.65              | 27.26           |
| 3.            | Mahsuri        | 84.25             | 279.38       | 93.37          | 47.67              | 28.11           |
| 4.            | HMT            | 82.37             | 284.13       | 95.37          | 48.00              | 28.49           |
| 5.            | Danteshwari    | 79.75             | 262.88       | 86.25          | 44.12              | 27.48           |
| C.D. (P=0.05) |                | 3.77              | 20.27        | 8.23           | 3.78               | 1.28            |

Danteshwari variety of rice grown. These differences in the test weight may be attributed to differential values for growth and yield attributes under different dates of sowing, which ultimately resulted in production of differential grain size (Sarkunan *et al.*,1998).

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