

## Effect of age of seedling, organic manures and nitrogen levels on the yield and yield contributing characters of rice cv. GURJARI

A.S. PATEL\*, J.J. PATEL<sup>1</sup>, R.A. PATEL<sup>2</sup> AND G.J. PATEL<sup>3</sup>

Department of Agronomy, Agricultural Research Station (Anand Agricultural University),  
THASRA (GUJARAT) INDIA

### ABSTRACT

A field experiment was conducted at Agricultural Research Station for irrigated crops, Anand Agricultural University, Thasra, Gujarat during *Kharif* season of the year 2006 and 2007 to find out the effect of age of seedling, organic manures and nitrogen on the yield of transplanted *Kharif* rice named Gurjari. The treatments consisted of two seedling ages viz., A<sub>1</sub> (10 to 12 days old seedling) and A<sub>2</sub> (25 to 30 days old seedling), five levels of organic manures M<sub>1</sub> (No organic manure), M<sub>2</sub> (FYM 10 t ha<sup>-1</sup>), M<sub>3</sub> (Vermicompost 2 t ha<sup>-1</sup>), M<sub>4</sub> (FYM 10 t ha<sup>-1</sup> + Bio fertilizer) and M<sub>5</sub> (Vermicompost 2 t ha<sup>-1</sup> + Bio fertilizer) and two nitrogen levels N<sub>1</sub> (75 kg Nha<sup>-1</sup>) and N<sub>2</sub> (100 kg Nha<sup>-1</sup>). The highest plant height, effective tiller plant<sup>-1</sup>, panicle length, panicle weight, number of grain panicle<sup>-1</sup> and test weight were found in 10 to 12 days old seedling. 100 kg Nha<sup>-1</sup> (N<sub>2</sub>) was the best performer in respect to growth attributes, yield attributes and yield. Panicle length, panicle weight and test weight were the highest than 75 kg Nha<sup>-1</sup> (N<sub>1</sub>). Finally 10 to 12 days old seedling demonstrated the best performance in respect of grain yield and this variety may preferably be cultivated with the application of Vermicompost@ 2 t ha<sup>-1</sup> + Bio-fertilizer (*Azotobacter* ABA-1 + Phospho solublizing bacteria PSB-16 each @ one liter ha<sup>-1</sup> at 3 DATP) and application 100 kg Nha<sup>-1</sup> in three split to obtain appreciably good yield in *Kharif* season.

**Key words :** Gurjari, Rice, Seedling age, Nitrogen, Yield parameter

### INTRODUCTION

Rice (*Oryza sativa* L.) is the foremost cereal of the world. It belongs to the grass family Poaceae, sub-family Oryzoideae. Among the cereals, rice occupies a second position, next to wheat with regard to food value. Rice is major source of protein in the Asian diets. Three fourth of the total population of India depends mainly on rice. In Gujarat, major rice growing areas are confined in Navsari, Valsad, Surat, Dang, Panchmahal, Vadodara, Kheda, Anand and Ahmedabad districts. Seedling age plays a key role in deciding the productivity of rice. Transplanting is done at an early stage of seedling which enhances the tillering ability of the plant. Due to uncertainty of monsoon rains, the transplanting of rice gets prolonged. Under such situation, comparative evaluation of young versus aged seedlings needs to be done, to make the crop more accommodative in the system and to obtain the good yields. The use of chemical and off farm inputs in intensive agriculture is fast increasing, resulting in deterioration of soil health and increase environmental pollution. There is a need to integrate organics with chemical fertilizers for sustainable crop production, maintenance of soil fertility and conservation of natural resources. Due to regular use of chemical fertilizers, the fertility of soil is also decreasing.

### MATERIALS AND METHODS

An experiment was conducted at the Agricultural Research Station for Irrigated Crops, Anand Agricultural University, Thasra, Dist. Kheda (Gujarat) during two consecutive *Kharif* seasons of the year 2006 and 2007. The soil of the experimental field was sandy clay loam in texture, having good drainage capacity. It was low in organic carbon and nitrogen, medium in available phosphorus and high in available potash. The experiment consisted of twenty treatment combinations, comprised of two age of seedlings A<sub>1</sub> (10 to 12 days old seedling) and A<sub>2</sub> (25 to 30 days old seedling), five levels of organic manures M<sub>1</sub> (No organic manure), M<sub>2</sub> (FYM 10 t ha<sup>-1</sup>), M<sub>3</sub> (Vermicompost 2 t ha<sup>-1</sup>), M<sub>4</sub> (FYM 10 t ha<sup>-1</sup> + Bio fertilizer) and M<sub>5</sub> (Vermicompost 2 t ha<sup>-1</sup> + Bio fertilizer) and two nitrogen levels N<sub>1</sub> (75 kg Nha<sup>-1</sup>) and N<sub>2</sub> (100 kg Nha<sup>-1</sup>). The seeds in nursery were seeded on 20<sup>th</sup> June, 2006. After fifteen days, second nursery was seeded on 4<sup>th</sup> July, 2006 for getting low age seedling. Same procedure was carried out during the second year 2007. The nursery was seeded on 21<sup>st</sup> June and 5<sup>th</sup> July, 2007. To obtain vigorous healthy seedling, ammonium sulphate was applied @ 250g /10 m<sup>-2</sup>. Full dose of phosphorus from diammonium phosphate was applied at the time of transplanting as a basal dose. Nitrogen was applied in the form of urea in three splits, 40 per cent at transplanting,

\* Author for correspondence.

<sup>1</sup>Department of Agronomy, B.A. College of Agriculture, Anand Agricultural University, ANAND (GUJARAT) INDIA

<sup>2</sup>Department of Agronomy, Directorate of Extension Education, Anand Agricultural University, ANAND (GUJARAT) INDIA

<sup>3</sup>Department of Agronomy, T.R.T.C., Anand Agricultural University, Devagadh BARIA (GUJARAT) INDIA