



Research Article

Influence of FYM, brown manuring and levels of nitrogen on yield, net water expense and quality parameters of direct seeded and transplanted rice (*Oryza sativa* L.)

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Abstract : The influences of FYM, brown manuring and nitrogen levels on yield, net water expense and quality parameters of rice was assessed in a field experiment carried out on a loamy sand soil at Punjab Agricultural University, Ludhiana, during *Kharif* 2008. Field experiment comprised of 20 treatment combinations *viz.*, five main plot treatments (Direct seeded rice with and without FYM, Direct seeded with brown manuring, Transplanted rice with and without FYM and 4 nitrogen levels as sub-plot treatments (90, 120 and 150 kg N ha⁻¹ and LCC treatment). Rice growth and yield were statistically similar under direct seeded and transplanted conditions. The direct seeded puddle rice gave yield comparable to that of traditional practice of transplanting of seedlings with the added advantage of earlier maturity of the crop by 12 days. Compared with transplanted rice, direct seeded rice reduced the net water expense during crop growth period by 21 per cent. Both transplanted and direct seeded rice responded to the application of 120 kg N ha⁻¹. Quality parameters *i.e.* hulled, milled and head rice recovery and protein content was not influenced by different planting methods. These findings thus clearly elucidate the scope of direct seeded rice under puddle irrigated conditions on Punjab.

Key Words : Brown manuring, Direct seeded rice, FYM, Leaf colour chart, Nitrogen

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INTRODUCTION

In Punjab, the rice is cultivated on an area of about 2.6 million hectares with total production of 10.5 million tones of milled rice (Anonymous, 2009a). Traditionally, rice is cultivated as puddle transplanted, which is cumbersome and labour intensive. Moreover, this technique requires continuous ponding of water for establishment of the seedlings and for full effectiveness of applied herbicides. This in turn leads to nutrient losses through leaching besides

causing high evapo-transpiration (ET) losses during the hot summer months. In addition, it has been realized that at cultivar's fields plant population varies from 16-21 hills/m² as against the recommended 33 hills/m², which acts as a yield limiting factor. Presently, the farmers in Punjab transplant paddy in the first week of June when the daily evaporation rate is very high (8-10 mm/day). This practice of staggered planting has led not only to higher water consumption but also posed a serious threat to timely planted paddy crop (15-30 June) due to sizeable build-up of pests and disease and over exploitation of resources. Moreover, in the Indo-Gangetic Plains (IGP) in general and in Punjab which lies in the Trans-Gangetic region of IGP, in particular, the underground water is being over exploited by excessive pumping to meet the water need of transplanted paddy. As a consequence, it has been causing a sharp decline in ground water table. Therefore, of late, need has acutely

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