ENGINEERING AND TECHNOLOGY IN INDIA Volume 2 Issue (1&2); (April & October, 2011); Page : 32-36

RESEARCH ARTICLE

Received: may, 2011; Revised: Aug., 2011; Accepted: sep.., 2011

Influence of industrial wastes on growth, yield and yield attributing characters of rice

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ABSTRACT

The present investigation was undertaken with an objective to study the utilization of industrial solid and liquid wastes in the cultivation of rice (*Oryza sativa* L.) in the net house of Agricultural and Food Engineering department, I. I. T., Kharagpur. The results revealed that the growth, yield attributing characters and yield increased considerably by the combined application of rice mill water with chemical fertilizer and FYM $@ 5 ext{ tha}^{-1}$. However, combined application of industrial solid wastes with MW and CF was found to be more effective than their individual application alone. Among the treatments, the maximum grain yield was recorded under MW + FYM + CF. The increase in grain yield was associated with increase in number of panicles per pot and grains per panicle. The maximum uptake of N and P by rice was found in case of CF alone whereas for K it was in case of MW + FYM. The results further revealed that application of chemical fertilizer could be dispensed with by the application of rice mill water in required quantity and at regular interval during the growing period of the crop.

Gaikwad, S.P. and Kaute, M.H. (2011).Influence of industrial wastes on growth, yield and yield attributing characters of rice. *Engg. & Tech. in India*, **2** (1&2): 32-36.

Key words : Completely randomized design, Yield, Yield attributing characters, Fly ash, Rice husk ash, Mill waste water

INTRODUCTION

Industrial wastes which are often the cause of environmental pollution can be used after treatment or mixing with organic sources as soil amendment or enrichment to improve the land productivity. Wastes of rice mills and fly ash of thermal power plants are now available in abundance. Among the available industrial wastes, only 3 to 5 per cent are being utilized in our country, whereas in many developing countries about 50 to 60 per cent of these industrial wastes are being utilized. It is found that rice mill waste water is a source of essential plant nutrients.

Its proper utilization can prevent environmental

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M.H. KAUTE, Department of Irrigation and Drainage Engineering, Padmashree Dr. D.Y. Patil College of Agricultural Engineering and Technology, KOLHAPUR (M.S.) INDIA pollution as well as help to improve agricultural production by increasing the nutrient uptake and ultimately the yield. Properly planned use of waste water alleviates surface water pollution problems and not only conserves valuable water resources but also takes advantage of the nutrients contained in it to grow crops. The availability of this additional water near population sources will increase the choice of crops which farmers can grow. The nitrogen and phosphorus content of this water might reduce or eliminate the requirements for chemical fertilizers. It is generally accepted that wastewater use in agriculture is justified on agronomic and economic grounds but care must be taken to minimize adverse health and environmental impacts. Rice (Oryza sativa L.) is the most important crop grown in rainfed lowland areas of the subcontinent and also of south East Asia. Cost of fertilizers constitutes about 50 to 60 per cent of the cost of production of rice under different conditions (Mandal et al., 1990). This necessitates use of low cost or zero cost industrial wastes as source of nutrients for enriching soil to increase production at a reduced cost of cultivation. Keeping this in mind and also the importance of industrial wastes and waste water, the present experiment was carried out to