INTERNATIONAL JOURNAL OF PROCESSING AND POST HARVEST TECHNOLOGY (December, 2010); 1 (2) : 107-110

RESEARCH PAPER

Received : Nov., 2010; Accepted : Dec., 2010

Impact of biologically treated dye factory effluent and the efficacy of biofertilizer amendment on seed germinability, biochemistry and yield of *Vigna mungo* (L.) Hepper

I. JAYASHREE, M. RAJESWARI AND S. SHARMILA

ABSTRACT

The study reported the effect of short-term effluent irrigation along with bioferitilizer (Rhizobia + Phosphobacteria) amendments on seed germination, biochemistry and yield of black gram under pot condition. Higher concentrations of the raw effluent were deleterious to the plant. However, dilution of the effluent, irrigation by treated effluents (biologically and chemically treated effluents from dye factory) and soil incorporation of biofertilizers gave better results comparable with that of the control.

KEY WORDS : Dye effluent, Biofertilizer, Biological treatment, Biochemical constituents

Jayashree, I., Rajeswari, M. and Sharmila, S. (2010). Impact of biologically treated dye factory effluent and the efficacy of biofertilizer amendment on seed germinability, biochemistry and yield of *Vigna mungo* (L.) Hepper, *Internat. J. Proc. & Post Harvest Technol.,* **1** (2) : 107-110.

INTRODUCTION

Rapid industrialization has led to enormous amount of discharge of industrial wastes leading to heavy pollution of fresh water resources. The dyeing industry is one of the major industries in our country. The disposal of dyeing wastes after proper dilution serves as a potential source of fertilizer for agricultural use (Sujatha and Gupta, 1996; Subramani *et al.*, 1998). Effluents can be treated at the source itself through physical, chemical and biological processes. Among them, biological treatment methods are more effective and ecofriendly than chemical methods. Aquatic weeds like waterhyacinths are capable of absorbing, metabolizing and concentrating nutrients and chemical pollutants from polluted water body (Wolverton, 1975; Cornwell *et al.*, 1977 and Gersberg *et al.*, 1984). The response of various crops to the combined effect of effluent and different biofertilizers has been well documented (Natarajan and Oblisami, 1980; Subrahmanyam *et al.,* 1984). Therefore, a thorough investigation of the effluents on the crop and the ameliorative effect of biofertilizers and water weeds on the effluent characteristics is essential before it is implemented in agriculture.

Correspondence to:
I. JAYASHREE, P.G. and Research Department of Botany, Vellalar College for Women, ERODE (T.N.) INDIA

Authors' affiliations:
M. RAJESWARI AND S. SHARMILA, P.G. and Research, Department of Botany, Vellalar College for Women, ERODE (T.N.) INDIA

MATERIALS AND METHODS

The raw and treated effluent (effluent treated in dye factory by chemical process) samples were collected from a medium sized dye factory. Some quantity of the effluent was taken in plastic containers and treated biologically using *Eichhornia crassipes*. The plastic containers were kept in the laboratory at $30^0 \pm 2^0$C room temperature for 8 days (retention period). After the retention period 1 litre of this biologically treated effluent (T_1) was used for irrigating the crops. *Vigna mungo* (L.) Hepper was used as the test plant. It was grown in pots filled with field soil. In another experimental set, the soil in some of the pots was amended with biofertilizer (Rhizobia + Phosphobacteria) in the ratio of 5:1 (soil:biofertilizer) and the plants were irrigated using treated effluents – biologically treated effluent (T_2) and chemically treated effluent (T_4). The plants were irrigated with different concentrations (25%, 50%, 75% and 100%) of raw effluent, biologically treated effluent (T_1) and factory treated effluent (T_3) at fortnightly interval. Tap water was used for intermittent watering whenever necessary. Control was maintained using tap water. No pesticide was applied to the plants during the course of study. The results