International Journal of PharmTech Research
CODEN (USA): IJPRIF ISSN : 0974-4304
Vol.4, No.4, pp 1703-1705, Oct-Dec 2012

# Effect Of Organic And Biofertilizers On Growth And Yield Of Eclipta alba(L.)

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**Abstract:** This experiment was carried out to study the effect of organic manure(Farmyard manure and poultry manure at a rate of 75$m^3$/ha) and biofertilizers (Rhizobium and azospirillum at a rate of 980 gm/ha) as their interactions on growth and yield using drip irrigation system.the results indicated that the appilication of a poultry manure as an organic fertilization to recorded the maximum values.*Eclipta alba* treated with rhizobium biofertilizer gave the highest value, while plants treated with azospirillum respectively.
**Keywords:** Biofertilizers, Rhizobium, azospirillum.

## Introduction

Medicinal and aromatic plants are known to be used by 80% of global population for their medicinal therapeutic effects as estimated [1]. *Eclipta alba* (L.) is a small branched annual herbaceous plant with a long history of traditional medicines uses in many countries especially in tropical and sub tropical regions. This plant is commonly known as false daisy. It is an erect or prostrate, much branched, roughly hairy, annual, rooting at the nodes; the leaves are opposite, sessile and lanceolate. Belonging to family Asteraceae [2]. It is also known as Bhringaraj and Karisilakanni, which is found a common weed throughout India [3].

The herb has been known for its curative properties and has been utilized as antimytotoxic, analgesic, antibacterial, antihaemorrhagic, antiperglycemic, antioxidant, immunomodulatory properties and it is considered as a good rejuvenator too [4]. A wide range of chemical compounds including coumestans, alkaloids, thiopenes, flavonoids, polyacetylenes, triterpenes and their glycosides have been known to possess ethnomedicinal uses, chemical composition and the pharmacological profile as medicinal plant [5].

Organic fertilizers is a very important method of providing plant with their nutritional requirements without having the best undesirable impact on the environment [6].Organic manure and biofertilizers are important for medicinal and aromatic plants to product best product in both quantity and quality and it is also safe for human, animal and the environment [7]. The aim of this work was to study the effect of the application of organic manures and biofertilizers on the vegetative growth, yield and chemical composition of *Eclipta alba*.

## Experimental Methods

This experiment included which were the combinations of two organic manures, that is farmyard manure and poultry manure and two fertilizers i.e rhizobium and azospirillum beside control. These treatments were arranged in a split plot the organic fertilizers were randomly arranged in the main plots and biofertilizer were randomly distributed in the sub plots.
Seeds of *Eclipta alba* were obtained from Agricultural research center in Coimbatore. The

seeds were sown in the foam trays containing peat moss. The experiment unit area was 12.5$m^{2.}$ It contains 3 dripper lines with 6m length each and 60cm distance between each dipper lines. Organic manure was added during the soil preparation before planning at a rate of 75$m^3$/ha for both FYM and poultry manure. Both the fertilizer was added at a rate of 400g/hec of each. Both fertilizers were dissolved in 5l water and the roots of transplants were dipped for 3min in this suspension before transplanting.

Harvesting the plants was alone at 15cm above soil surface. Random samples of the plotes from each sub plot cuts were taken and the following parameters were determined. For vegetative growth of plants, there were changes in plant height (cm), number of branches/plant, herb fresh and dry weight/plant(g).the dry weight of herb was finelly ground and wet digested. Nitrogen (N), phosphorus (P) and potassium (K) were determine ed as dry weight basis according the methods [8.] The data was subjected to proper statistical analysis of varience[9].

## Results And Discussion

**Vegetative growth**

**Effect of organic fertilizer**

Plant height, number of branches of herb was significantly affected by addition of organic fertilizers source. It is clear from the data in table-1 shows the maximum values of 49.53 cm for plant height and 44.82 cm for number of branches, while application of FYM manure recorded 45.74 to 40.00 cm for number of branches.

**Effect of biofertilizer**

The data in table 1 showed that the sources of biofertilizer had a significant effect on plant height and number of branches/ plant. Application of biofertilizer rhizobium gave the highest values in this respect, compared to the azospirillum. The increment in vegetative growth due to biofertilizer application might be due to the vital role of bacteria present in the applied biofertilizer and capable of contributing some hormone substances[10].

**Herb fresh weight**

**Effect of organic fertilizer**

The fresh weight/plant and hectare were significantly increased by application of organic manure of poultry recorded 108.53 g/plant. While application of organic manure as the source of poultry manure increased than FYM respectively. It could be concluded that the increment in plant fresh weight may be attributed to the increase in both plant height and the number of branches/ plant.

**Effect of biofertilizer**

The use of rhizobium biofertilizer resulted in corresponding increase in herb fresh weight/plant and per hectare and recorded the maximum values as 92.87.Biofertilizer are microbial inoculants used for ferity with the objective of increasing the number of such microorganisms and to accelerate certain microbial processes in the rhizosphere of inoculated plants or soil [11.]

**Herb dry weight**

**Effect of organic fertilizer**

It is clear from the data in table 1 shows the sources of organic fertilizer had a significant effect on the poulatry manure gave the highest values in their respect32.34g/plantcompare to the other treatments. These results are in agreement with those results obtained [12.]

**Effect of biofertilizer**

The treatment of *E.alba* transplants with biofertilizer increased herb dry weigh the and per hectare and gave the same values for herb dry weight were recording for rhizobium biofertilizer 26.15 g/plant while azospirillum gave intermediate values.

**N, P and K (%)**

**Effect of organic fertilizer**

The N, P and K in herb proved a significant response with using poultry manure as an organic fertilizer. Poultry manure were the superior source, which gave the highest values of N, P, and b K content of herb tissues of *E.alba* plants may explain the efficiency of suitable quantity of organic fertilizer that can attract and hold nutrients and water on its some nutrients such as Fe, Zn and Mn through the breakdown of organic manure in the soil and makes these elements in available forms and this in turns improve N, P, K and this reflects a beneficial effect on growth and dry weight.

**Effect of biofertilizer**

It is clear that generally, treatments of *E.alba* transplants with rhizobium biofertilizer gave the highest content of N, P, K in herb without significant difference with azospirillum .The effect of biofertilizer may be due to the effect different strain group and nutrients mobilizing microorganisms which help in availability of metals and their forms in the composted materials and increased level of extracted minerals [13].

**Table 1: Effect of organic sources and biofertilizers of *Eclipta alba***

| Treatments | Effect of organic manures | | | | | | |
|---|---|---|---|---|---|---|---|
| | Plant height(cm) | No. of Branches /plant | Herb fresh wt(g/plant) | Dry wt (g/plant) | Nitrogen (%) | Phosphorus (%) | Potassium (%) |
| Farmyard manure | 45.74 | 40.00 | 83.43 | 21.11 | 1.91 | 0.209 | 1.41 |
| Poultry manure | 49.53 | 44.82 | 108.53 | 32.34 | 2.29 | 0.223 | 1.64 |
| | Effects of Biofertilizers | | | | | | |
| Control | 43.58 | 24.26 | 59.70 | 19.97 | 2.07 | 0.223 | 2.00 |
| Rhizobium | 47.94 | 44.51 | 92.87 | 26.15 | 2.92 | 0.264 | 2.19 |
| Azospirillum | 45.08 | 42.45 | 76.40 | 21.06 | 2.17 | 0.243 | 2.10 |

## Conclusion

Therefore, a combination of organic manure and biofertilizer is suggested to be used in order to improve the fresh weight of *E.alba* plant. Finally, it could be concluded that the interaction between poultry manure at a rate of 75 $m^3$/hc and with rhizobium biofertilizer are adjusted as the superior treatments for increasing plant growth, herb dry weight of *E.alba* plant.

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