

## Studies on spacing and nutrient management practices on growth and yield of *Eclipta prostrata* L. and residual soil properties

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### ABSTRACT

A field experiment was conducted to study the effect of spacing and nutrient management practices on performance of growth and yield of bhringaraj (*Eclipta prostrata* L.) and the soil properties after harvest at Research-cum-Experimental farm, Department of Forestry, NERIST, Nirjuli, Arunachal Pradesh during 2005-06 and 2006-07 under split plot design with three replications. There were 3 different spacings viz., S<sub>1</sub>- 20 x 20 cm, S<sub>2</sub>- 25 x 25 cm and S<sub>3</sub>- 30 x 30 considered as main factor and six different doses of nutrients viz., F<sub>0</sub>- N<sub>0</sub>P<sub>0</sub>K<sub>0</sub>, F<sub>1</sub>-N<sub>30</sub>P<sub>20</sub>K<sub>10</sub>, F<sub>2</sub>- N<sub>60</sub>P<sub>40</sub>K<sub>20</sub>, F<sub>3</sub>- N<sub>90</sub>P<sub>60</sub>K<sub>30</sub>, F<sub>4</sub>- 10 t FYM/ha and F<sub>5</sub>- N<sub>60</sub>P<sub>40</sub>K<sub>20</sub> + 5 t FYM/ha as sub factor. The results indicated that relatively wider spacing viz., 25 x 25 cm and 30 x 30 cm recorded significantly higher growth and reproductive characters along with herb yield. All the spacing treatments remained at par on residual soil P, K and organic carbon though soil N was superior in the closest spacing. All the nutrient management practices showed better performance than control on all the above parameters. Among the nutrient management treatments FYM application either alone or in combination with fertilizer and highest doses of NPK applied treatments were superior to other treatments. Application of organics recorded the highest residual soil parameters.

**Key words :** *Eclipta prostrata* L., Spacing, Nutrient management, Growth, Yield, Soil properties

### INTRODUCTION

“Bhringaraj” botanically known as *Eclipta prostrata* L. false daisy in English, is a very valuable medicinal plant having wide range of uses from pre-vedic era. The whole plant of the parts is used in medicinal industries (Anonymous, 1989). According to Ayurveda philosophy, *Eclipta prostrata* is bitter, hot fattening alternative anathematic and alexipharmic. In scientific studies *Eclipta prostrata* shows good antifungal activities. From the medicinal point of view it is useful in inflammations, hernia, eye diseases, bronchitis, asthma, leucoderma, anemia, heart and skin black and long hair all over India for its hair growth-promoting potential (Kanjilal *et al.*, 1982). The fresh juice of leaves is used for increasing appetite, improving digestion and as a mild bowel regulator. It is popularly used to enhance memory and a general tonic against debility (Gogate, 1982). There are also reports of clinical improvement in the treatment of infective hepatitis (Dixit and Achar, 1979) and snake venom poisoning in Brazil (Melo *et al.*, 1994) as well as septic shock in folk medicine in China (Kobori *et al.*, 2004). Due to high percentage of saponins and tennins in the leaf extract of *Eclipta prostrata*, the herbs can be used as environment friendly and sustainable insecticides to control *Culex quinquefasciatus* mosquito larvae (Khanna and Kannabiran, 2007). At present 80 per cent of the available quantity of medicinal plant used in medicinal industries is actually obtained from the forest areas, while only 10 per cent of the actual quantity available is collected from non-forest areas (Ravishankar *et al.*, 1999). But now, efforts are

being made to change the scenario, to obtain 80 per cent medicinal plants from cultivated field and less than 20% from the forest. The major limitation, however, for the cultivation of a wild medicinal plant is lack of standard cultivation packages. Therefore, present investigation was undertaken to standardize the suitable spacing and nutrient management practices for domestication and commercial cultivation of false daisy.

### MATERIALS AND METHODS

One field experiment was conducted at Research-cum-Experimental farm, Department of Forestry, North Eastern Regional Institute of Science and Technology (NERIST), Nirjuli, Arunachal Pradesh for two consecutive years 2005-06 and 2006-07 under split plot design with three replication. The research farm is located at 27°08'30" N latitude and 93°44' 36" E longitudes with an altitude of 120 meters above the mean sea level. The soil of the experimental site was loamy sand in texture, acidic in reaction (pH 5.64), 1.19 in bulk density, 15.65% moisture content with low initial available soil nitrogen (265.47 kg/ha), Phosphorus (21.56 kg/ha), Potash (97.53 kg/ha) and medium soil organic carbon (0.66%). The climatic condition of Nirjuli, Arunachal Pradesh, as a whole is tropical warm humid where monsoon normally sets in the first week of June, extends up to the end of September and recedes in October. The mean annual maximum and minimum temperature varies between 37°C and 12°C, respectively. More than 80% of rainfall occurs during monsoon (June-September) registering about 60-80%

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