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Research Paper

Fertigation studies on leaf area and chlorophyll content in coriander (*Coriandrum sativum* L.)

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ABSTRACT

Fertigation allows applying the nutrients exactly and uniformly only to the root volume, where the plants active roots are concentrated. This refined technology remarkably increases the efficiency of the applied fertilizers thus economizes the quantity of fertilizers and water, and the cost of labour and energy resulting in reduced cost of cultivation. Adoption of advanced and efficient methods of application of water and fertilizers will have saving up to 50% fertilizer usage (Shiva shankar,1999). Hence the present investigation was taken up to find out the influence of fertigation on growth, productivity of coriander Co CR-4, CS 11 with the following objectives to study the effect of fertigation on leafy types of coriander. Fertigation with 125 per cent water soluble fertilizer showed profound influence on chlorophyll content of the leaves. Application 125 percent RDF (T_1) recorded the maximum chlorophyll 'a' of 2.20 and 2.54 mg g^{-1} during first and second season at harvest stage.

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Key words : Coriander, Fertigation, Leaf area, Chlorophyll

Among the sophisticated hi-tech methods practiced, drip irrigation has proved its superiority due to direct application of water in the vicinity of root zone. Under drip irrigation, the spatial distribution of soil moisture and consequently crop roots are restricted to a small volume of soil directly below the emitters such as restriction has important implications for optimum fertilizer placement (Selvakumar, 2006).

MATERIALS AND METHODS

The experiment was laid out in FRBD design with 4 treatments replicated thrice. A plot size of 1 x 1.5 m was maintained for each treatment.The field experiment was carried at the University orchard of Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore Out of 27 genotypes (leafy types) maintained in the Department of Spices and Plantation Crops, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore, two genotypes (Co CR-4, CS 11) were selected for this study, as the genotypes proved well for use as leafy type.

The treatments are as follows : T_1 - Drip fertigation with water soluble fertilizer at 125 % RDF, T_2 - Drip fertigation with water soluble fertilizer at 100 % RDF, T_3-Drip fertigation with water soluble fertilizer at 75 % RDF and T_4 - Recommended normal fertilizer applied to soil with furrow irrigation

RESULTS AND DISCUSSION

The effect of fertigation on leaf area at different growth stages of coriander in different varieties is furnished in the Table 1.

The treatments had a significant influence on leaf area at all stages of observation. Application of nutrients at 35 days after sowing through fertigation significantly influenced the leaf area. Application of 125% RDF (T_1) recorded 37.83 and 36.90 cm^2 in first and second season, respectively at 35 DAS. With regard to variety Co CR-4 (V_1) had maximum Leaf area than CS 11(V_2).

At 45 DAS, application 125 per cent RDF (T_1) recorded the maximum leaf area of 73.33 and 71.31 cm^2 during first and second season, respectively. The lowest leaf area registered in the treatment applied with recommended NPK applied to soil with furrow irrigation (T_4) with values of 20.78 and 23.61 cm^2 during first and second season, respectively. Values has exhibited similar trend as that of observations at 35 DAS.

The combined effect of Co CR-4 with 125 per cent of fertigation (T_1V_1) at all the stages of the crop growth, recorded maximum leaf area followed by T_1V_2 in both