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EFFECT OF ZINC AND IRON ON GROWTH AND YIELD OF CAULIFLOWER (*Brassica oleracea* VAR. BOTRYTIS LINN.) cv. SNOWBALL-16

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ABSTRACT

A field trial was conducted on cauliflower cv. Snowball-16 during Rabi season of the year, 2002-03 in order to find out the effect of Zinc (Zn) and Iron (Fe) on growth and yield of cauliflower. Zinc (ZnSO4) and Iron (FeSO4) were applied as foliar sprays in nine treatment combinations considering three concentrations of Zn (0.0, 0.5 & 1.0%) and three concentrations of Fe (0.0, 0.5 & 1.0%) at 30 and 60 days after transplanting of seedlings. The results indicate that leaf area $(cm)^2$ and marketable yield (q/ha) were found significantly highest with combine foliar sprays of zinc and iron at 0.5% concentration each. The non-significant results were obtained on minimum days taken for curd initiation and curd maturity with different combine foliar sprays of zinc and iron at 0.0, 0.5 & 1.0% concentration each. However the minimum days taken for curd initiation and curd maturity were recorded with individual foliar sprays of zinc and iron at 0.5% concentration, respectively.

Key words : Zinc, Iron and Cauliflower

Cauliflower (*Brassica oleracea* var. Botrytis Linn.) is one of the most important vegetable cole crops grown in India. It is grown for its white tender curd formed by shortened flower parts. It has high nutrient requirement, particularly macro and micronutrients. Cauliflower curd yield has been set aside by deficiency of micronutrients, which leads to certain physiological disorders Mehrotra and Misra (1974). But the research done on use of zinc with combination of iron is scantly. So that the present trial was conducted to study the effect of Zinc (ZnSO4) and Iron (FeSO4) on growth and yield of cauliflower cv. Snowball-16.

MATERIALS AND METHODS

The field trial was conducted during Rabi season of the year, 2002-03 at Agronomy Research Farm, College of Agriculture, Junagadh Agricultural University, Junagadh. The experiment was laid out in Factorial Randomized Block Design with four replications. Zinc and iron were applied in the form of zinc sulphate ($ZnSO_4.7H_2O$) and ferrous sulphate ($FeSO_4.7H_2O$), respectively. There were nine treatment combinations, considering three concentrations of zinc (0.0, 0.5 & 1.0%) and three concentrations of iron (0.0, 0.5 & 1.0%) applied as foliar sprays at 30 and 60 days after transplanting of seedlings. The seedlings of cauliflower cv. Snowball-16 were transplanted after five weeks of seed sowing at 45×30 cm spacing. All the experimental plots received recommended dose of nitrogen (150 kg/ha), phosphorus (37.5 kg/ha) and potassium (37.5 kg/ha) along with F.Y.M. (15 tones/ha). The data were recorded on leaf area (cm^2), curd initiation (days), curd maturity (days) and marketable yield (q/ha) for randomly selected plants.

RESULTS AND DISCUSSION

Effect of zinc:

The findings indicate that the maximum leaf area $(cm)^2$ was recorded with zinc 0.5% concentration (Table-1). The leaf area significantly increased might be due to the beneficial effect of zinc, which plays an important role in the synthesis of tryptophane (precursors of auxin), stimulate leaf growth of plant by active physiological processes of cell elongation and cell division and there by increased leaf area of plant. This finding is in conformity with Martin (1966). The data further reveal that the minimum days taken for curd initiation and curd maturity were found with zinc 0.5% concentration. The favorable effect of zinc application on flower initiation and early flowering was reported by Kanwar and Thakur (1972) in kidney bean. Liverman and Lang (1956) reported that zinc might have helped in the synthesis of tryptophan, which ultimately promoted the flower initiation.

Shear (1948) indicated the significant reduction in days taken for curd initiation and curd maturity might be due to the better absorption of nutrients resulting in efficient physiological activities in plants, which was governed by the beneficial effect of zinc and it was directly