

Effects of Zinc Sulphate Treatments on Apple Yield and Growth Indices Salmas Area

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Apple (*Malus domestica L.*) is one of the most important and strategic fruits of this country. Increasing apple yields constitutes an important motive in developing the country's economy. Apple ranks first among the exported horticultural products as far as the weight is concerned. This experiment was designed to test the methods of Zn application in relation to apple yield and growth indices in Salmas, West Azarbaijan, during 1998-99 growing season. Experiment included methods of fertilizer application, namely, broadcast, placement in a hole (Chalkood), foliar application, and finally injection of zinc sulphate. These methods were tested in a completely randomized block design with five replications having 10 treatments, namely T1 = Control (no fertilizer), T2 = Balanced fertilization based on soil tests minus zinc, T3 = T1 + Fertilizer broadcast, T4 = T2 + zinc injection, T5 = T1 + Fertilizer broadcast, T6 = T2 + zinc broadcast, T7 = T1 + Foliar application of zinc, T8 = T2 + Foliar application of zinc, T9 = T1 + Placement of zinc in a hole, and T10 = T2 + Placement of zinc in a hole. Analysis of soil tests from 0-30 cm and 31-60 cm depths indicated that the level of soil fertility was low, and the concentration of most nutrients were about or below the critical level. It was of great interest to know that the zinc concentrations from both soil layers were 0.2 mg/kg, indicating a severe deficiency of this element resulting from its continuous uptake without supplementing it. The analysis of the irrigation water showed high levels of bicarbonates.

The results demonstrated that, in all treatments, there was a yield increase

A - Chemical characters:

- 1- Sugar Content (%)
- 2- Total soluble solids (TSS) (%)
- 3- Acidity content (%)
- 4- Water content (%)
- 5- Dry matter content (%)
- 6- Fiber content (%)
- 7- Pectin content (%)
- 8- PH
- 9- Ash content (%)

B - Morphological and physical characters:

- 1- Fruit shape (includes basin and apex form)
- 2- Calyx tube (form, size)
- 3- Core (form, size)
- 4- Seed (size, form, color)
- 5- Fruit size (Mean weight and mean length)
- 6- Fruit color
- 7- Fruit surface (includes skin and pubescence characters)
- 8- Fruit flesh (texture, color)
- 9- Texture firmness
- 10- Flavor, taste and fragrance

Any of these factors, were measured in 5 fruits from any genotype randomizely and fruits in all genotypes were picked up in September. Finally, fruit characters in these genotypes were introduced perfectly.