

The Role of Zinc in Plant Nutrition

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INTRODUCTION

When there is a deficiency of a particular element in the land, then it is definitely impossible to get a good crop without removing the deficiency of that element. Plants require many nutrients to grow and flourish. If the nutrients required by the plants are not supplied properly, then the plants cannot develop properly and yield is not available.

Along with the major nutrients, deficiency of important nutrients like zinc is being experienced in most parts of the country. In such a situation, it may not be possible to get a good yield with the use of nitrogen, phosphorus and potash only. A significant increase in crop yield is achieved when zinc is used in combination with key nutrients in zinc deficient fields.

The role of zinc in plant nutrition:-Zinc is a part of many metal enzymes, besides zinc plays a role in activating many enzymes, zinc helps in protein synthesis. In the absence of this element, protein synthesis cannot take place. Zinc also affects the utilization of carbohydrates in plants. It helps in the formation of chlorophyll when combined with iron and manganese.

Symptoms of Zinc Deficiency:-The symptoms of zinc deficiency are clearly visible in plants. Due to its low or excessive deficiency, the following symptoms are manifested.

- due to inhibition of plant growth, dwarfism (dwarf)
- chlorotic yellowing of leaves (chlorosis)
- thickening, thickening or distorting of leaves (mottleaf)
- tissues in the chlorotic area on the leaves Die off (necrosis)
- shortening of stem and shriveling and sweeping of leaves (rosetti)
- Small, abnormal, deformed and folded leaves (little leaf)
- Early fall of leaves, flower and fruit deformity (hypertrophy)
- Adverse effect on seed formation Excessive reduction of production.

Apart from all this, sometimes the symptoms of zinc deficiency are not visible but there is a direct adverse effect on the production.

Detection of zinc deficiency in crops:

Wheat:-Symptoms of zinc deficiency in wheat appear shortly before the onset of buds, the central part of the older leaves turns yellow and the tissue at the sites of these spots dies. As a result, the affected leaves bend down from the middle. First, the symptoms of deficiency appear on the third and fourth leaves and later the new leaves are affected, which reduces the production.

Maize:-Due to the deficiency of zinc in maize, light yellow streaks occur in the middle of the veins of the middle fully grown leaves, which later acquires a white color. The newly emerged leaves are usually light yellow or white in color, so this disease is called white bud disease. **Mustard:-**Due to zinc deficiency, brown and beige colored spots appear in young leaves which later turn white. The stem becomes very short and the leaves become tufted at the top is a symptom of severe deficiency.

Gram:-Small and yellow appearance of leaves is the main symptom of zinc deficiency. Falling of flowers and shortening of pods are also its special symptoms.

Paddy:-The disease which occurs in paddy due to deficiency of zinc is called Khaira disease. Due to this disease, after 15-25 days of transplanting, the third and fourth leaves of the plants first show signs of chlorosis, after that small spots of brownish golden color appear on them, which later meet each other on all the leaves. gets spread. As a result, the entire plant appears reddish brown and eventually the leaves die.

Potato:-Irregular spots of brown gold color are formed on the stems and leaves. Plant growth stops. Leaves become distorted, clump and curl upwards with symptoms of cyanosis. Due to the appearance of old leaves like fern

leaves, it is called fernleaf disease. Different varieties of potatoes produce different symptoms. **Onion:-**Due to zinc deficiency, the plant becomes dwarf, the tip of the leaf becomes yellow striped and twisted. Yellowing of leaves is the main symptom of zinc deficiency.

Tomato:-Its symptoms appear quickly in cold. The initial growth is very slow, the leaves are thick, abnormal and show signs of colorlessness. Leaves turn downwards and brownish yellow spot on it and petiole becomes like hook.

Vegetables:-Due to zinc deficiency in vegetables, firstly the cyanosis between the veins of the leaves, the leaves become abnormally deformed and twisted upwards. Flowers fall early and fruit holding capacity and fruit quality are affected.

Mango:-The disease caused due to deficiency of zinc in mango is called Little Leaf. In this, the leaves are deformed, abnormal and take the form of a bunch in the top. Premature shedding of flowers and fruits Copper colored spots on older leaves. Being is a symptom of it.

How to use Zinc for the diagnosis of the above diseases

1. Mixing in soil:-In normal land, application of Zinc Sulphate (21 percent) is suitable at the rate of 5-10 kg per acre, but in alkaline soil this amount is found to be 10-20 kg per acre. Entire amount of zinc should be applied along with other fertilizers at the time of planting in paddy and at the time of sowing in other crops.

2. Foliar spraying:-For some reason, zinc was not used in the field and if zinc deficiency is experienced in the standing crop, then for foliar spray of zinc sulphate, 2 kg zinc sulphate (21 percent) and 1 kg slaked chives should be used. It should be sprayed on the leaves by dissolving it in 200 liters of water. Next spraying must be done at an interval of 10 days.