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The Essential Role of Zinc Nutrition in Pecan Orchards

Pecan trees (botanical name: *Carya Illinoensis*) are deciduous fruit trees originating from Central and North America. Pecan trees live longer and can bear fruit (nuts) for more than 300 years. The tree grows up very quickly and tends to like rather cold climates. Most of the pecan orchards in Israel are located in the coastal area, Jezreel valley, and the Hula Valley. Pecan picking takes place from November till January according to variety and region. Pecan nuts are rich in unsaturated fats which are health beneficent and contain vitamin B, Iron, and Potassium. Among trace elements, pecan mostly needs zinc, especially for flowering process and kernel filling. Compared to most fruit trees and other nuts, pecan trees require higher levels of zinc. Zinc deficiency might affect tree productivity by falling flowers, inhibitor developing the of leaves and fruits, and damage the quality of fruit (nuts). Zinc is involved in various enzymatic processes in the plant. It is an essential element for the good functioning of cell membranes. Hidden deficiencies can find out during annual leaf tests, which are recommended for mature orchards during August. The visible deficit symptom when the branch segment between the leaves are shorter and shaped like a "leaf rosette".

Just like in case of other trace elements deficiencies, lack of zinc is due to the high pH of the soil which impedes the roots microelements absorption process. Zinc availability is reduced in alkali soils due to its sedimentation as a hardly soluble salt, its reaction to calcium carbonate, and its fixation into internal layers of clay. adsorption Zn^{2+} ion charge, when positive, is easily absorbed by clay layers in the soil known for their negative charge.

To enable zinc uptake by a plant in Israeli soils, zinc should be added through a chelation process (such as Zn EDTA) with its organic molecules covering and protecting the zinc inside. The application of chelated zinc to the soil such as Gat Zinc prevents sedimentation and fixation, increases Zn concentration in the soil solution, and its mobility in the soil, thus increasing Zn availability to the plants.

Gat Zinc is the most effective and high-quality solution available on the market for the treatment of zinc deficiencies in the plant. To compensate deficiencies,



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Recommended amount per hectare 40-80 liters/hectare, depending on the plot condition. According to the Ministry of Agriculture Guidance Section, zinc leaf tests resulting in a ppm level lower than 15, is a sign of deficiency requiring treatment.

Gat Fertilizers Company offers efficient and high-quality solutions for pecan orchards such as complex fertilizer solutions ("Elite" / "Tov" / "Tov Blue") and / or nitrogen solution containing "Blue" additives (nitrogen stabilizer) in combination with Gat Zinc and other trace elements. The Blue additive preserves nitrogen as ammonium and the absorption of ammonium in the plant lowers the pH in the rhizosphere zone while stimulating efficiency and availability of trace elements and phosphorus.

Gat Fertilizers specializes and offers its wide experience in producing and composing fertilizer solutions in various NPK ratios in combination with Gat Zinc and other trace elements adapted to orchards according to plant tests, water quality and soil tests based on growing stages and the plant needs, this, in addition to close and reliable agronomic guidance.

Fertilization guidelines are mentioned for recommendation only. Gat Fertilizers' agronomists' team is ready anytime to provide solutions and professional guidance.

Adi Nave, Gat Fertilizer agronomist

Sources:

1. Field Service, Ministry of Agriculture and Rural Development.
2. Plant Council
3. Diagnosing Nutrient Disorders -New Mexico Pecan trees – NM State University