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WHERE DOES FOLIAR FERTILIZATION FIT IN?

A portion of a plant's nutritional needs can be met by applying soluble fertilizer directly to the foliage. Foliar fertilization can result in rapid nutrient absorption and utilization to correct deficiencies or to merely prevent nutrient shortages during critical periods of growth. However, unlike roots, plant leaves are not adapted to assimilate large amounts of nutrients and meet the bulk of the nutrient requirement. Foliar nutrition has several potential benefits, such as:

- Supplying nutrients during peak periods of demand when an immediate response is needed
- Providing plants with certain nutrients, such as zinc and iron, that may not be readily available for root uptake
- Allowing flexibility in supplying nutrients related to improving the quality of the harvest
- Controlling nutrient losses in conditions with high potential loss
- Providing a nutrient source during periods of stress when soil applications are not practical
- Giving a nutritional boost to plants at the same time that other foliar chemicals are being applied, thereby minimizing application expenses

For some crops, foliar nutrition may be the most economical and reliable method of providing some nutrients, especially with micronutrients. However, there can be a large difference in the effectiveness of various fertilizer sources in actually penetrating into the leaf surface and providing the desired nutritional benefit. A local expert should be consulted to select the source of foliar nutrition that will best achieve the desired result with the least expense on specific crops.

There are many environmental factors that also impact the effectiveness of foliar nutrient application. Generally, application during early morning or evening is most effective. Air temperatures less than 85 °F and high humidity conditions favor nutrient adsorption into the leaf. Wind speed should be low to avoid missing the target plants and minimize drift. Nutrient application to young, actively growing tissue and buds is generally more effective than application to mature tissue.

Foliar application of macronutrients, such as N and K, can also be beneficial for meeting the complete plant nutritional requirement. For example, foliar application of K has been shown to help cotton meet the demand of the rapidly developing bolls when roots may not be capable of completely meeting demand. Additionally, foliar sprays of N fertilizer onto small grains such as wheat are sometimes beneficial in increasing the protein content of the seed.

Foliar fertilization can provide an important supplement to the nutritional program of farmers. However, this practice should be considered an additional management technique and not the primary means of nutrient delivery. Plant roots have evolved to be the major pathway for nutrient uptake and their health and function is the primary goal. Appropriate soil fertility levels in the rootzone should be monitored with regular soil testing and maintained with nutrient replacements. However during critical growth stages, a foliar application of nutrients might be just what the plants need to reach goals for yield and quality.

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For more information, contact Dr. Robert Mikkelsen, Western North America Director, IPNI, 4125 Sattui Court, Merced, CA 95348. Phone: (209) 725-0382. E-mail: rmikkelsen@ipni.net.

Abbreviations: N = nitrogen; K = potassium;