

Foliar Feeding Of Nutrients

Foliar application of plant nutrients can produce higher yields and make your nutrition program more efficient.

By Charlie O'Dell

FOR many years, horticulturists and agronomists have largely subscribed to the belief that foliar feeding of plant nutrients is an idea of dubious merit best employed only where a specific minor element deficiency may exist. Dramatic and fast correction of such nutrient deficiencies are almost always seen from such foliar applications.

Dr. H.B. Tukey, renowned plant researcher and head of the Michigan State University (MSU) Department of Horticulture in the 1950s, working with research colleague S.H. Wittwer at MSU, first proved conclusively that foliar feeding of plant nutrients really works. Researching possible peaceful uses of atomic energy in agriculture, they used radioactive phosphorous and radiopotassium to spray plants, then measured with a Geiger counter the absorption, movement, and utilization of these and other nutrients within plants. They found plant nutrients moved at the rate of about one foot per hour to all parts of the plants.

Comparing efficiency of plant use of foliar-fed nutrients versus soil-applied nutrients near roots, they found foliar feeding provided about 95% efficiency of use compared to about 10% of use from soil applications.

Likewise, speed of absorption and use by foliar applications was immediate, whereas from soil applications absorption and plant use both were very slow, thus providing a major benefit of foliar feeding where a specific plant nutrient deficiency may exist, be it a major or minor nutrient.

You'll note from references of these

researchers' work cited herein that this very important finding was published, but only in research journals and symposia proceedings. These findings rarely made their way into the ranks of Extension educators or their grower-focused publications and other teaching materials or programs.

Now, a half-century later, it is important to bring these science-based findings to light and publicize this work to benefit growers and their crops.

Putting It To Good Use

Armed with this knowledge dug from research journals, commercial agricultural chemists began developing foliar feeding formulations. Their continuous product improvement research has resulted in products containing not only specific plant nutrients, but also natural plant sugars that aid rapid entry and movement into and through plants, plus cytokinins — natural plant growth hormones extracted from seaweed, now stabilized for several years of shelflife.

Together with nutrients, they aid natural plant defense mechanisms to resist many diseases and insect pests. Such products can help improve your soil and your plants' health for higher yields with lower pest control inputs and plant nutrients costs, based on tests over the past year. A small amount of plant nutrients, foliar-applied, can replace a much greater amount that is soil-applied, and is immediately available.

A Range Of Benefits

At recent meetings, growers have expressed great interest in nutritional plant health products. Some health products for soil application contain enzymes that

For Further Reading

FOR more information on foliar nutrient applications, check out the following resources.

1. Tukey, H.B. and Wittwer, S.H., 1956. "The entry of nutrients into plants through stem, leaf and fruit, as indicated by radioactive isotopes." *Progress in Nuclear Energy Biological Sciences Series Six*, pp. 106-114. McGraw-Hill, NY, and Pergamon Press, London.

2. Tukey, H.B., Wittwer, S.H., Teubner, F.G., and Long, W.G., 1956. "Utilization of radioactive isotopes in resolving the effectiveness of foliar absorption of plant nutrients." *International Conference on the Peaceful Uses of Atomic Energy, Vol. 12: 138-148*. United Nations, NY.

3. Wittwer, S.H., Teubner, F.G. and McCall, W.W. 1957. "Comparative absorption and utilization by beans and tomatoes of phosphorus applied to the soil and foliage."

Proceedings, American Society for Horticultural Science, Vol. 69: 302-308.

cause an increase in the soil's native population of bacteria and fungal microflora to improve soil structure, water and air permeability, and help unlock bound-up, currently unavailable soil nutrients. Products for drip irrigation improve plants without nitrogen. And, products for foliar application, provide the fastest plant response.

All are designed to supplement and improve your soil fertility program. Several are certified by the Organic Materials Review Institute, and some are formulated for sustainable, non-toxic use. With improvements in plant absorption technology, use of food-grade nutrients prevents plant absorption of possible impurities that may be contained in non food-grade formulations.

Such impurities could be toxins that could become part of the fruits and vegetables that we would consume. Check the plant food labels! **AVG**

O'Dell is a horticultural consultant and extension horticulturist emeritus, commercial strawberry, blueberry, and vegetable production; olecro@agro-k.com.