Agronomist claims foliar fertilizer n

NEW YORK, N.Y. — It could be several years before agricultural authorities include foliar fertilizers in their official recommendations for corn and soybeans.

Nevertheless, many progressive and curious farmers continue to spray their corn and soybeans, often treating a few more acres per year as results become more consistent.

Manufacturers also remain optimistic. The Allied Corporation (formerly Allied Chemical Corporation), for instance, is now in the midst of a $1.5 million research program aimed at perfecting the technique.

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The corporation recently reaffirmed its confidence in foliar feeding by acquiring from Iowa State University residual rights to a patent on use of certain foliar fertilizer solutions which increased yields dramatically in a 1976 study.

Sales activity also reflect enthusiasm among farmers. According to Allied, demand for its foliar fertilizer (12-4-4-.5S) has been increasing annually in the United States. And large volumes of micronutrient sprays such as NZN, NMG and NFE also are being used to boost yields or, sometimes, prevent yield losses.

Foliar fertilization is not just a concept for the future, proponents claim. So far the technique has proved to be a sound and relatively consistent practice on vegetables, tree fruits, nuts and turf.

But, experts say, more field trials are needed before foliar fertilizers can be used with the same level of confidence on soybeans. Finding out why they produce tremendous yield increases in one plot and not another—or why they work one year and fail the next—is the objective of researchers and farmers across the country.

"The question today is not whether foliar fertilizers should be used, but how and when to use them to their best advantage," says agronomist Don Johnson of Allied. "The concept's growth has come from those farmers and researchers who have studied it carefully, and then followed a well-planned, practical approach to field selection, environment, application timing and technique."

Not many plant physiologists dispute the logic behind foliar feeding. The idea is to apply the solution directly to the foliage so the plant can absorb nutrients at a critical stage of crop development.

Unlike soil-applied fertilizers, foliar sprays do not come in contact with compounds that break down or tie up nutrients. It has been estimated that as much as 85 percent of the total plant food in a foliar spray is utilized by the plant. (Efficiency standards for soil-applied fertilizers are sometimes as low as 10 percent and rarely exceed 70 percent.)

According to Johnson, who has been closely involved with the technique's development, foliar sprays work best when used on crops that already have high-yield potential.

"They make a good crop better by giving it an extra kick prior to seed or pod filling," he explains. "If all goes well, yield increases of 10-30 percent are quite possible."

Determining whether or not a crop has high-yield potential requires more than a windshield survey from a pick-up truck. Johnson urges farmers not to be fooled by a crop's cosmetic beauty and to examine plants thoroughly before spraying.

"You might have the prettiest field of corn or beans in the county, but that's no guarantee the crop has high-yield potential," the agronomist warns. "You have to get out in the field, make sure you have a good stand and population, and check to see if the crop is at the right stage of development to receive a foliar spray."

For example, spraying foliar fertilizer on soybean plants not having a good pod set would do little, if anything, to increase yields, he says. Pods at the base of the plant should be plentiful, and the fertilizer should not be applied until pods form on the upper podes—usually when they are .25 to .75 inch long.

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In field corn, foliar fertilizer should be sprayed after pollination and before early-dough stage. (Be sure to check the product's specific application guidelines.)

Environmental factors and time and method of application also are critical when using foliar fertilizers. Agronomists involved with Allied's research project for foliar fertilization, now underway with various land grant institutions in the United States, hope to fine tune these variables. Meanwhile, Johnson advises farmers to think before they spray and avoid applications during extremes in the weather.

"Common sense has to prevail," he says. "If you're going to spray, the crop should be actively growing and not be under stress from drought, insects or disease."

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As a general rule, refrain from spraying if the temperature is above 90 degrees. Better results are often obtained when the material is sprayed at dawn or dusk. Johnson explains that plants regain some moisture in late afternoon and early evening, making them more conducive to adsorbing fertilizer through the tissue. Early morning is also considered a good time to spray because there little or no wind, though farmers should avoid spraying fields dripping with dew because some fertilizer could run off the foliage, he says.

Regardless of the time of day, chances for success are enhanced if it does not rain within 48 hours of application.

Although foliar fertilizers should be used only on crops that are actively growing, there are a few instances where they may be applied to correct damage caused by other means.

Hail, soil compaction or herbicide injury, for example, can upset a plant's metabolism and hamper efficient use and transport of soil nutrients. Foliar fertilizers, Johnson says, have been known to accelerate plant recovery by supplying them with needed nutrients and getting their metabolism back on track so they can utilize soil nutrients. In this sense foliar sprays prevent yield losses by nursing the crop through the crisis period. They could even increase yields in spite of the temporary stress.

"The longer plants are under stress, the less yield they product," Johnson says. "The problem must be corrected quickly, and foliar fertilizers are really the only practical tool for the job."

Foliar fertilizers also can be used on crops to correct temporary deficiencies of nutrients tied up in the soil. The trick is to identify the exact nutrient deficiency—whether it be by visual appearance or tissue test - and use the correct foliar spray to fill the gap and enhance the plant's ability to recover land-locked nutrients.

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