

# THE MIDWEST

# BIO-TECH NEWS

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**June, 2005**

## **HIGH INPUT COSTS**

Although gasoline and diesel prices are a bit lower now than they were earlier in the spring, all indicators point to continued high fuel prices for the foreseeable future. The most important factors driving high energy costs into the future include strong demand from the major oil importers, the weakness of the US dollar, uncertainties about world oil reserves, limits on the capacity to ship and refine more crude oil, the high cost of discovering and extracting new oil sources, and political difficulties in major producing regions like Nigeria, Venezuela, Iraq and other parts of the Middle East, and Russia and other former Soviet states.

In the past, high fuel prices have tended to stimulate businesses to find new ways to use energy more efficiently. For example, strong interest in energy conservation emerged after the oil price shocks of the 1970's. As a result, the US economy can currently generate the same amount of goods and services as 30 years ago while using about half as much energy. The same is true in farming, but the problem is generally more challenging because higher petroleum prices not only affect the cost of fuel used for fieldwork and grain drying but also raise the prices of petroleum-based inputs like some chemicals and inorganic fertilizers (especially nitrogen). Until energy prices decline or we develop lower cost alternatives, farmers will have to manage higher costs for all of these inputs in order to maintain or improve their bottom line. The good news is that more money is now being invested in renewable fuels from farm sources, including bio-diesel and ethanol.

Due to the high price of nitrogen, we are now seeing more articles about reduced fertilizer rates in the popular press. As well, the University of Illinois will soon begin a multi-year study of reduced nitrogen rates on corn. Although we are happy to see more interest in reduced fertilizer rates and believe these efforts will be productive, we also believe they are long over-due. Our first-hand experience with the benefits of these products under reduced fertilizer rates extends back over 25 years. In past issues of the newsletter, we have reported results from several on-farm trials that compared yields under full and reduced rates of nitrogen and other nutrients. We have also reported several side-by-side soil tests that show the Chandler Crop Products can help maintain or increase soil nutrient availability, even if the amount of applied fertilizer is reduced.

Chandler Crop Products may help reduce crop production costs in other ways. Users of Chandler Soil typically find that the increased bacterial activity makes the soil much easier to work, and several of our long-term users report that they typically shift up a gear while working fields that have been treated with Chandler Soil for at least two years. The increased bacterial activity in the soil also helps make pesticide treatments more effective. Some users of Chandler Soil have eliminated insecticide treatments, and other users have reduced their herbicide application rates. For example, Richard Swanson of Morrison, IL, recently told us that he reduced his herbicide rates by 25% with no noticeable change in the level of weed control.

## **FOLLOW-UP INFORMATION ON SOIL MICROBE COUNTS**

In the March, 2005, newsletter, we printed an article that reported some university test results on Chandler Soil and the number of soil microbe colonies formed in a soybean field. The colony counts were collected for three types of soil microbes (actinomycetes, bacteria, and fungi) at monthly intervals during the growing season (May to October). After the Chandler Soil treatment in early June, the colony counts in the treated plots were much higher than in the untreated plots, and the season average increase was roughly 200% across the three types of soil microbes. The article has generated a lot of favorable comments and some additional questions from readers of the newsletter. We want to take this opportunity to provide some follow-up information and to answer these questions:

**What are actinomycetes?** Actinomycetes are a type of bacteria that decompose the toughest plant materials like cellulose that form the plant walls. They generate the earthy smell from freshly turned soil or a newly opened compost pile. When you dig into a compost pile, the actinomycetes may be seen as gray web-like filaments in the outer 4 to 6 inches of the pile.

**What about bacteria?** Soil bacteria are the most numerous of the soil microbes, but there are different types of bacteria. Some bacteria convert plant nutrients to forms that the plant can use, and other types work to decompose plant material in the soil. The decomposers work on plant material after the actinomycetes and fungi are done with the heavy work, and these soil bacteria generate the heat found in the center of a compost pile. Some of the decomposers work at low temperatures (down to 0 degrees F) and others are active at high temperatures (over 100 degrees F). Finally, some soil bacteria release a sticky substance that binds the soil particles and builds soil structure. As bacterial activity increases, soil tilth and structure improves.

**Aren't bacteria bad?** Some forms of bacteria are pathogens and are responsible for soil-borne disease. However, the soil scientists indicate that the beneficial soil bacteria will compete with the bad bacteria and keep them in control. So, the key to soil disease prevention is to maintain strong and activity colonies of beneficial bacteria.

**What about fungi?** Mycorrhizal fungi work among the roots and help the plant to take up water and nutrients. Other types of fungi are like the actinomycetes and decompose cellulose before the bacteria complete the task. These fungi are especially important because they work in extreme conditions, including acidic, low moisture, or low nitrogen soils that will not support much bacterial activity. The fungi in a compost pile may be seen as fluffy gray colonies on or near the surface.

## **PRIVACY POLICY**

Over the past several years, we have provided detailed on-farm test results and testimonials in this newsletter. We have also printed much of this material in our product brochures and have cited it during our user meetings and at the winter trade shows. However, we have recently had an increasing number of requests to keep this information private. There is one main reason for these privacy requests --- the increasingly competitive nature of farming. Many of our users report that the extra net income provided by the Chandler Crop Products gives them a competitive edge when bidding for rented or purchased land.

We understand the privacy needs of our users, and we will fully honor each request. The positive message that we take from this trend is that the products are providing very significant benefits to our users. The disadvantage of this change in farming is that we probably won't be able to offer as much detailed on-farm yield data as in the past. However, we will try to provide as much useful information as possible without compromising the identity of our users who have requested protection of their privacy.

## SOYBEAN RUST

One of the hottest topics in farming today is the potential impact of soybean rust. The infestation has moved up from the southern states much faster than initially thought, and rust outbreaks are expected to appear in the upper Midwest in the coming year. Over the past few months, we have received calls from several farmers who want to know if one or more of the Chandler Crop Products can help prevent or control an outbreak of soybean rust. At present, we don't have any direct experience with Chandler Crop Products and soybean rust because the problem has not yet spread to our marketing area. However, the product specialists at Chandler tell us that their South American users experienced lower yield losses and other problems on their treated soybean acres. All of the material on soybean rust we have read indicates that the best way to reduce the impact of a rust outbreak is to maintain a healthy and vigorous plant, and the results from South America support these findings.

## CHANDLER FOLIAR

Chandler Foliar is a liquid plant food that promotes plant health and boosts crop yields during the later stages of the growing season. Our users have reported very good results when using Chandler Foliar on most of the field crops produced in the Midwest, especially when the foliar product is used in combination with Chandler Dry Seed and Soil.

Chandler Foliar includes nitrogen and other organic compounds, micronutrients, and proprietary biostimulants that enhance plant vitality, vigor, and yield. The included micronutrients (iron, magnesium, sulfur, boron, copper, zinc, manganese and molybdenum) are chelated to make them more readily available to the plant. The biostimulants in Chandler Foliar are organic compounds that increase the uptake or availability of nutrients, cause or accelerate plant growth activity, and increase the efficiency of nutrients used for plant growth.

## CHANDLER FOLIAR APPLICATION RATES

Chandler Foliar may be applied to plant foliage using conventional ground or aerial spray equipment and is non-phytotoxic when used as directed. Chandler Foliar may be applied by itself or in a tank mix, and the product is compatible with most commonly used fertilizers and pesticides. However, we always recommend that you test all new tank mix combinations for compatibility before application. In general, you should apply Chandler Foliar with enough water (10-20 gallons per acre) to provide good coverage of the plant, and the product may be applied with newer spray equipment that uses lower water flow rates.

**Alfalfa** --- for a **new seeding**, apply 10 ounces per acre. For an **established crop**, apply 10 ounces per acre after the first burst of spring growth. Later, apply 10 ounces per acre within 10-14 days after each cutting. For **seed production**, apply 10 ounces per acre just prior to flowering.

**Oats** --- apply 8 ounces per acre at the second to third leaf stage.

**Soybeans (planted in rows)** --- band spray 6 ounces per acre over the row at the second to third trifoliate leaf stage.

**Soybeans (drilled)** --- broadcast spray 10 ounces per acre at the second to third trifoliate leaf stage.

**Wheat** --- apply 8 ounces per acre at the second to third leaf stage. You can make a second application at 8 ounces per acre later in the growing season.

The per-acre cost of Chandler Foliar depends on the application rate. At the full retail price, the per-acre costs of Chandler Foliar treatments are:

6 ounces per acre --- \$5.33 per acre

8 ounces per acre --- \$7.00 per acre

10 ounces per acre --- \$8.75 per acre

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## **BENEFITS OF CHANDLER FOLIAR**

Our users of Chandler Foliar report the following benefits when the product is applied as recommended to alfalfa, other hay and pasture, soybeans, oats, wheat, and other small grains:

- Increases the uptake and availability of plant nutrients
- Enhances plant photosynthesis
- Improves plant yield potential
- Promotes flower bloom and fruit set
- Improved nutrient content and overall quality of seeds, grain, and leaves
- Boosts plant vigor during periods of drought and other unfavorable weather conditions
- Helps plants to survive and overcome nutrient deficiencies and other forms of plant stress
- Accelerates plant maturity
- Reduces the impact of pest and disease problems

## **CHANDLER FOLIAR PRICES**

Chandler Foliar is available in one gallon jugs, 2.5 gallon jugs, and 30 gallon drums. At the 8 ounce per acre application rate, a gallon jug will treat 16 acres, a 2.5 gallon jug will treat 40 acres, and a 30 gallon drum will treat 480 acres. The regular retail prices per gallon and per container are:

	Price/ gallon	Price/ container
Foliar container		
1 gallon jug	\$112	\$112
2.5 gallon jug	\$109	\$272
30 gallon drum	\$100	\$3000

All orders over \$800 will be shipped freight free. For all orders under \$800, we add a shipping charge of \$8 per gallon jug or \$10 per 2.5 gallon jug to cover UPS shipping costs. If you want more information about Chandler Foliar, call us by telephone at (309) 659-7773 or send an email message to [info@midwestbioman.com](mailto:info@midwestbioman.com).