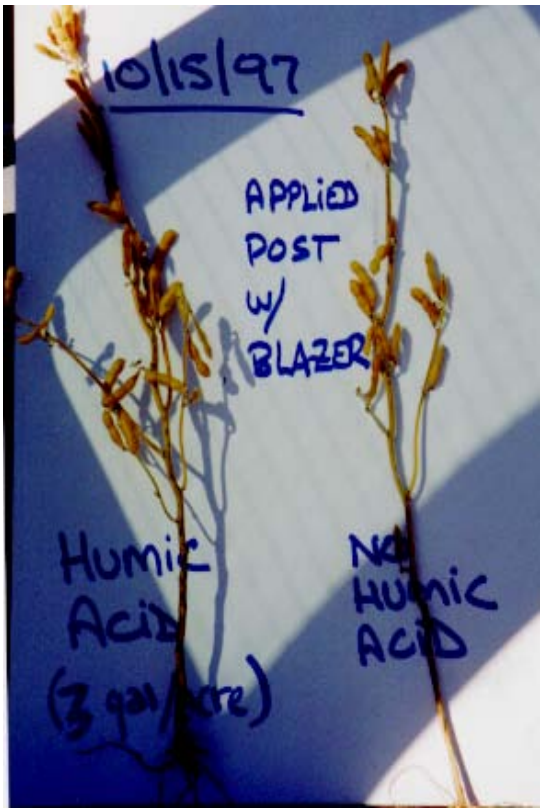
actosol®	**actosol® Benefits in Combination with Herbicides FIELD TRIALS Report #14**

actosol® in Combination with Herbicides and Glyphosate (Roundup) for GMO Crops Proven Beneficial for Increasing Crop Yields, Low Cost and Environmental Protection

Field Crop tests by Mr. Paul Bodenstein, Agronomist in Virginia with actosol® in combination with herbicides (Blazer, Cobra, Pursuit or Typhoon) and Roundup and by Prof. Dick Schmidt with Banner (Trizol Fungicide) for control of disease on Turf.

SOYBEAN

actosol® was applied at a 550 mg/L concentration (1.1 lbs./acre) in a foliar application with a post-emergence application of Blazer (acifluorfen) herbicide, surfactant and manganese. The soybeans were in the fourth trifoliate. Blazer was used because of its low cost and the broad spectrum of weeds that it controls. Blazer is notorious for stunting and causing phytotoxicity of soybeans. This "phyto" problem is exhibited by a spotting of the leaves and is usually outgrown within 20 days, given normal conditions. In the plot, observed two weeks after treatment, the soybeans treated with the actosol® had continued growing and had progressed to the eighth trifoliate while the soybeans sprayed with the Blazer without actosol® were just beginning the fifth trifoliate. This turned into an ***increase of* 6.8 *bushels per acre*** by using actosol®.



An at-harvest photo showing the growth differences and pods set of soybean plants treated with actosol® when spraying with Blazer. The soybeans on the left yielded 6.8 more bushels than the soybeans on the right.

Approval of actosol® Humic Acid

A. USDA National Organic Food Production Program
October 21, 2002
Allows use of Humic Acid for Growing Organic Food
Additional Info : www.ams.usda.gov/nop

B. US Environmental Protection Agency
June 13, 2003
Approves Humic Acid as Environmentally Safe and Exempts from Tolerance Requirement when Used as an Ingredient (adjuvant, UV protectant) in Pesticide Formulations
Additional Info : www.epa.gov/fedregstr

C. OMRI Listed (Organic Materials Review Institute)
February 18, 2005
Additional Info : www.omri.org

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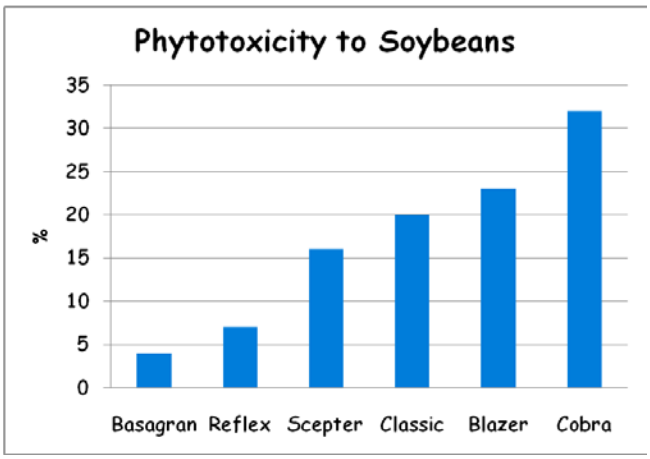

actosol® is working as a safener for low cost weed-control chemicals, such as Blazer, Storm and Cobra. This allows farmers to use low cost, low-residual chemicals while avoiding the heavy "burn" normally associated with these chemicals. If we look at the chart provided by Zeneca Ag Products, we can see how certain postemergence soybean herbicides cause phytotoxicity to soybeans when applied at labeled rates. The soybeans usually outgrow this "phyto" in a normal year where soil moisture is adequate. But in many years, soil moisture conditions cause plant stress and can reduce yields. When we added the actosol® to postemergence spray, this “phyto" has either been eliminated or reduced. Even when the burn on the leaves was visible, the plants never stopped growing.

In a Roundup-Ready system, a postemergence application is used. Adding actosol® to postemergence herbicides along with small rates of pyrethroids has lowered these pest levels in soybeans. The major pests that cause the most damage in the Mid-Atlantic are; stinkbugs, corn earworm *(Heliothiszea),* alfalfa leafhopper, bean leaf beetles and soybean thrips *(thrips are the vector for the disease known as Bud Blight, which can reduce yields by 25% to 100%).* Adding actosol® a soybean Roundup spray enhances foliar fertilizer penetration into the plant. Over 2,000 acres of soybeans were sprayed with Roundup, Karate, EDTA manganese and actosol®. Many acres were sprayed with Blazer, Cobra, Pursuit or Typhoon in place of the Roundup. The actosol® rate was one gallon per acre. Soybean growth was accelerated where the actosol® was applied.

CORN

The benefits of actosol® in corn field was found to be similar to soybeans. As problem weeds arise, such as triazine-resistant pigweed and lambsquarter, field bindweed and climbing milkweed, growers are incorporating post-emergence sprays into their corn herbicide programs. Just like soybeans, these chemicals have the potential to stunt or stress the young corn plants. Pioneer and Dekalb seed corn companies have published lists suggesting avoidance of some postemergence materials. actosol® was shown for reducing or even eliminating the stress caused by these chemicals.

In Henrico County, VA, we placed actosol® in a replicated plot where we sprayed Accent, a DuPont postemergence grass herbicide, with three different rates of actosol®. The rates were one, two and three gallons compared to no actosol®. We were attempting to control Johnsongrass. The grower harvested the plots before we could get yield data.

BARLEY AND WHEAT

Cereal crops planted in the Mid-Atlantic region of USA are planted in the fall when soil temperatures and soil microbial activity are in decline. These decreases result in less available phosphorous in the soil requiring the addition of phosphorous to ensure availability for adequate plant growth. actosol® humic acid products stimulate soil micro-organisms and enhance P solubility. Adding actosol® to small rates of nitrogen should allow growers to reduce or eliminate P rates in the fall on "high" and "very high" P-testing soils.

In the fall, Mr. Paul Bodenstein of Ag. Systems, a Virginia crop consulting firm, applied actosol® with a full rate of fertilizer to barley and at a half-rate to wheat to determine the effect of actosol® in reducing or eliminating excess fertilizer costs. Application rates at the test plots were three gallons per acre.

Two barley test plots averaged 102 bushels per acre at harvest. In a separate trial, actosol® was applied at the rate of one gallon per acre, with the second spring nitrogen application to determine of "foliage burn" would be impacted. Visible results were achieved with "burn" noticeably reduced. Test plots were replicated and yields recorded at harvest. Plots treated with actosol® averaged 101.5 bushels per acre compared to untreated plots which yielded 96.3 bushels per acre. Foliar applications of actosol® increased barley yields by an average of 5.2 bushels per acre.

Two separate wheat plots were also planted and tested. The first test plot was planted at rates of 30 lbs. of nitrogen, 70 lbs. of phosphates, 100 lbs. of potash and three gallons of actosol® per acre. Yield at harvest averaged 67.74 bushels per acre. The second test plot was planted at a rate of 30 lbs. of nitrogen, and a "half-rate" of 35 lbs. of phosphates, and 50 lbs. of potash. The results at harvest indicated an increase in yield over the "full rate" test plot of 2.52 bushels at 70.26 bushels per acre.

UNIVERSITY STUDIES_KENTUCKY BLUEGRASS

Results by Professor R. E. Schmidt, Department of Crop and Soil Environment Sciences, Virginia Tech, VA shows astonishing synergistic benefits in root growth when combined with Banner as well as effective disease control at the half the rate of normal application. Following photo by Prof. Schmidt speaks for itself.