

THE MIDWEST

BIO-TECH NEWS

PUBLISHED QUARTERLY

MARCH - JUNE - SEPTEMBER - DECEMBER

Email: info@midwestbioman.com Homepage: www.midwestbioman.com

September, 2009

NEAR-RECORD CORN AND SOYBEAN CROPS FOR 2009?

Crop prices have continued to drift lower over the past year, but some of the recent news keeps the potential for an upswing alive. Exports of grains have been stronger than expected, and the quick economic recovery in Asia and the weakness in the dollar have helped. Also, the recent spike in world sugar prices may spill over into the corn market. Finally, the 2009 corn and bean crops are not yet in the bin, and prices can still make big moves in response to any late-season changes in crop conditions.

USDA's August 12 estimate put the 2009 corn crop at 12.8 billion bushels, which is just 200 million bushels below the record set in 2007. Projected US corn acreage harvested for grain is 80 million acres, and the national yield is expected to be 159.5 BPA. The acreage count is up 2 percent from last year, and the yield estimate is up 3.5 percent from 2008.

The US soybean crop may set a new record high at 3.2 billion bushels based on 76.8 million harvested acres and a national yield of 41.7 BPA. If this yield estimate is actually achieved, the national yield will be the fourth highest on record. Relative to 2008, bean yields are expected to be lower in Illinois and the southeastern states and considerably higher in Ohio.

The US winter wheat crop also ran late due to poor weather. Total production was 1.5 billion bushels, which was 18 percent below the 2008 crop. This change was due to a 12 percent drop in harvested acres and a 7 percent decline in yields.

CARBON SEQUESTRATION OR RESIDUE REMOVAL?

For the past few years, two interesting ideas have emerged in discussions of the future for Midwestern crop farming. First, concerns about greenhouse gases and the climate have led some to consider plans that would store or sequester carbon in various ways, including storage of carbon-based crop residue in the soil. Much of the interest in these forms of carbon storage is associated with no-till cropping practices, but agronomy researchers have shown that effective carbon storage strategies can be developed under other cropping systems.

Second, concerns about petroleum prices and energy shortages have stimulated interest in farm-based sources of energy beyond corn-based ethanol and soy-diesel. In some areas, corn cobs and other residue have been dried and mixed with coal for use in electricity generation plants. Also, there is growing interest in using crop residue to produce cellulosic ethanol, which can be made from grasses, bark and wood byproducts, and crop residue.

Based on our experience, any practice that removes large amounts of crop residue from the field ignores one of the most profitable uses of the residue --- decaying it to release the plant nutrients for the next crop and to build soil fertility and structure. In general, there should be a net benefit from keeping the residue in the field and building a decay program that can help to reduce tillage costs and fertilizer application rates as well as the amount of petroleum and fuel used in crop farming.

HOW DO WE MANAGE TONS OF CROP RESIDUE?

The key challenge to storing carbon in the field is managing the increasing amounts of crop residue that are generated by modern hybrids, especially with genetically modified plants like Bt corn. In fact, the decay of residue from prior crops is now the second most limiting factor in crop farming (soil compaction is first). The main problem with large amounts of undecayed residue is the tie-up of soil nutrients. As the article on the next page explains, the organisms break down residue and use soil nutrients during this process, so the soil nutrients are unavailable to the plant.

For example, we have talked with several farmers who have cattle and cut silage from their corn acreage. They report that beans planted on the corn ground cut for silage tend to yield 5-8 BPA more than beans planted on corn ground that was combined. The extra residue on the combined land is tying up the nutrients and reducing the yield of the next bean crop. The solution is not to remove the residue because this deprives the soil of nutrients and humus --- the best solution is to speed up the decay process.

In our product literature, we use the figure at the bottom of this page to illustrate this point. The top line represents the decay activity, and the bottom line is the amount of soil nutrient available for plants. As the decay process reaches its peak, nutrient availability is at its lowest point. Further, the amount of nutrient increases as the decay process ends. So, the main goal of managing crop residue should be to complete the decay process as soon as possible in order to release the nutrients for the next crop.

HOW MUCH NUTRIENT CAN BE RELEASED?

The residue in a typical field contains the following levels of nitrogen (N), phosphorus (P), and potassium (K) in pounds per acre:

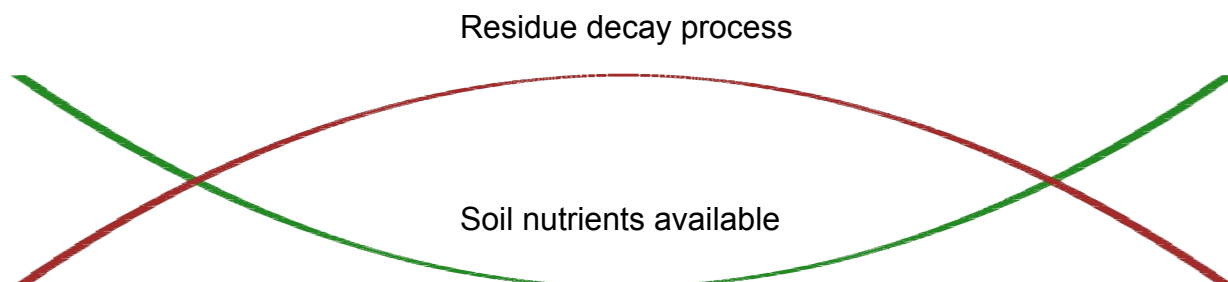
Crop	N	P	K
Corn	200	74	290
Soybeans	90	20	50
Oats	25	15	80
Wheat	40	10	70

The actual nutrient content of the residue in a particular field will vary with crop genetics, population density, stalk size, and other factors. For example, the nutrient values for corn are based on average hybrids that produce 10 tons of residue and over 200 BPA. Many farmers now plant hybrids that have higher plant populations and heavier stalks (especially Bt corn), and the nutrient content of the residue may be higher. Depending on your situation, the nutrients in your residue may be worth well over \$100 per acre at current fertilizer prices.

WHAT IS BIOCAT 1000?

Chandler Biocat 1000 is a liquid enzyme product that stimulates the soil organisms that convert residue to soil nutrients. You should apply Biocat 1000 to the residue as soon as possible after harvest.

The product may be applied in a tank mix with Chandler Soil and other products, and it is compatible with most liquid fertilizers and pesticides. Many users also add 2-3 pounds of ammonium sulfate per acre to enhance the performance of Biocat 1000. We recommend that you test all new tank mixes for compatibility. You should apply Biocat 1000 with enough water (10-20 gallons per acre) to get good coverage.



TECHNICAL DESCRIPTION OF CHANDLER BIOCAT 1000

Back in the September 1999 issue of the newsletter, we printed a brief summary of the soil activities stimulated by Chandler Biocat 1000, and this article was written by Gerald R. Haddock, President of Chandler Sales Co. Although ten years have past since we reported this information, Jerry's summary of Biocat 1000 is still highly relevant, and we have reproduced the main content of this article below. Jerry wrote:

"The difference between fertile soil, one that has the capacity to produce excellent yields of plants and crops, and less fertile conditions is the large population of living organisms. Science demonstrates that one of the keys to successful plant growth and development is the ability of plants to attract and stimulate microbial activity in the soil environment (rhizosphere).

Microorganisms convert inert materials into living soil. Their populations rise or fall in proportion to the energy supplied by plant and animal residues. When microorganism populations are in balance, their biological byproducts are the primary plant nourishing elements. Thus, when beneficial soil microorganisms are in balance, soil fertility increases, protection is provided against soil pathogens, and nutrient uptake into plants is accelerated.

Fertility is also influenced by the carbon-nitrogen (C/N) ratio in the soil. The C/N ratio is relatively constant in soils so the introduction of residues having a high C/N ratio creates a competitive situation that is harmful to plants. When large quantities of crop residues are incorporated into the soil, the bacteria, fungi, and actinomycetes accelerate their activity level, multiply rapidly, and produce large amounts of carbon dioxide in the soil. The microbial demand for nitrate becomes so high that the availability of soil nutrients to plants practically ceases. However, as decay continues, the C/N ratio of the decaying plant material decreases, carbon is lost and nitrogen conserved. This condition persists

until the availability of oxidizable carbon subsides and the decay organisms die off.

As the decay organisms diminish at the end of the decay cycle, the production of carbon dioxide also diminishes and nitrification can proceed in the soil. As nitrates appear in quantity, the soil is richer both in available nitrogen and humus.

Crop stubble and root residues make up the bulk of organic residues and provide a significant foundation for soil conditioning. The aim of Chandler Biocat 1000 is to promote the beneficial use of crop residues and to do so in a more efficient manner (that is, with less detrimental effect upon subsequent crops) by shortening the time of the C/N cycle. In other words, the goal is to accelerate the decomposition and decay of plant matter."

Jerry went on to explain that fungi are the best microbial scavengers for decomposing raw organic matter, and they prepare crop residue for further decomposition by other microorganisms. Fungi are simple, usually microscopic, plants that lack chlorophyll and cannot make their own food, so they feed on manure, dead vegetation, and other nonliving materials in the soil. Fungi grow as tiny filaments and branching tissues called hyphae, which literally reach above the ground to attack dead vegetation.

Jerry concluded the article by noting that fungi are actually more important than bacteria for the formation of humus in the soil. For this reason, Chandler added compounds in Biocat 1000 that specifically accelerate fungal activity. These additives were first included in Biocat 1000 ten years ago, and the subsequent product research showed that the additives helped to significantly enhance the decay process. These additives have been included in the Biocat 1000 formulation ever since 1999.

Biocat 1000 does not add any new microbes to the soil and only stimulates the existing microbes, so the soil must have some biological life for the product to work. Biocat 1000 requires some moisture in the residue to work effectively, so it should not be applied under severe drought conditions.

Midwest Bio Tech, Inc.
Box 156
Erie, IL 61250
(309) 659-7773

Address Service Requested

BIOCAT 1000 APPLICATION RATES AND COSTS

Chandler Biocat 1000 may be applied to crop residue with conventional spraying equipment. The recommended application rates for Biocat 1000 are 10-16 ounces per acre for corn and 8-10 ounces per acre for beans and small grains, and the optimal rate depends on the amount of residue in the field. For example, corn fields that yield over 200 BPA should be treated with 14-16 ounces of Biocat 1000 per acre. At the full retail price (\$90 / gal.), the per-acre cost is:

- 8 ounces per acre --- \$5.63 per acre
- 10 ounces per acre --- \$7.03 per acre
- 12 ounces per acre --- \$8.44 per acre
- 14 ounces per acre --- \$9.84 per acre
- 16 ounces per acre --- \$11.26 per acre

The per-acre cost is lower if you buy in larger sizes (2.5 gallon jugs or 30 gallon drums) or during our Fall Discount Program (September 1 to October 31, 2009). For more details on discount prices, application rates, and product benefits, please visit our homepage at www.midwestbioman.com.

FALL DISCOUNT PROGRAM BEGINS ON SEPTEMBER 1

Our Fall Discount Program for most of the Chandler Crop Products starts September 1 and runs through the end of October, 2009. The complete discount and retail price list is enclosed with the newsletter. Please note that the discounts are higher during the initial weeks of the program and decline during the later weeks. You must pay for the product within the stated discount period to qualify for that discount, and you can take delivery of the product when you place the order or request that we store it for later delivery. All prices and shipping rates remain the same as last year.

IF YOU HAVE AN UPDATED ADDRESS THAT IS DIFFERENT FROM THE ONE ON YOUR ADDRESS LABEL, PLEASE SEND IT TO US OR GIVE US A CALL SO IT CAN BE CHANGED FOR FUTURE NEWSLETTERS.

**2009
SPECIAL FALL APPLICATION PROGRAM
for CHANDLER CROP PRODUCTS**

Chandler Products	Retail	Oct. 16-31	Oct. 1-15	Sept. 16-30	Sept. 1-15
15# Bkt Dry Seed Treat	150.00	144.00	140.00	135.00	132.00
2 to 5 Bkts - Per Bkt	145.00	139.00	135.00	131.00	128.00
6 or more Bkts - Per Bkt	140.00	134.00	130.00	126.00	123.00
(Each Bkt will treat about 60 Bu. or units of seed)					
Gal Liquid Seed Treat	125.00	120.00	116.00	113.00	110.00
2½ Gal Liquid Seed Treat - Per Gal	120.00	116.00	112.00	108.00	106.00
- Per 2½ Gal	300.00	290.00	280.00	270.00	265.00
30 Gal Liquid Seed Treat	110.00	106.00	102.00	99.00	97.00
(Each gallon will treat about 64 Bu. or units of seed)					
Gal Soil	92.00	88.00	86.00	83.00	81.00
2½ Gal Soil - Per Gal	90.00	86.00	84.00	80.00	78.00
- Per 2½ Gal	225.00	215.00	210.00	200.00	195.00
30 Gal Soil	82.00	79.00	76.00	74.00	72.00
Gal Biocat 1000	90.00	86.00	84.00	80.00	78.00
2½ Gal Biocat 1000 - Per Gal	88.00	84.00	82.00	78.00	76.00
- Per 2½ Gal	220.00	210.00	205.00	195.00	190.00
30 Gal Biocat 1000	80.00	77.00	74.00	72.00	70.00
Note - Biocat 1000 is a cellulose digester					
Gal Foliar	112.00	108.00	104.00	101.00	98.00
2½ Gal Foliar - Per Gal	109.00	105.00	101.00	98.00	95.00
- Per 2½ Gal	272.00	262.00	252.00	245.00	237.00
30 Gal Foliar	100.00	96.00	93.00	90.00	88.00
Chandler Organic					
Gal Organic	105.00	101.00	98.00	95.00	92.00
2½ Gal Organic - Per Gal	100.00	96.00	93.00	90.00	88.00
- Per 2½ Gal	250.00	240.00	233.00	225.00	220.00
30 Gal Organic	90.00	86.00	84.00	80.00	78.00

Chandler Organic can be sprayed on the soil or as a foliar on plants.
Dry Seed Treat is priced per bucket --- **the rest of the products are priced per gallon**

- A – The early September and October discount periods end at midnight on September 15 and October 15, 2009
- B – The late September and October discount periods end on the last calendar day of the month at midnight
- C – Customer must pay for product within the specified discount period to get that discount
- D – You may take delivery of the product at time of payment or we can store it for you
- E – Prices are subject to change, and product cannot be returned for credit or exchange due to insurance regulations
- F – All prices are F.O.B. Erie, IL

**ORDER FORM
MIDWEST BIO-TECH, INC.**

P.O. Box 156 – ERIE, IL 61250
Phone 309-659-7773

Name _____
(please print)

Address _____

City _____ State ____ ZIP _____

Phone _____ - _____

Qty.	Products	Unit	Price
	15# Bkt Dry Seed Treat		
	Gal Liquid Seed Treat		
	2½ Gal Liquid Seed Treat		
	30 Gal Liquid Seed Treat		
	Gal Soil		
	2½ Gal Soil		
	30 Gal Soil		
	Gal Biocat 1000		
	2½ Gal Biocat 1000		
	30 Gal Biocat 1000		
	Gal Foliar		
	2½ Gal Foliar		
	30 Gal Foliar		
	Gal Chandler Organic		
	2½ Gal Chandler Organic		
	30 Gal Chandler Organic		

PRICES SUBJECT TO CHANGE WITHOUT NOTICE **Product Total** _____
UPS Shipping _____

TOTAL AMOUNT ENCLOSED _____
WHEN YOU WOULD LIKE DELIVERY OF THIS PRODUCT _____

All orders over \$800.00 will be shipped Freight Free
All orders under \$800.00 add the following UPS fee

- Each 15# Dry Seed - \$14.00
- Each Gal of Product - \$13.00
- Each 2½ Gal of Product - \$15.00

Enclose Check or Money Order
Payable to Midwest Bio-Tech, Inc.

THANK YOU FOR THIS BUSINESS!