

December, 2020

## WE ARE CO-SPONSORING 2021 NO-TILL CONFERENCE

For the first time, Midwest Bio-Tech has signed on as a title sponsor of the National No-Till Conference for 2021. The annual conference has met since 1993 and draws over 1,000 farmers and ag professionals from the US and Canada plus several other countries. Over the years, this conference has become widely known for its high quality presentations, especially on topics related to soil health.

Due to current restrictions on in-person meetings, Lessiter Media has moved the 2021 version of the National No-Till Conference online as they did for the 2020 National Strip Tillage Conference. The conference was originally scheduled to meet in Indianapolis on January 12-15, 2021, and the virtual conference will be held on the same dates. Those folks who are registered for the conference will have full access to the speaker presentations as well as exhibits, publications, and other amenities that are featured at the regular conference. You can still register for the 2021 National No-Till Conference online at [www.no-tillfarmer.com/nntc](http://www.no-tillfarmer.com/nntc).

We have been part of the National No-Till Conference for the past six years as a co-sponsor of the Welcome Reception. It has been a real pleasure to visit with all of the folks at the conferences, and we look forward to doing so again in the future. This is just one of many changes to our usual winter events schedule, and the other changes for January through March are outlined on the last page of the newsletter.

## SOIL HEALTH AND NUTRIENT SAVINGS

The economics of crop farming over the past few years has had everyone looking at ways to reduce costs. As we have reported for years, one effective way to save money is to boost your soil biology. Soil microbes make nutrients available from soil sources and carry these nutrients to the plant roots. The Chandler crop products have helped our customers improve their soil health so they can reduce their fertilizer rates while maintaining or increasing crop yields.

A very good example of the potential savings was reported to us by one of our customers from northern Iowa. He has used the Chandler products for the past three years, and we have conducted annual soil health tests on each field. The test results from last August showed that the Chandler products generated 21% higher CO<sub>2</sub> respiration, 24% higher amino nitrogen, and 15% better aggregate stability than the untreated plots. The microbial activity in the treated plots also generates about 50-60 pounds of mineralized nitrogen from organic matter during the crop season.

Based on his soil health test results from 2019, he set up two corn plots for 2020 with reduced fertilizer rates. The applied N on both plots was reduced to 135 pounds per acre, and he applied **no potash or phosphorus**. Despite the very dry weather in his part of northern Iowa, the corn plots had near-normal yields and averaged 221 BPA across 40 acres. This amounts to 0.61 pounds of applied N per bushel, which is a very efficient level of nutrient use.

# MICROBIAL RESPONSE TO SOIL TREATMENTS

For decades, some farmers have treated their soil with natural products like humic acid and sugar sources like molasses. In the past few years, several companies have added new soil health products that contain one or both of these components, and they are often marketed as a form of liquid carbon. We have received lots of questions about how these products actually affect soil health.

## ***Sugar versus humic acid***

Molasses and other forms of sugar provide active carbon that microbes can use as energy, and they tend to provide a rapid but short-lived boost to microbial activity. Experts debate the long-term impact of sugar applied to soils because most fields have ample amounts of active carbon in undecayed and partially decayed residues.

In contrast, humic acid is the end product of residue decay. It contains lots of carbon, but most of it is in complex molecules that are difficult to break down any further. Humates in soils have valuable properties like nutrient bonding capabilities, and the liquid Chandler crop products contain small amounts of humic acid for this reason. However, humic acid is not a good source of active carbon to feed microbes.

## ***Measuring responses with Solvita IRTH***

Solvita IRTH is a new tool that measures CO<sub>2</sub> respiration from a soil sample every 20 seconds, and it allows us to evaluate the real-time response of soil microbes to different treatments. To compare Chandler Soil with humic acid and molasses, we collected local silt loam samples that were dried, screened, and blended to ensure uniformity. We divided the soil into four subsamples, which were used to compare the CO<sub>2</sub> respiration from an untreated (control) sample plus three treatments:

- Chandler Soil at 16 ounces per acre
- Humic acid at two gallons per acre
- Molasses (sugar) at two gallons per acre

The amount of Chandler Soil used is the recommended rate. In practice, the rates of humic acid or sugar products applied to farm fields vary widely, and some rates for sugar products are as low as a few ounces per acre. We used the two gallon per acre rates for humic acid and molasses to make sure that we were more than fair when comparing the competing products.

## ***CO<sub>2</sub> respiration results***

The four samples were allowed to respire for four days in the IRTH sensor at constant temperature. The CO<sub>2</sub> generated by the untreated sample was subtracted from the three treatment values, so the results in the top figure on the next page are net amounts of CO<sub>2</sub> generated by the three treatments.

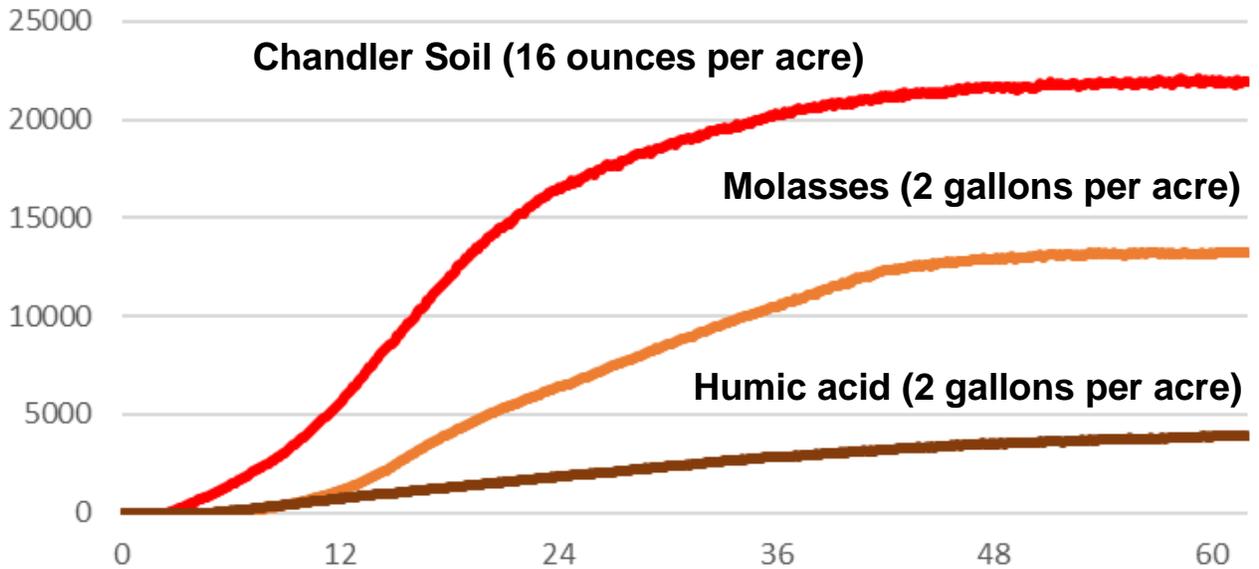
As expected, molasses generated more CO<sub>2</sub> than humic acid because sugars have more active carbon to feed the microbes. The commercial molasses used in this study has over five times as much active carbon as the humic acid, which only has about 2 ounces of active carbon per gallon.

More importantly, Chandler Soil produced a measurable impact on microbial activity in less than 3 hours after the test started, and the other treatments required nearly twice as long to produce a comparable response. The CO<sub>2</sub> respiration rates for all three treatments stabilized after 2.5 days. At this point, Chandler Soil had produced 5.5 times more CO<sub>2</sub> than humic acid and 70% more microbial activity than molasses.

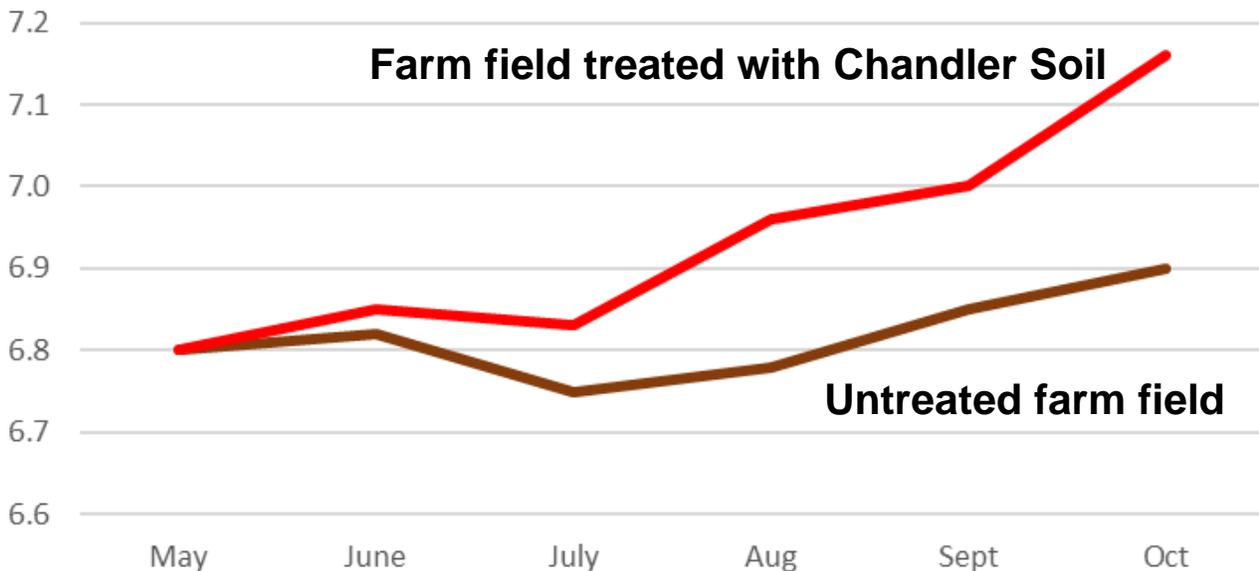
Further, independent research contracted by Chandler shows that Chandler Soil maintains an elevated level of microbial activity through the entire crop season. The second figure on the next page shows the impact of Chandler Soil on bacteria colony counts in a farm field from May to October, and similar results were found for beneficial fungi and other types of microbes.

In summary, the enzymes and other biostimulants in Chandler Soil can quickly boost microbial activity and sustain it all season long. Relative to other products, Chandler Soil is a very convenient and cost effective way to improve soil health.

## Microbial Response to Soil Treatments (CO<sub>2</sub> parts per million)



## Bacterial Response to Chandler Soil (log colony counts)



The top figure shows CO<sub>2</sub> respiration (parts per million) by hour for the three treatments. Chandler Soil quickly increases soil microbial activity and generates much higher levels of CO<sub>2</sub> respiration than humic acid or molasses. The lower figure shows that Chandler Soil maintains a high rate of bacterial activity (relative to untreated soil) in farm fields throughout the entire crop season (May to October).

## SAME PRICES BUT HIGHER SHIPPING FEES FOR SPRING

The enclosed spring discount price list offers the same product prices that we have maintained for the past five years. The December discount prices are 12% off regular retail and are the best deals for the coming year. The December prices are available on all orders placed between December 1, 2020, and January 9, 2021. After January 9, the discounts decline on a monthly basis through January (9% off), February (6% off), and March (3% off). Our regular retail prices go back into effect on April 1, 2021.

Unfortunately, we will have to increase our shipping fees for the coming year. Due to the demand for shipping brought on by the COVID-19 situation, UPS and the other commercial freight carriers have increased their rates by more than 20% since March. For example, we have charged \$18 to ship each 2.5 gallon jug for the past 5 years, and our actual costs are now much higher. We have always charged a bit less than our actual costs to help customers with smaller orders that don't qualify for free shipping. However, our actual cost has jumped this year, and UPS charged us \$24 to \$34 per jug over the past 6 months. Also, we charge \$17 to ship a bucket of Dry Seed Treat, and our actual costs have run from \$20 to \$32 per bucket since last spring.

**For all orders received after January 9, 2021,** the new shipping charges are \$18 per gallon jug, \$22 per bucket of Dry Seed Treat, and \$24 per 2.5 gallon jug of liquid. As before, we will not charge shipping fees on orders that exceed \$800.

We typically provide free pickup of early orders at the winter farm shows, and we will continue to offer this option in the future. However, as noted in the next column, most of the winter shows have been cancelled or postponed until March. If you normally pick up your order at a show, we will contact you with the pricing and shipping options. Also, please let us know when you want to receive the shipment by completing the back of the order form.

## CHANGES TO OUR WINTER SHOW SCHEDULE

Due to continuing COVID-19 problems, the following events have been cancelled for this coming winter:

- Quad Cities Farm Show, QCCA Expo Center, Rock Island, IL (January)
- IFCA Convention, Peoria Civic Center, Peoria, IL (January)
- Midwest Ag Expo, Gordyville USA, Gifford, IL (January)

As mentioned on the first page, the National No-Till Conference for 2021 was previously scheduled to meet in Indianapolis but will be held online from January 12-15. Two shows have been moved to later dates:

- Greater Peoria Farm Show, Peoria, IL (moved from December to March)
- Fort Wayne Farm Show, Fort Wayne, IN (moved from January to March)

At this time, there is still one farm show that is scheduled as originally planned:

- Hawkeye Farm Show, UNI-Dome, University of Northern Iowa, Cedar Falls, IA (March 2-4, 2021)

If you normally pick up product at one of the cancelled or rescheduled events, we will offer you the same price you paid last year and free delivery. We will send a separate letter to you later in December that outlines your ordering and delivery options.



*Seasons  
Greetings*

We want to take this opportunity to thank you for the privilege of serving you in the past year, and we look forward to working together in the future. We also extend our best wishes for the season and for the New Year!

Sincerely,

*Jim and Doug Miller*

**2020-2021 PRE-SEASON DISCOUNT PROGRAM  
for CHANDLER CROP PRODUCTS**

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

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

<u>Chandler Products</u>	<b>Retail</b>	<b>March</b>	<b>Feb</b>	<b>Jan</b>	<b>Dec</b>
15# bucket of Dry Seed Treat	160.00	154.00	149.00	144.00	140.00
2 to 5 buckets (per bucket)	155.00	149.00	144.00	140.00	136.00
6 or more buckets (per bucket)	150.00	144.00	140.00	136.00	132.00
Single gallon of Liquid Seed Treat	134.00	129.00	125.00	121.00	118.00
2.5 gallon Liquid Seed Treat (per gal.) (per 2.5 gal. jug)	128.00 320.00	123.00 307.00	119.00 298.00	115.00 288.00	113.00 282.00
30 gallon Liquid Seed Treat (per gal.)	120.00	115.00	112.00	108.00	106.00
Single gallon of Chandler Soil	102.00	98.00	95.00	92.00	90.00
2.5 gallon Soil (per gal.) (per 2.5 gal. jug)	98.00 245.00	94.00 235.00	91.00 228.00	88.00 220.00	86.00 215.00
30 gallon Soil (per gal.)	90.00	86.00	84.00	81.00	79.00
Single gallon of Biocat 1000	100.00	96.00	93.00	90.00	88.00
2.5 gallon Biocat 1000 (per gal.) (per 2.5 gal. jug)	96.00 240.00	92.00 230.00	89.00 223.00	86.00 215.00	84.00 210.00
30 gallon Biocat 1000 (per gal.)	88.00	84.00	82.00	79.00	77.00
Single gallon of Chandler Foliar	124.00	119.00	115.00	112.00	109.00
2.5 gallon Foliar (per gal.) (per 2.5 gal. jug)	118.00 295.00	113.00 283.00	110.00 275.00	106.00 266.00	104.00 260.00
30 gallon Foliar (per gal.)	110.00	106.00	102.00	99.00	97.00
Single gallon of Chandler Organic	116.00	111.00	108.00	104.00	102.00
2.5 gallon Organic (per gal.) (per 2.5 gal. jug)	110.00 275.00	106.00 265.00	102.00 255.00	99.00 248.00	97.00 242.00
30 gallon Organic (per gal.)	100.00	96.00	93.00	90.00	88.00

Name \_\_\_\_\_  
(please print)  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_ ZIP \_\_\_\_\_  
Phone \_\_\_\_\_ - \_\_\_\_\_

<b>Qty</b>	<b>Products</b>	<b>Unit Price</b>	<b>Item Total</b>
	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 NOTUCE** Product Total \_\_\_\_\_  
UPS Shipping \_\_\_\_\_

TOTAL AMOUNT ENCLOSED \_\_\_\_\_

Dry Seed Treat is priced per bucket. We offer quantity discounts for pallets of 48 buckets.  
All other products are priced per gallon. We offer quantity discounts for 180-270 gal. totes.

All orders over \$800.00 will be shipped Freight Free.  
After January 9, add UPS fees for orders under \$800:  
\$18.00 for each single gallon of liquid  
\$22.00 for each 15# bucket of Dry Seed  
\$24.00 for each 2.5 gallon jug of liquid

- A – The 12% December discount period ends at midnight on January 9, 2021
- B – The January, February, and March discount periods end at midnight on the last calendar day of the month
- 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 until spring
- 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

Enclose check payable to Midwest Bio-Tech, Inc.

Please provide your shipping instructions for this order on the back of this form.

## RECOMMENDED APPLICATION RATES FOR CHANDLER CROP PRODUCTS

When would you like to receive the product that you have ordered?

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What is the best way for us to contact you about the shipping details for this order? Please note that we will only use this information as needed to complete this order, and we never provide your name or other personal information to any other party without your prior permission.

Telephone call to:

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Text message sent to:

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Email message sent to:

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**THANK YOU FOR THIS BUSINESS!**

### Chandler Dry Seed Treat

4 ounces per bushel or unit for corn, beans, and small grains and 8 ounces per bushel for alfalfa, clover, vetch, or other small-seeded crops. The actual amount of Dry Seed Treat required depends on seed size and humidity, so you should adjust the rate if you need better seed coverage or have excess treatment in the seed hopper.

### Chandler Liquid Seed Treat

2 ounces per bushel for corn, beans, and small grains and 4 ounces per bushel for alfalfa, clover, vetch, or other small-seeded crops.

### Chandler Soil

Broadcast 12-16 ounces per acre in the fall or spring or apply 8-10 ounces per acre in the row at planting or when side-dressing. Use the higher rate in these ranges if you are using Chandler Soil for the first time or if your soil is heavy, compacted, or poorly drained.

### Chandler Biocat 1000

**Corn Residue** – 12-16 ounces per acre. We recommend that you use the 16 ounce rate for heavy residue in corn fields that yielded 200 BPA or more.

**Soybean and Small Grain Residue** – 8 to 10 ounces per acre

### Chandler Foliar

**Alfalfa** – for new seedings, apply 10 ounces per acre. For established crops, apply 10 ounces per acre after the first spring growth. Later, apply 10 ounces per acre 10-14 days after each cutting. For seed production, apply 10 ounces per acre before flowering.

**Oats** – apply 10 ounces per acre at the second to third leaf stage.

**Soybeans** – band 6-8 ounces per acre over the row or broadcast 10 ounces per acre. The best times to apply Foliar to soybeans are at the second to third trifoliolate leaf stage or between flowering and pod set.

**Wheat** – apply 8 ounces per acre at the second to third leaf stage. In the spring, apply 8 ounces per acre at the beginning of new plant growth or tillering.

**Pasture** – apply 8 to 10 ounces per acre when there is ample foliage to receive the spray.

### Chandler Organic

Use the application rates listed above for Chandler Soil when using Organic as a broadcast or in-row soil treatment, and use the same rates as Chandler Foliar for foliar treatments.