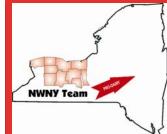
NORTHWEST NEW YORK DAIRY, LIVESTOCK & FIELD CROPS TEAM



Advanced Wheat Management Seminar: *Pushing NY Wheat Yields*

By: Mike Stanyard

On February 16, over 100 producers and industry representatives attended the Advanced Wheat Management Seminar at the Clarion Hotel in Batavia. This Seminar was pushed forward by producer Donn Branton as a continuation of the wheat seminar we had on his farm in Stafford with Phil of N per bushel of wheat. See chart presented by Dave DeGolyer for an example of 100 bushel wheat and 200 lb. of N. Utilize credits for soil nitrate tests, percent organic matter, and previous crop. The remaining N needed after credits are split between green-up and growth stage 5-6 which is just before

100 Bushel Crop estimated crop * 2 lbs per N	200 lbs	Gal./Acre N-P-K-S
Soil Nitrate 0-6 inch	10 lbs	
Soil Nitrate 6-30 inch	15 lbs	
OM at 2 %	40 lbs	
10-34-0 at 150 lbs	15 lbs	
Soy Beans N residue Credit	20 lbs	
Total N Credits	100 lbs	
Total N needed	100 lbs	
Tiller count 450 per square yard at green up	45 lbs	15 Gallons of 28-0-0-2.6
Feekes GS 5	55 lbs	18 Gallons of 28-0-0-2.6

jointing.

The rate at the two timings is determined by the number of tillers per square ft. First count the number of plants per square yard. Then pick out 10 plants and count the number of tillers per plant.

Multiply the number of plants by the average number of tillers per plant to calculate the tillers per yard. See the chart on the next page to determine how much N should be applied up front and the rest at GS 5-6.

Continue on page 3

Needham back in August of 2009. Donn has been working closely with Phil and Dave DeGolyer of WNY Crop Management Assoc. and has averaged over 100 bushels the past two seasons. Here are a couple of the topics discussed that could help you push wheat yields to their limits this year!

How much N do you need to topdress? April is upon us and that means the wheat will be greening up soon and nitrogen will be crucial to get the wheat off to a great start. There are a couple of factors that determine how much N to apply. Use an estimate of 2 pounds

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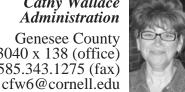
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Mission Statement

The NWNY Dairy, Livestock & Field Crops team will provide lifelong education to the people of the agricultural community to assist them in achieving their goals. Through education programs & opportunities, the NWNY Team seeks to build producers' capacities to:

- Enhance the profitability of their business
- Practice environmental stewardship
- Enhance employee & family well-being in a safe work environment
- Provide safe, healthful agricultural products
- Provide leadership for enhancing relationships between agricultural sector, neighbors & the general public.

Tiller Numbers (per Sq. yard)	
< 300	60 units of N at green up, rest applied at GS 5-6
450-600	45 units of N at green up, rest applied at GS 5-6
>700	30 units of N at green up, rest applied at GS 5-6

How should N be applied? Phil Needham has really pushed utilizing stream bars for N application over flat fan nozzles. They are spaced so that less N hits the foliar portion of the wheat and focuses it between the rows. This leads to less foliar burn and less stress on the plant. For more information see Phil's webpage at http://www.needhamag.com/index.php.

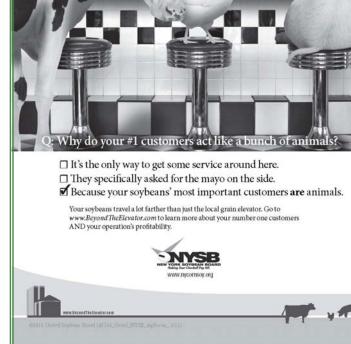
Foliar fungicide applications We now have more fungicide options for disease management in NY. Assessment of foliar diseases such as powdery mildew, leaf blotches and leaf rust should be made in May and June. The most important application timing for Fusarium head scab is GS 10.5 which is the initiation of flowering. See Table 5.7.1 of the small grains section of the Cornell Guidelines at http://ipmguidelines.org/Fieldcrops/content/CH05/default-7.asp.

Tissue sampling. Plant tissue sampling is less common in wheat but can also be an important tool for determining if your crop is receiving adequate macro and micronutrients. Nitrogen is the most important nutrient for early development and yield determination but micros such as zinc, sulfur, and manganese all have important roles in plant function and are necessary for optimum yields. Tissue sample results will show you what is really getting picked up by the wheat plant and if supplemental applications are needed

Mike Stanyard field crops and insect specialist with the North West New York Dairy, Livestock & Field Crops Team. Contact him at 315.331.8415. Ext. 123 or cell: 585.764.8452. Email: mjs88@cornell.edu



farm/family



Those Pesky Pasture Flies!

Take the Integrated Approach to Control By: Nancy Glazier

Livestock pests can be more than pesky. They can cause stresses on animals, which reduce grazing time and in turn reduce production. The reduction

can be seasonal, or with youngstock, cumulative. With current input and output (meat and milk) prices heading up, this season will be even more critical to manage pests.

The focus of this article will be the "Big Three": face fly, horn fly and stable fly. They each have their

own feeding areas on livestock, but have similar life cycles. They all have complete metamorphosis, which means they lay eggs that hatch into larvae, then pupate and emerge as adults. Critical for control is identification, habitat management, monitoring and assessment.

The *face fly* was native to Europe and was first found in Nova Scotia around 1950. It spread to 26 states by 1960 and is now found in most of the US. The fly resembles the house fly, but is about 20% larger. It is a non-biting fly where the female feeds on proteins around the face; they hang out near the eyes, muzzle and mouth. They can serve as vectors for diseases such as pink eye. They can also congregate around wounds and feed on blood. Males generally feed on nectar and hang out on fence posts or branches to wait for the females as they move about. After mating, the female lays her eggs (up to 600) on very fresh manure. The time from egg to adult is 2-3 weeks, depending on temperatures.

The *horn fly* is about half the size of the face fly. It also came from Europe, being first observed in the US in 1887 and is now generally distributed. Both males and female horn flies feed by biting and take up to 20 blood meals a day. They will congregate on backs and shoulders of livestock. The female will lay 200-400 eggs in her life on fresh, undisturbed manure.



The *stable fly* is another biting fly found worldwide. It is dark gray and slightly smaller than the house fly. This species is seen on the legs of livestock; when they congregate on animals, they stomp their feet to try to dislodge them. The female is less specific where she lays her eggs (200-400). Eggs may be laid

on moist organic matter such as manure, spilled feeds, silage, grass clippings, and vegetation on edges of ponds and lakes. This fly can travel up to 20 miles on storms! They are the ones that stop by and take a bite on your ankles when you're out in the yard.

So once you've figured out the

species, you'll need to get a count of the numbers present. This takes some time out on pastures with the livestock. A good representation is needed, the more animals the better, with a minimum of 5 to 10, 15 is better. You need to get close enough to count, so move slowly. And I suggest not doing this when you move fence unless you give the livestock time to move and settle in to the new paddock. Sample on a weekly basis at roughly the same time and write down what you see. A pocket pad works well.

Thresholds:

Face fly - 10 flies/face.

Horn fly - about 50 flies per side for dairy, about 100 flies per side for beef.

Stable fly - 10 flies/4 legs of the animal.

Control can involve cultural, mechanical, biological and chemical; some years it may take a combination of methods. Habitat management is a critical step in breaking the life cycle and proliferation. When a female lays 400 eggs over the course of 3-4 weeks, populations can explode if not controlled. Keep feeds dry, clean up spills, move outside feeding areas if possible. On pastures, some producers utilize pasture chains or drags to disperse manure pats so they dry out more quickly. Check to see if you have ground beetles and dung beetles cleaning up those manure pats. This isn't very pleasant, but it helps with management.

Various traps are on the market. These are a mechanical means to capture the flies. Some are for livestock to walk through and flies get trapped in screens, some employ sticky surfaces, while others use attractants. Birds (even poultry), bugs, spiders, mites, and diseases can help control populations. Some producers purchase parasitoid wasps to release during fly season. These wasps lay eggs on larvae; their eggs hatch and the larvae burrow into the maggots and kill them.

The more traditional approach is chemical: sprays, rubs, dusters, etc. If you use chemical control options, keep in mind that some can kill beneficial insects as well.

For more detailed information consult the Integrated Pest Management (IPM) Guide for Organic Dairies from NYS IPM program. It can be downloaded at: www.nysipm.cornell.edu/organic_guide/dairy.pdf Conventional and beef operations could benefit from this as well. Give me a call if you'd like to learn about these this summer at a pasture walk!

Thanks to Keith Waldron, NYS IPM, for sharing information on this subject with me to write this article.



Rocket97@rochester.rr.com

Calf Tidbits – Did you know...

By: Jerry Bertoldo

- Calves are born with a 2-3 quart deficiency of circulatory fluid.
- After birth, calves should raise their heads in 3 minutes, become sternal in 5, attempt to stand in 20 and be on their feet in 60 minutes.
- Calves temperatures are 104-105°F at birth, but drop quickly to 102-103°F.
- Warming calves in the cold increases oxygen carrying capacity and reduces the need to use stored energy to keep warm.
- Calves that drop body temperature below 101°F will be in for problems.
- Calves (cattle in general) have rather small lungs (1/2 the capacity of a horse), low oxygen carrying ability and long lasting damage to lung tissue after pneumonias.
- Calves with birthing difficulty are almost 4x more ٠ apt to develop disease, 4-5X more likely to die and represent 60% of total calf losses.





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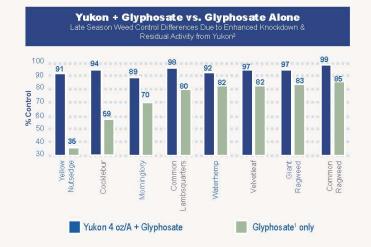


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Economics of Tile Plow Investment and Use

By: John Hanchar

n an article of the February 2011 issue of Ag-Focus, James Kingston reviewed the topic of tractor-drawn tile plows. The article utilized data from presentations that he made at the NWNY Dairy, Livestock, and Field Crops Program's 2011 Corn Congresses in January. In the article, James included a brief summary of some economic analyses that we developed to examine tile plow investment and use. The purpose of this article is to provide more detailed information from those economic analyses. For the detailed analyses, including the MS Excel Spreadsheet developed to examine tile investment and use, please visit the team's website at www.nwnyteam.org and click on "AgFocus".

Summary

Partial budget analyses for profit indicated that 16 of the 20 expected feet installed annually, expected tile contractor charge combinations yielded expected increases to profit (Table 1).

Net present value analyses indicated that of 14 of the 20 expected feet installed annually, expected tile contractor charge combinations yielded net present values greater than 0. Net present values greater than or equal to 0 reflect capital investments that would be considered attractive to the producer (Table 2).

	I		
10,000	20,000	30,000	40,000
-1,951	1,706	5,362	9,019
-1,451	2,706	6,862	11,019
-951	3,706	8,362	13,019
-451	4,706	9,862	15,019
49	5,706	11,362	17,019
	-1,451 -951 -451 49	-1,451 2,706 -951 3,706 -451 4,706 49 5,706	-1,451 2,706 6,862 -951 3,706 8,362 -451 4,706 9,862

years by custom charge per foot installed excluding materials.

\$ per Foot Installed	Expected Feet of Tile Installed Per Year Over 5 Years			
Excluding Materials	10,000	20,000	30,000	40,000
0.60	-17,169	- 1,337	14,494	30,325
0.65	-15,004	2,992	20,988	38,984
0.70	-12,839	7,322	27,482	47,643
0.75	-10,674	11,651	33,977	56,302
0.80	-8,510	15,981	40,471	64,961
Table 2. Expected net present value for a stream of net cash flows over 5 years by expected feet of tile installed per year				

over 5 years by expected contractor charge per foot installed excluding materials.

Overall, analyses suggest that if a producer can expect to install about 16,000 feet of tile or more annually over 5 years, then investment and use of a tractor pulled tile plow is attractive given expected contractor charges of about \$0.65 per foot or greater.

Tractor Drawn Tile Plows

Considering Costs to the Producer of Realizing Savings in Contractor Charges

A review of information sources prior to developing the economic analyses produced material that enthusiastically described the money that can be made using owned machinery and labor versus hiring a contractor. One example noted \$4,000 made in one afternoon (\$0.50 per foot excluding tile, the contractor

charge avoided, times 8,000 feet installed). Although the savings are notable, the analysis seems to ignore that a farmer would expect to incur additional ownership costs (depreciation, interest, insurance and others) and operating costs (hired labor, machinery repairs and maintenance, fuel, oil and lube expense, and others) associated with tile plow investment and use. The purpose of our analysis was to evaluate the expected benefits and costs associated with tile plow investment and use. An important assumption for all of the analyses described below is that the decision to tile has already been made - expected benefits exceeded expected costs. The only deci-

sion remaining is whether to have tile installed by a contractor, or install tile using owned equipment and labor supplied by the farm.

Partial Budget Analysis

A partial budget projects the expected change in profit associated with a proposed change in the farm business, for example, investment in and use of a tile plow compared to hiring a contractor. The expected change in profit equals the expected change in total value of production, income minus the expected change in the costs of inputs used in production. With regards to tiling, expected cost savings might be considerable. However, what cost increases will the farmer incur to realize these savings? A partial budget considers all expected changes to income and costs – the decreases and the increases.

Net Present Value Analysis

Net present value analysis considers the time value of a stream of net cash flows, income over the life of the investment. The time value of money concept results from the fact that individuals, when given the choice, would prefer to receive a dollar today over a dollar received at some future date, for example, a year from now. The net present value of an investment is the sum of the present values for each year's net cash flow less the initial cost of the investment. If the net present value of an investment is greater than or equal to zero, then the investment is attractive to the decision maker. For this analysis, the initial cost of the investment was \$33,000 for the tile plow, stringer cart, and control system.

The analyses described here focused on expected changes in profit and net present values of the investment. James' February article mentioned other considerations that help to determine whether tile plow investment and use makes sense for an individual operation.



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For more information contact: James Kingston, 585.746.1670 or Jerry Bertoldo, 585.281.6816

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Vertical Tillage Field Demonstration

10:00 a.m. on April 18th (April 20th Rain Day)

Corner of Route 5 & 20 and Clay Rd

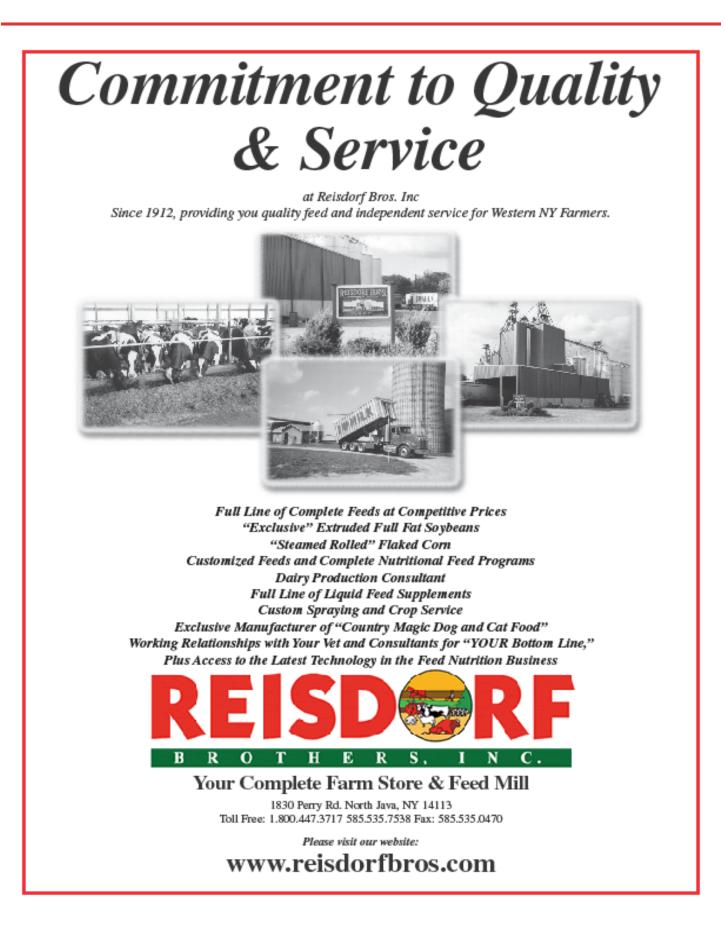
(Just East of the Village of Lima)

- All implements were operated last fall in side by side strips after corn was combined.
- Many farmers are using these types of tillage tools in the fall to help break down corn stalks.
- Compare 8 different implements to observe what ground & stalk conditions are left to deal with in the spring.
- Three separate products (Helena, CPS & Alltech) that were applied that help corn stalks break down over the winter, we will determine how effective each product was.
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For any questions??? James Kingston at 585-746-1670

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4	512 Disk Ripper	John Deere	Lakeland Equip.
5	330 Turbo	Case IH	Lamb & Webster
6	Disk Ripper	Landoll	Empire Tractor
7	Turbo-Till	Great Plains	Empire Tractor
8	Dominator	Krause	Monroe Tractor



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Ask Extension...

What's a Good Price for _____

By: Joan Sinclair Petzen

It depends! It depends upon whether you are buying, selling, have costs associated with putting the product on the market, or need something for your production process. One thing we can pretty much bet on in agriculture is that prices will be more volatile in the future. As a producer, you think about prices from two perspectives. What is the price I can sell my product for? And what is the price of items I need to support my production process? So a good price is relative to the situation. In the long run, the price for something is the amount a buyer is willing to pay a seller for a good or service.

?

Changing times are generating more interest among farms in Western New York in managing price risk. Marketing tools for managing price risk include, forward contracting, crop insurance, futures, options and more. Application of these tools can be complicated, but so are many of the machines and processes we employ in day to day operation of farm businesses. To become more comfortable with a new tool, learn how others are using it, try it out and adjust how you use it to achieve the desired outcome.

With complex tools sometimes the learning curve is a little steep. I often hear producers lament about the mistakes made when trying out a new technology. One great thing about the agricultural community is people are willing to share their experiences both good and bad and everyone learns from one another's successes and mistakes. This learning often takes place at field days and open houses. Marketing tools must be illustrated in a little different environment where one has access to market reports, contracts, and data.

A discussion group is an excellent place for collectively sharing knowledge and experience relative to marketing tools. Each party can bring what they have learned to the table and share it with their peers. If additional information is needed, one or more "experts" can be called upon to address specific topics participants want to learn more about. The group can begin to track contracts and model trades that can

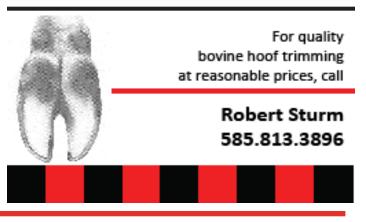
used be to minimize risk and discuss the outcomes. Through this process everyone engaged in the group learns the language, and becomes more comfortable



with the price protection tools available.

In an industry where we can figure out and implement a process to manipulate heats to get cows bred, make hay in a day to preserve precious energy, and use global positioning to grow more crops with less inputs, producers should be able to figure out how to implement the available marketing tools to protect the financial resources of our businesses.

If you have an interest in becoming more market savvy, contact Joan Petzen, 585-786-2251 jsp10@cornell.edu, about getting involved in a marketing discussion group. Ideally a group like this would involve 8 to 15 producers who are willing to share their experiences openly among the group. The group will set their own parameters for meeting frequency, location, and topics. If the group is from a broad geographic area, we could employ the Polycom system for interactive videoconferencing among, up to four, Cornell Cooperative Extension offices or internet based meetings to save the travel time associated with face to face meetings.



Controlling Johne's Disease in Dairy Cattle

By: Jackson Wright

mated that over 60% of all U.S. dairy herds have at ea, and prevent suspect animals from entering calving least one infected animal, with each infected animal areas costing producers over \$200/year.

Johne's disease is an intestinal infection caused by Mycobacterium avium ss paratuberculosis, or MAP. MAP is a bacterium that primarily affects the later portion of the small intestine (known as the ileum) of ruminants. Once ingested, intestinal mucosal cells absorb the bacteria which initiates an immune response. The result is inflammation and thickening of the intestinal lining and decreased nutrient absorption. Symptoms of Johne's disease include weight loss despite good appetite, decreased milk production, diarrhea, and death.

fecal-oral route as a result of ingesting manure- rently, fecal culturing is a common method to detect contaminated feed, water, or milk. Infection usually animals shedding the pathogen, however real-time occurs within the first few months of life, as older ani- quantitative polymerase chain reaction (PCR) could be mals are more resistant to infection. Following infec- more accurate. PCR is capable of detecting DNA spetion the bacteria lie dormant until the appearance of cific to MAP making it a fast and sensitive way to declinical signs in adult animals, typically between 3 and tect Johne's disease. Other advances in technology 6 years of age. In addition, controlling Johne's disease have led to the development of a fully automated ELIcan be difficult as infected animals can shed bacteria SA test capable of running over 1,000 samples per in the feces and milk and are capable of transmitting day, saving producers both time and money. the disease for years prior to showing symptoms.

Johne's disease is characterized into four stages of in- the efficacy of such vaccines is uncertain. Despite this, fection. Stage I animals do not show signs of disease vaccination against Johne's disease can decrease disand are not likely to shed bacteria into the environ- ease severity and shedding of bacteria and therefore is ment. Stage II animals still do not show any clinical probably cost effective. signs, however at this stage of infection the organisms may be excreted into the feces and is infectious to other animals. Stage III animals show early signs of disease, and actively shed the pathogen. Finally, Stage IV animals are easily recognized, and also actively shed bacteria into the environment. Multiple diagnostic tests can detect Stage III and IV animals, and unfortunately it has been estimated that every Stage IV animal represents 5 to 15 subclinical infections.

mission site and therefore the most important area to focus efforts on prevention. To prevent the spread of Tor dairy producers Johne's disease continues to be disease make sure to use individual calving areas, a difficult disease to prevent and control. It is esti- clean udders and legs of cows entering the calving ar-

Other best management practices include:

- Feeding milk and colostrum from low risk animals and/or utilizing milk replacers or pasteurized milk
- Knowing the disease status of purchased animals
- Culling Stage III and Stage IV animals
- Using diagnostic tests to define herd status and identify clinical and subclinical animals

Currently, several diagnostic tests are available to identify animals infected with Johne's disease. These diagnostic tests include pooled or individual fecal cultures, real-time polymerase chain reaction (PCR), and The majority of MAP transmission occurs through the enzyme-linked immunosorbent assays (ELISA). Cur-

Other prevention measures include vaccines, however

Ultimately, advances in technology are making it easier to identify and manage cows infected with Johne's disease. Furthermore, adopting practices that reduce the risk of Johne's disease also decreases the risk for multiple pathogens that affect dairy cows, including Corona and rotaviruses, E. coli, Salmonella, Coccidia, and Cryptosporidia, and likely increase thriftiness and productivity of your herd.

On dairy farms the calving area is the primary trans-

Violative Residues are a Dairy Problem

By: Jerry Bertoldo

Dairy culls and bob veal represent 7.7% of all cattle that enter meat packing plants. Unfortunately, they are responsible for 67% of carcasses condemned for traces of antibiotic and other illegal residues. In truth, the number of animals in all categories of livestock has declined steadily. Public perception however has not.

Violative residues can be the result of antibiotics, sulfas, anti-inflammatories, pain killers and antihistamines. Flunixin and sulfa compounds are the leading culprits found by USDA inspectors. Some drugs are pure and simply illegal to use in food animals. {The vast majority of violations are due to approved products being used improperly or not being given enough time to clear out of the animal's system}.

Dose, route of administration, frequency and length of treatment, health of the patient and withdrawal



time are all important in determining what might be found if a suspect or randomly selected animal is tested in the slaughter plant.

It is critical to have a medications manual containing all of the information on use and



withholdings listed for each drug used on the farm whether over the counter, prescription or extra labeled use as directed by the farm's attending veterinarian. A treatment log is a requirement as well.

Presently, a proposed bulk milk sampling plan by the FDA is on hold until logistical problems can be ironed out. 900 dairy farms across the country found to have violative residues in animals sent to slaughter will be targeted. 26 drugs of various categories will be targeted for using very sensitive analytical methods.

Sponsored by AGROTAIN International



Less than \$2 an acre to try AGROTAIN-stabilized N By Harold Brecht

Almost every grower I talk to is concerned about costs. And rightly so. Fertilizer prices have jumped all over the charts. But here's a way you may be able to get more value out of an application that isn't high on your priority list.

When your dealer uses UAN as a carrier for your spring herbicide treatment, consider adding AGROTAIN to your tank mix. For 10 gallons of UAN per acre, it only costs about \$2 more. Why add it to this application? Because many times you can see the difference that AGROTAIN can make in such a simple comparison. where conditions are right for N loss, and the simple addition of AGROTAIN controls the loss.

ammonia volatilization. We've had growers rave about the difference they have seen in the past few years. The darker green color that results as the plants respond to the

AGROTAIN is the only

product proven to control

nitrogen loss caused by

nitrogen application and getting more efficient use from the nitrogen applied.

And talk about return on investment! The universities of Illinois, Kansas State, Kentucky and Virginia Tech each showed (in their independent 2008 corn studies) that your financial gain will be \$46 to \$79 per acre better with AGROTAIN or AGROTAIN PLUS nitrogen stabilizer.



Harold Brech

What's more, is that AGROTAIN or AGROTAIN PLUS costs just pennies per pound of nitrogen and requires no additional equipment or changes in farming practices.

Make the most of your nitrogen this season. There's still time for you to try AGROTAIN and see what AGROTAIN technology can contribute to your bottom line.

If you have a question for the Nitrogen Miser or would like to get more information about Stabilized Nitrogen Technology, contact me at hbrecht@agrotain.com or 570-356-2910. Or call 888-425-8732 for more information.

AGROTAIN.COM

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Save the Date...

April 2011

- 6 Smartphones on the Farm: An Introduction to Apps for Agriculture, 7:00 -8:30 p.m., CCE-Ontario Co., \$10 per person, Registration contact: Nancy Anderson: 585.394.3977 x427 or send name, address & phone number to: nea8@cornell.edu
- 7 Forage Management Field Day, 10:30 a.m. 1:00 p.m., Merrimac Farms, 3920 E. Groveland Rd., Mt. Morris
- CROP Seminar, 10:15 a.m.-3:00 p.m., Romulus Fire Dept., 2010 Cayuga St., Romulus. Registration: Roberta Harrison: 315.539.9251 or email: rmh27@cornell.edu
- 12 Back to the Land Series: Horse Pastures, 6:30 p.m.-8:30 p.m., CCE-Monroe Co., Questions & Registration: Walt Nelson: 585.461.1000
- 18 Vertical Tillage Field Day, 10:00 a.m., Corner of Route 5 & 20/Clay Road, Lima (Rain Date: April 20th)
- 20 Using QuickBooks to Track Farm Finances, 10:00 a.m. 2:30 p.m., Finger Lakes Community College, Computer Lab B304, \$20 per person, *SPACE IS LIMITED*, *ADVANCE REGISTRATION REQUIRED*, Registration contact: Nancy Anderson: 585.394.3977 x427 or send name, address & phone number to: nea8@cornell.edu
- 27 Making Great Hay & Pasture, CCE-Orleans Co., 6:30 p.m. 9:00 p.m., \$10 per person, \$15 Farm/Family, Registration, Contact: Cathy Wallace: 585.343.3040 x138 or email: cfw6@cornell.edu

Free Agricultural Plastic Container Recycling

Open to farmers all around New York State to recycle their triple-rinsed plastic containers from agricultural crop protection products. Genesee and Monroe County Soil & Water Conservation Districts are urging farmers to demonstrate their product stewardship by recycling. Please contact either District to advise them of the approximate amount of containers they will have for recycling this year.

For more information:

Contact Elizabeth Bentley-Huber with the Genesee Co. SWCD at (585) 343-2362 or

Tucker Kautz with Monroe Co. SWCD at (585) 473-2120, Ext. 3



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