

The Tree

Discovery Farms' Newsletter

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Director's Column-Discovery Farms Resolutions

It's the time of year when people make resolutions or set new goals, while others reflect on the things that have occurred over the past year. The goals for the UW-Discovery Farms Program are set for several years, so let's reflect on some of the past year's accomplishments.

- ❖ Our steering committee helped set priorities for the next five years for the Discovery Farm Program. While the committee identified seven issues, we will focus on them in priority order based on funding and time commitments.
- ❖ We have identified critical conditions when the risk of runoff is high and when producers should look at modifying manure applications. We developed education and training programs to help producers identify these critical time periods.
 - ◆ Understanding the risk associated with frozen or snow-covered fields
 - ◆ Understanding what factors influence runoff on non-frozen fields
- ❖ We are gaining a better understanding of the impact of tile drainage systems and need to expand our tile monitoring program to identify practices that can reduce sediment and nutrient loss through tiles.
- ❖ We are finishing up on studies on some of our current farms and will be looking for new farms/settings to improve our understanding of the impacts from varying farming systems.

We would like to take this time to encourage you to also look back on our accomplishments for the past year(s). If you have questions or comments for us, please don't hesitate to:

Call: 715-983-5668

Email: jgoplin@wisc.edu OR

Join us at one of our events or meetings held all around the state!

Dennis R. Frame



Update on the Manitowoc County Discovery Farms Project

Written by Eric Cooley

Outreach Specialist, Eastern Wisconsin

The Manitowoc County Discovery Farms Project Area (DFPA) began in the Fall of 2004. Since then, we have been collecting data from a site at Soaring Eagle Dairy, and four sites at Saxon Homestead Farm. During this past fall, many changes have been taking place in regards to the Manitowoc County DFPA.

At the beginning of fall 2006, one surface water monitoring site was in place at Soaring Eagle Dairy, LLC. As explained later in this article, this site was removed for several reasons related to the quality of data produced by this site. Also in early November, one of the five surface water research sites was removed from the Pagel Farm in Kewaunee County for similar reasons.

A slightly altered research plan for Saxon Homestead Farm is now in place. The new research plan includes monitoring from smaller basins/watersheds. Previously, monitoring stations were collecting run off from basins ranging from 480-640 acres, and now will be collecting run off from 10-20 acre watersheds. We have had challenges with the research in the large basins/watersheds at Saxon Homestead Farm due to farm management practices being masked by large water volume, otherwise known as the "dilution effect." These smaller basins will allow us to have much better control and understanding of the effect of this farming system on the environment as compared to the large basins.

We have also had numerous challenges with our previously installed tile monitoring station due to: upstream blowouts, upstream springs contributing large water volumes to the tile system, and proximity of groundwater table that may also contribute significant amounts of upwelling groundwater and also cause static water levels in tile which make monitoring difficult.

From this point on, we will collect data from three sites at Saxon Homestead Farm, none of which are the original monitoring locations. When the two surface water monitoring sites from Soaring Eagle and Pagel's Ponderosa were removed, the equipment was relocated to Saxon Homestead Farm. One additional tile line monitoring site was installed to the Saxon Homestead Farm. Currently, Saxon Homestead Farm has monitoring stations installed in the original four locations, and the three new locations.

Although we have learned a great deal at the large basin/watershed scale, we would like to move the four previously installed monitoring stations at Saxon Homestead Farm to a new farm with smaller basin/watershed size to gain a better comprehension of the effect of management techniques and Best Management Practices on surface and tile water systems. We are currently planning this move in the Fall of 2007.

With that said, UW-Discovery Farms is currently searching for a new farm to participate in the Manitowoc County DFPA. The four original sites from Saxon Homestead Farm will be relocated to this new farm. Some criteria that are guiding our search for the new farm include:

- ✓ Surface water and tile monitoring sites paired together at one location (in same basin).
- ✓ Close to power (near power lines or buildings).
- ✓ Easy access by road (able to plow in winter).

Update on the Manitowoc County Discovery Farms Project, Continued...

- ✓ Single field per watershed if possible.
- ✓ No backwater (good slope away from surface site and clear discharge path for tile).
- ✓ Cooperative and good recordkeeping participant.
- ✓ Two paired surface/tile sites on same farm would be optimal.

Another of those changes is the graduation of Soaring Eagle Dairy from the Discovery Farms Program. The owners and staff at Soaring Eagle Dairy have been excellent cooperators. However, the surface water monitoring site at this farm was removed and the farm will be graduated from the program for a few reasons.

- First, flow of water through the surface water monitoring station is heavily influenced by tile outlets and not by surface water. Thus, data gathered at this monitoring station is not an accurate picture of what is leaving the farm in terms of surface water losses.
- The tile outlets that influence and contribute to surface water flow (as mentioned above) drain land that is not under the control of Soaring Eagle Dairy. We can not accurately determine this particular farming system's impact on the environment if other sources are also contributing to run off at the farm.
- Substantial repairs would be required to keep the current site operational due to damage caused by unexpected large flow volumes.
- A search was conducted for other suitable sites to perform research at Soaring Eagle Dairy, but none could be located.

A meeting will be held during the late spring of 2007 to commend Soaring Eagle for their efforts and cooperation with the UW-Discovery Farms Program. At this time, the new participating farm in the Manitowoc County DFPA will be announced.

To submit potential candidates for the new Manitowoc County DFPA cooperating farm, please contact the UW-Discovery Farms office by phone at 715-983-5668 or by email at drframe@wisc.edu.

At the present time, we would like to take the opportunity to congratulate and thank Soaring Eagle Dairy for their continued efforts in environmental research and protection. Without the cooperation and time put in by the owners and staff of Soaring Eagle Dairy, LLC, UW-Discovery Farms and the Manitowoc County DFPA would not be possible.

Summary of Changes to the Manitowoc County DFPA:

- ✓ Soaring Eagle Dairy LLC graduates from UW-Discovery Farms Program
- ✓ Three new monitoring sites installed at Saxon Homestead Farm, four original sites to be relocated
- ✓ UW-Discovery Farms searching for new farm to be a part of the Manitowoc County DFPA, criteria for desirable site outlined in article

Graduating Discovery Farms

Written by Dennis Frame
Discovery Farms Co-Director

In this issue's director's column, the last bullet indicates that sometime in the next few years Discovery Farms will be graduating some farms and looking for new locations to study. For those unfamiliar with this program, we started with the premise that we would study a farm for 5 – 7 years and then move to another operation. During the first few years of the study, we develop baseline information on nutrient and sediment losses, determine relations of these losses between paired basins, and determine how an operation is impacting the environment (positively and negatively). Once we know the impact of an operation on the environment, we work with the producer, their advisory committee and a group of agency personnel to determine what types of management changes could reduce negative impacts. Then we implement these changes in management in one basin (the treatment basin) and evaluate the nutrient and sediment losses again to determine if the changes have reduced negative impacts. We assumed that 2 – 3 years of monitoring after management changes were made would be long enough to determine if the management changes were effective, how these changes have impacted environmental losses, and the economics of implementation and operation of the farm.

Well, we're five years down the road and we have learned a great deal about monitoring on real farms and working with a variety of farm families. For the most part, our projects have performed like expected. So now we are busy developing baseline data or implementing changes in management, and on some operations we are evaluating how these changes are affecting environmental losses and farm profitability. One thing we hadn't planned on was what to do with operations that have very little negative impact. We agree that it is valuable to study many types of farms to document how different operations have developed their farming systems, but if environmental losses are low for a particular farm, there is little potential to make improvements. Studies on farming operations with small environmental losses can help to set achievable goals for operations in a variety of settings and under a variety of management systems throughout the state. However, we don't need to stay on these farms for 7 years. It would be more beneficial to shorten the monitoring period on these farms and work to find new operations with different challenges in other locations.

Other study sites have not moved ahead as expected. We need to think about moving from these operations to farms with different settings (smaller more manageable monitoring sites), different types of management (non-livestock verses livestock), and sites that provide multiple monitoring capabilities (surface water, tile drainage systems and groundwater monitoring). Why haven't all of our farms performed as expected? There are a number of reasons, and it is important to identify each reason and learn from those experiences.

- ✓ Some of the early farms were selected prior to the establishment of a good study design. Applications went out, a group of people representing the University, state and federal agencies visited the farms and ranked the farms based on the producers, the initial walk through of the farm and the facilities, and a discussion of what we knew about the environmental issues in that region of the state. The farms were also selected based on their potential for environmental issues as well as their ability to represent a significant number of producers in their region of the state. It is important that we select farms that are typical of the types of operations found in each region of the state.

Then we began working with the United States Geological Survey (USGS) to insure that all of our farms could be evaluated using a paired basin study design to minimize climatic and other variations that exist between farms. Bringing in the USGS was important to this program because data that they collect are fair and unbiased. They do science, not policy or farm management.

Graduating Discovery Farms, Continued...

The Discovery Farms staff collects the farm management information and our staff understands farming and the agricultural policy issues. The relationship between USGS and UW – Discovery Farms is what makes this data collected for the Discovery Farms Program a powerful source of information to producers, policy makers, and the research community.

When we brought in the USGS, we found that some of the farms did not have right type of landscape to provide a good paired basin study design. We could usually establish one site, but we would never have been able to determine if a management practice made changes in water quality without another site on the farm under the same management conditions. That, in effect, eliminated certain farms from our USGS monitoring program. For these operations, we have worked on other studies like air/odor emissions, a study with UW – Stevens Point on denitrification and a study with the Biological Systems Engineering Department at UW – Madison. These studies have been short term in nature and, as the program matures, we need to find other study sites.

- ✓ Data collected at other farms have been total surprises to our staff and our colleagues at USGS. As stated above, we selected farms and study locations based on what we thought we knew about the local environmental issues. We have always said that we weren't coming in with a prescribed management practice until we studied the farm and determined the types of practices that were contributing to environmental losses. That is true, but you need to have some ideas of the management practices that are occurring on an operation and a good guess of the impacts of these practices on surface water in the region (that way we know if a farm represents the typical operations in a certain region of the state). We were really wrong on two farms. No, it's not the first or the last time we have made a mistake. But on these operations, the assumptions were so incorrect that after two years of monitoring we decided that we need to either make significant changes to the study design or move to another location.

What happened?—Tile drainage systems. These farms were added to the program after we had worked on a number of operations on surface water monitoring and we were starting to get a good handle on how our monitored watersheds react. Then we moved into an area of the state with a lot of tile drainage and suddenly our watersheds were not behaving as predicted. Usually we can accurately estimate the drainage area that flows into a surface water monitoring station. That has not been true of our sites that have significant amounts of tile. We don't usually know where the tile is located, how much land it is draining and who is running the land over the tile lines. Although we can measure the amount of water and the levels of nutrients and sediment coming through tiles, we can't calculate accurate yields (pounds per acre) because we don't know the drainage area. Does that mean that monitoring on these operations has been a total waste of time and money? No! In fact, these farms have taught us a great deal about the impact of tile drainage and the level of contribution from tile to surface water in the eastern regions of the state. We now have a much better understanding of how often these systems flow (the majority of the year), how quickly nutrients can enter these tiles, how much sediment enters tile and how management practices can influence nutrient and sediment losses. What we need to do is move to new sites where we have a fairly good handle on the location of the tile and know how many acres contribute flow through the system. If we can find a site with two smaller watersheds (15 – 30 acres), we will have a pair of basins that hopefully have a strong statistical relationship. Once the relationship has been established, we can begin to implement changes in management (tillage, different application rates, timing and methods, etc.) and determine how changes in management practices influence nutrient and sediment losses. We will begin looking for these new study sites sometime this summer if funding allows.

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Graduating Discovery Farms, Continued...

How will we select new farms? The first thing we need to do is go back to our original list of interested cooperators and determine if any of them are still interested in the program. We will need to visit these operations and determine if they have sites suitable for a study. We have an open sign up period to become a Discovery Farm which means that anytime someone wants to be in the program they should contact Judy at the office and get an application. We keep a file of interested farms and when funding is available we work with our steering committee to select a new study site.

We have been blessed with wonderful cooperators and it is truly surprising how open and honest our cooperators have been. I have had farms apply manure at inappropriate times and in inappropriate locations just to see how it affects nutrient losses. I have taken data to farms and sat at the table thinking that producers are going to be upset by what we are learning or unwilling to talk about the challenges they have with their current farming system. But, our producers have been open, honest and more than willing to accept challenges with their systems and talk about ways to modify their farming practices. For producers considering participation in this program, you need to understand that this is a key part of the program. You must be willing to be totally honest about what is happening on your farm and open to the possibility that your farm is having a negative impact on the environment.

UW - Discovery Farms and the USGS is committed to being open and honest about our findings. We are willing to work with producers, state, county and federal agencies to find solutions to the issues we identify on these operations. That means that producers need to accept that their farming systems have challenges and work with others to seek reasonable solutions to these challenges. It also means that agency personnel must be willing to accept that they don't have all the answers and the only way to find solutions is to work together with the people who live and work on the land and understand it better than we in the office buildings ever will.

Manure: Is it Liquid or is it Solid?

By Kevan Klingberg
Outreach Coordinator

According to WI-NRCS, WI-DATCP, and WI-DNR: Liquid manure has less than 12 % solids; Solid manure has 12 % solids or more.

References

- ✓ WI-NRCS 590, Sept 05. Nutrient Management Standard. http://www.datcp.state.wi.us/arm/regulation/pdf/590_final.pdf. V.A.3.a. "...liquid manure applications (less than 12 % solids)..."
- ✓ WI Chapter ATCP 51, Apr 06. Livestock Facility Siting Law. http://www.datcp.state.wi.us/arm/agriculture/land-water/livestock_siting/siting_statute_and_rule.jsp. Appendix B is the WI-NRCS 590, Sept 05.
- ✓ WI NR 243, proposed revision, Aug 06. Animal Feeding Operations. <http://dnr.wi.gov/org/water/wm/nps/pdf/ag/NR243/NRBoard-NR243-ProposedRule.pdf>. NR 243.03. Definitions. (32) Liquid manure means manure with a solids content of less than 12 %. (58) Solid manure means manure with a solids content of 12 % or more.



Qualified Nutrient Management Plans

Written by Dennis Frame

UW-Discovery Farms Co-Director

When I talk about nutrient management planning a few questions usually come up. These questions include: when do I need a plan; what happens if I don't have one; and who is qualified to write a plan? We just finished a set of classes with county staff who work with producers and consultants on writing and implementing nutrient management plans. I would like to try and provide an answer to at least some of these questions.

I can't think of a single operation that doesn't have some type of fertilizer program already in place. Ok, it's not documented in a three ring binder or on a computer somewhere, but there is a system in place that outlines how many pounds of fertilizer or manure are applied to fields going into various cropping systems. A sound nutrient management plan simply accounts for the nutrient needs of a crop and credits the various sources (soil, manure, legumes, etc.). Just like balancing your checkbook, this accounting ensures that you don't over apply nutrients; it saves you money and reduces the risk of nutrients negatively impacting the environment. The fact is that not everyone balances their checkbook, but I think we can agree that it's a good idea.

So, the fact is that everyone probably has a nutrient management plan of some sort, but it might not comply with state requirements or be the most organized plan in the world. As you're implementing your New Year's resolutions, maybe one of your goals should be to evaluate the use of nutrients on your farm to determine if your application rates, methods and timing are appropriate based on crop needs. You should also check to ensure that you have identified critical sites and locations on your operation where the potential for loss is high (sink holes, shallow soils, near streams, lakes etc.).

Will someone come to your door demanding to see your plan? That depends on how you apply manure and other nutrients to your fields and whether there is a significant runoff event. If you apply manure that runs off a field and impacts a stream or lake, then I wouldn't be surprised if someone asks for your plan. If you have one and can document that you are following it you will be able to determine whether or not your management practices were appropriate. Some runoff events are caused by producer error and others by unforeseen weather events. Without documentation you have nothing to justify your management decisions.

That leaves the question of what is a qualified Nutrient Management Plan and who is qualified to write one? A qualified plan is one that meets the requirements outlined in the Nutrient Management Plan Checklist in ATCP 50. You can get copies of this checklist from your local conservation office or online at the DATCP website under nutrient management planning. Here is the website: <http://www.datcp.state.wi.us/arm/agriculture/land-water/conservation/nutrient-mngmt/planning.jsp>. The key is that a plan is qualified if it meets the requirement on this checklist. A plan developed by a professional that has training or certification may not be qualified if the recommendations are outside of requirements on the checklist.

What about producer written plans? Producers can develop their own nutrient management plans if they have been through a training program and the plans they developed meet the checklist. This doesn't mean that you need a license to spread manure or nutrients on your farm, it means that if you attend a training program offered by Extension, Land Conservation or the technical college you can become qualified to write your own nutrient management plan. Which is better, writing your own plans or working with a consultant to develop a plan for your operation? That's up to you, but the best plan is one that you understand and can implement on your farm without having to call someone every time something changes on your operation. Whether you go to the training program to become qualified to write a plan or attend so that you understand the importance of implementing a nutrient management plan that someone else develops for you, it's a great idea to participate in the training program.

UW Discovery Farms and Environmental Regulations

By Dennis Frame and Fred Madison
Co-Directors of UW-Discovery Farms

Last fall we went in front of the Senate Committee on Agriculture & Insurance to testify on the proposed regulation NR-243 which was developed by the DNR with guidance from internal and external technical advisory committees. While the rules outlined in 243 can affect medium and small livestock operations with significant discharges to waters of the state, they are mostly developed for the very large confined animal feeding operations (> 1,000 animal units). While we knew that not everyone would be happy with our testimony, we felt it was important to talk about what we have learned through this program and our concerns with the proposed legislation. This article provides a summary of the concerns we had with the proposed rules and concludes with some comments on the revised rule package.

The key to our testimony was in our introduction where we said:

“While we recognize that the Department of Natural Resources needs to update these rules to comply with changes in Federal regulations, we feel that it is extremely important to establish rules that can be easily understood and adopted by producers all around the state. The goal is to improve water quality. The rules won’t improve water quality; the effective implementation of those rules by farmers will”.

Rules are written to influence or control behavior. They are a method of directing how people should act in manner that is beneficial to society. Environmental rules are necessary and important, but the development of a rule is not the goal. The goal is to improve water quality and the way to achieve that goal is for people to adopt management practices that reduce negative impacts on the environment.

Through our work on farms throughout the state and our involvement with many of the state agencies on the development of environmental regulations we have identified many times when strictly following the rules is not enough. There are times and locations where allowable application rates and/or methods will not provide adequate protection. Producers need assistance to identify critical sites and critical time periods and the flexibility to develop and implement a management system that works for their operation. The challenge with environmental rules is that we don’t know exactly what every farmer should adopt. In other words, there is no magic system that everyone needs to implement. Every farming system has strengths and weaknesses. In the right location with proper implementation they all work, the wrong location, time period or conditions they can all have significant losses.

Below are the key points in our testimony. If you want copies of the entire testimony it is available on the Discovery Farms website (<http://www.uwdiscoveryfarms.org/>).

- ✓ Producers need sufficient storage capacity in the critical winter period, which means storage facilities have to be emptied at a time that insures adequate capacity is there. Mandating greater storage capacity does not necessarily mean that this will happen.
- ✓ If manure must be hauled in this period, fields need to be identified that do not have direct conduits to either surface or groundwater.

UW Discovery Farms and Environmental Regulations, Continued...

- ✓ If manure has to be stacked during that time period, appropriate sites must be identified and approved in advance.
- ✓ The proposed rules may force producers to stop hauling manure during the late fall and early winter periods or to use tillage. This can lead to increased sediment and nutrient losses and increased movement of nitrogen to groundwater.
- ✓ Landscape vulnerability can occur anytime during the winter period when manure is applied on snow that is melting or when it rains on manure that has been applied either on snow or frozen ground. Establishing calendar dates in the administrative rules, is not necessary.
- ✓ Producers should not be forced to build solid manure stacking systems if appropriate sites for land stacking are available.
- ✓ Soil moisture is a critical factor in predicting and reducing nutrient and sediment losses on non-frozen soils. The definition in the rules of “saturated soils” is of no value to the farm community. There is need to develop an easy and accurate way for farmers to determine soil moisture and to apply that knowledge to their manure management.
- ✓ Requiring that farmers make manure application plans based on weather reports from the National Weather Service is not realistic.
- ✓ Data collected to date by the Discovery Farms program on tile drainage is preliminary. Further, detailed work is required before any limitations on tile flow are established. Therefore, it is in our judgment, premature at this time to adopt any rules on tile drainage. Tile drainage is not just an agricultural problem.
- ✓ There is a need to develop a simple risk management tool which helps producers and conservation professionals assess the risk of nutrient and/or sediment losses to surface and groundwater based on field locations, site conditions, time of year, manure type (% moisture) and the soil moisture conditions.

Farming by its very nature is a risky business; nothing we do will totally eliminate that risk. Sound manure management programs are designed to reduce the risks involved as much as possible. Regulatory programs should compliment and support sound planning efforts.

What has happened since this hearing?

The DNR has worked with their stakeholders and revised NR-243 and is taking it to their board on January 24th. We met with DNR and DATCP to review the revised document and we feel that they have done an excellent job of taking our concerns into consideration. They have tried to address the issues identified in our testimony while still meeting both state and federal requirements. Does this mean we think the rules are perfect? Nope, there are still areas of concern that we have in terms of farmers being able to implement these rules but that is true of any rule package.



Who Cares About Nitrogen Anyway?

Written by Eric Cooley
Outreach Specialist, Eastern Wisconsin

We care. And you should too. Here's why.

As Wisconsin shifts from nitrogen to phosphorus-based nutrient management planning, the emphasis on proper nitrogen management often takes a back seat to phosphorus management. Much like phosphorus can build-up in a soil, nitrogen from soil organic matter, manure and fertilizers can also accumulate in soil and result in subsequent release to ground and surface waters. The potential for release of excess nitrogen increases as soil accumulations of nitrogen exceed crop uptake capacity.

Nitrogen losses to ground and surface waters often occur in the nitrate (NO_3^-) form because the ion is very mobile in soil. Nitrate losses are prevalent in shallow and coarse textured soil (groundwater concern) and tile drained (surface water concern) environments. Elevated nitrate concentrations in groundwater have been linked to increased incidence of human and animal illness. Elevated nitrate in surface waters is a contributor to the hypoxic (oxygen depleted) zone in the Gulf of Mexico.

Tile line water quality data from the fall of 2005 through the spring of 2006, indicated that even with proper nitrogen crediting and management, substantial losses can occur if the previous crop did not fully utilize nitrogen sources in the soil and nitrogen is applied to the full crop need of the upcoming crop.

Many areas of Wisconsin were droughty in 2005, especially during crucial growth periods. This reduced the uptake of nitrogen from the soil as a result of two different factors. The first and most obvious, is since yields were reduced because of water deficiency, less total nitrogen was utilized by the growing plant. The second, also due to the dry soil condition, is a reduced microbial conversion of organic nitrogen to nitrogen in soil solution. Therefore, organic forms of nitrogen in manure and decaying legume crops remain in organic form, thus unavailable to the plant, until adequate moisture is present for microbial conversion.

The problem occurred late in 2005 when many producers fall applied manure to the full nitrogen need of the 2006 crop. The rain that we so desperately needed during the summer, now came in late fall of 2005. The abundance of moisture, combined with the higher than normal temperatures from September to December, allowed for rapid conversion of nitrogen fixed in the organic form to nitrogen in soil solution. Without a growing crop to utilize the now available nitrogen, many leaching losses were observed from the late fall of 2005 through the spring of 2006.

As a result of the magnitude of observed nitrogen losses, some producers questioned if sufficient nitrogen reserves remained in the soil for the 2006 crop. Pre-plant soil nitrate tests (PPNT) were performed soon after frost was out of the ground and this test verified that more than adequate quantities of nitrogen remained in the soil. Excellent yields were obtained on tested fields in 2006 with no evidence of nitrogen deficiencies through the growing season.



Who Cares about Nitrogen Anyway? Continued...

So the question is: how could we get substantial losses of nitrogen before the growing season, yet still have exceptional yields? Two explanations again are required to answer this question. The first, which we have already discussed, is the fact that the total nitrogen credit that we applied for the 2005 crop was not utilized so leftover nitrogen would be available for the 2006 crop. Second and likely more substantial, is the crediting that was utilized for the legumes and manure applied to the field.

Because second year credits for legumes and manure make nutrient management planning much more complex, many planners do not take into account second-year credits. Furthermore, utilizing third year credits for manure are virtually unheard of. The fact remains that 30-40% of the total nitrogen in dairy manure becomes available the first year, 10% becomes available the second year, and 5% becomes available the third year. If you add all three numbers up, you will see that only 45-55% of the total nitrogen in dairy manure ever becomes available, the remainder is lost through volatilization losses to the air or leaching losses to ground and surface waters. These percentages occur under normal moisture conditions and are delayed in years like 2005 when sufficient soil moisture is not present.

Therefore, when conditions exist that may allow for the carryover of nitrogen to the following year or questions arise about properly credited nitrogen from legumes and manure, two soil tests are available to assist you in determining proper nitrogen applications: the Pre-Plant Soil Nitrate Test (A3512) and Pre-Sidedress Soil Nitrate Test (A3630). It is also very important to take full recommended nitrogen credits for manure and legumes first year and second year to maximize economic utilization of nitrogen while preventing excess losses.

One final note on fall applications of manure and fertilizer: If possible, apply fall manure when soils are below 50°F and at low moisture contents to reduce losses. If nitrogen fertilizer or manure must be applied early in the fall, the use of urease or nitrification inhibitors will reduce nitrogen losses.

The data observed from 2006 proved as a reminder that University of Wisconsin recommendations for crop need and nutrient crediting are accurate and often err on the conservative side, allowing for more than adequate nutrient availability for crop need. It should also be noted that these recommendations are based on maximum economic yield, not environmental protection, so following these guidelines will not only optimize your profit, but reduce the release of excess nutrients to ground and surface waters of the state.

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This newsletter is an information source about the Discovery Farms Program. Regarding the mailing list, call/e-mail 715-983-5668 or jgoplin@wisc.edu.

This newsletter can be found on the web at www.uwdiscoveryfarms.org.

Discovery Farms is a program from the University of Wisconsin, and is part of UW-Extension and the College of Agriculture and Life Sciences at UW-Madison. It has a relationship with WASI, as does UW-Platteville's Pioneer Farm.

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