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**Capital Area Ag Report**
**October 2014**

“Progress is impossible without change, and those who cannot change their minds cannot change anything.”
- George Bernard Shaw

**Announcements**

**October 23, 2014 10:00 am - 2:00 pm - Aerial Cover Crop Field Day Tour - Starts at Kilpatrick Farm, 1159 County Route 24, Granville, NY.** This fall, funds awarded to the Washington County Soil and Water Conservation District were used to help 8 farms within the Washington County/Lake Champlain Basin, to implement aerial rye cover cropping on 426 acres of cropland connected to the Mettawee River. Most of the cover crop was applied to fields of corn silage through the use of an aerial application of cereal rye. Cereal rye is being used as a way to combat soil erosion during the winter months, and stabilize soil during seasonal flooding. For more information and to register for the tour, contact Washington County Soil and Water Conservation District, 518-692-9940, ext. 3 or email lori.sheehan@ny.nacdnet.net to reserve your place in the lunch line. Or go to lcbp.org, to download the field day flier.

**Tile Drainage School**
**Wednesday, Nov. 12, 9:30 am—3 pm—Sponsored by CCE, at The Factory Eatery, 20 Prospect St., Ballston Spa.** Speakers include George & Travis Allen (Allenwaite Farm Inc), Steve Mahoney (River Bend Farm Agricultural & Environmental Services), Larry Geohring (Cornell Dept of Biological & Environmental Engineering). Topics include drainage
installation, materials, and machinery; Minimizing Environmental Risks of drainage water; Maintaining & Operating drainage systems; Fixing problems in existing systems; Compliance with USDA regulations.

Registration is $40, due Friday, Nov. 7th. Space limited to 80 participants. Payable to: CCE of Herkimer County 5657 State Route 5, Herkimer, NY 13350, or call (315) 866-7920 (Barb Johnson). For Program Questions Contact:
Aaron Gabriel, adg12@cornell.edu 518-380-1496
Kevin Ganoe, khg2@cornell.edu, 315-866-7920
Ashley Pierce, arp253@cornell.edu, 518-272-4210

Wednesday, Nov. 19, 1-3:30pm - CAFO Roadshow, Eastern NY—Saratoga County CCE, 50 West High Street, Ballston Spa. Registration deadline: Nov. 17 Register online at (http://nyfb.informz.net/NYFB/event.asp?eid=7BB238BE-77BE-48A9-AA96-3EECC29F852C) or call New York Farm Bureau at 1-800-342-4143, ask for Jessica Lopez and be prepared to provide details of who is attending and which location you will attend (Ballston Spa for eastern NY). Sponsored by Cornell PRO-DAIRY, NEDPA, NYFB, Farm Credit East, NYS DEC, NYS Ag & Markets, and USDA-NRCS. This series of four seminars to be held in November across NYS will focus on ways for farmers to do an even better job of preventing runoff and water well problems and to learn more about what may be in the new CAFO permit to address these issues.

Agenda:
Welcome.
Winter 2014: reviewing conditions and runoff impacts.
Q and A with audience, what DEC does when there is a well contamination concern.
Review of wet weather spreading guidelines.
Following the plan, revising the plan, who is responsible?
Where do we go from here? Considerations for the next CAFO Permit.
Manure storage/transfer/treatment, NRCS standards, storage closure, etc.
Medium CAFOs: implementation deadline 6-31-14, are you there yet?
200-299 cow farms, never permitted, and seeking termination: DEC experience with no discharge determination.
New funding opportunity: Dairy Acceleration Program as a compliment to NRCS and SWCD programs.
Wrap up.

Calf & Heifer Congress 2014 – “Birth to Breeding” to be held on December 10-11, 2014, the fourth in a series of dairy replacement conferences presented by Cornell University Extension and the Cornell PRO-DAIRY Program. Held at the RIT Inn & Conference Center outside of Rochester, NY. Sponsored by the CCE NWNY Dairy, Livestock & Field Crops Team. Registration deadline is on or before November 28, 2014. To register on-line go to http://www.event.com/d/k4qctr/

FYI

Check out the Ag Exchange (http://agexchange.cce.cornell.edu) to sell standing crops, buy feed, need custom machinery work, need some trucking, whatever your need, check out the Ag Exchange. It is fast, easy and requires no password. We are up to about 70 items posted.
The latest issue of “What’s Cropping Up?” is available online. In this issue you will find:

- **Northern Stem Canker: A New Challenge for New York Soybean Producers**
- **Implementation of a Soil Health Management Plan Resolves Pond Eutrophication at Tuckaway Farm, NH**
- **2014 Grain Corn and Soybean Yields Could Be Record Highs Despite Another Challenging Growing Season**
- **Adapt-N Boosts Profits and Cuts N Losses in Three Years of On-Farm Trials in New York and Iowa**

**Mobile Access to Pesticides and Labels (MAPL) database** is a phone app that helps you create a list of possible pesticide products sorted by Reg#/Name or Site (crop)/Pest/Active Ingredient. MAPL is available through NPIC (online at [http://pi.ace.orst.edu/mapl/](http://pi.ace.orst.edu/mapl/)). After you generate your list of pesticides, **check to be sure they are registered in New York for the appropriate pest and site**, by going to the PIMS database at: [http://pims.psur.cornell.edu/](http://pims.psur.cornell.edu/). It’s pretty simple to use but it unfortunately doesn’t have a way to export the information into Excel; you have to re-key the info into Excel.

**How Do I Know When My Cattle Are Finished?**

Here's a great video to help you answer that question. You'll follow a handsome, grass-fed and finished, Lakota Ranch Devon steer around the pen as Jeremy Engh shows how he evaluates a finished animal. In just 7 minutes you'll have the information you need. (from “On Pasture”, Kathy Roth & Rachel Gilker, [http://hosted.verticalresponse.com/667702/245d96d1f4/284559149/d02fd64e4f/](http://hosted.verticalresponse.com/667702/245d96d1f4/284559149/d02fd64e4f/))


Beginning December 31, 2013, New York State’s minimum wage increased in a series of three annual changes as follows:

- $8.00 on 12/31/13
- $8.75 on 12/31/14
- $9.00 on 12/31/15

On this page you can find updated posters, summary rate sheets and FAQs. Check back frequently for other updates as the increases take effect.

The Minimum Wage regulations showing proposed changes are posted on the Department of Labor’s website under Legal Updates:

Pay special attention to the “Part number” of the New York Codes, Rules and Regulations (“NYCRR”) to be sure you reference the correct document for the industry you seek: 12 NYCRR Part 141 (building service), Part 142 (miscellaneous industries), Part 143 (nonprofit) and Part 146 (hospitality).
NOTE: Underlined items show the proposed rate changes to allowances or credits which result from the increase in the State Minimum Wage rate. No changes are proposed for rules such as recordkeeping requirements.

Minimum Wage Standards for Farm Workers

The Minimum Wage Order for Farm Workers applies only to farm workers employed on farms that paid over $3,000 to workers in the previous calendar year. Under this wage order, all workers must receive $8.00 per hour, with few exceptions. It excludes:

- Immediate family
- Minors under 17 years of age
- Employed on the same farm as their parents or guardians
  - who are paid on a piece-rate basis at the same rate as employees over 17

The wage order allows employers to deduct for meals and lodging, except for lodging for seasonal migrant workers. See the wage order for specific allowances. If employers make payments in kind, they may not charge more than the farm market value. Employers must post a summary of the wage order where it is visible to workers, along with a copy of the general work agreement.

COVER CROP USE WITH AN INSURED CROP
Sarah Johnston, September 2014

Advantages of Cover Crops & Crop Insurance: Northeast Needs

The list of advantages to farmers for incorporating cover crops into their production is long. It includes not only direct benefits, such as improved yields in droughty conditions, but both short and long term soil productivity improvements, such as better drainage, additional crop resiliency in wet conditions, reduced soil erosion, weed suppression and improved soil biological activity.

For those who insure their crops, the new USDA multi-agency guidance on cover crops provides a better understanding of cover crop use on a national basis, but leaves something to be desired for those in the Northeast. As stated in the USDA Risk Management Agency’s 2014 “Frequently Asked Questions,” found at http://www.rma.usda.gov/help/faq/covercrops2014.html the goal of the USDA interagency workgroup was to “develop cover crop management guidelines so that producers can achieve conservation benefits of cover crops while minimizing risk of reducing yield to the following crop due to soil water use.”

In the Northeast, where farmers have been experiencing intense rain storms that can dump anywhere from 1 to 6 inches in a matter of hours, farmers don’t find themselves in the position of reducing yields of following crops due to soil water use. Instead, the growing conservation need is to establish a cover crop with the insured crop as soon as practicable, not waiting until near physiological maturity of the insured crop.

Q&A #19 discusses “over-seeding/interseeding” as the practice that is associated with planting at or near cash crop maturity. Q&A #20 states that “interplanting” a conservation cover crop allows for the cash crop’s insurability as long as agronomic management and harvest of the cash crop are unimpeded. Most crop insurance companies in the Northeast interpret the information in total to mean that planting a cover crop into corn earlier than “near cash crop maturity” makes the crop uninsurable. Or, they may require the producer to locate and obtain
written support from 2 approved agricultural experts.

Producers and crop insurance agents throughout the Northeast are looking forward to a clarification that does not disadvantage the farmer looking to keep more soil in the field with cover crops, as storm precipitation events continue to pound the fields.

**Cover Crops Information – Found in Crop Insurance Policy “Special Provisions”**

The “Special Provisions” of every crop insurance policy contain a lot of information that is pertinent to the producer’s responsibilities for continuing coverage. Many producers don’t see the Special Provisions until they receive their policy, but they are available on the web at the USDA Risk Management Agency’s website. To see a crop’s Special Provisions, go to [www.rma.usda.gov/](http://www.rma.usda.gov/) and click on the information browser. Then, click on the Cost Estimator/Premium calculator. Choose the upcoming year. You actually have to choose the location, crop and type of policy and even your acreage to insure to get a price quote and a look at the Special Provisions. If you want step-by-step instructions, you can use our fact sheet and the associated Power Point presentation for how to use this feature of the USDA RMA website. You can find these at: [http://www.agriculture.ny.gov/AP/InsuranceByCrop.html](http://www.agriculture.ny.gov/AP/InsuranceByCrop.html).

You can also ask your crop insurance agent for a preview of the Special Provisions for the crops you wish to insure. The typical Special Provisions are about 12 pages in length. Those in a policy for winter-planted feed grade barley in Allegany County included the following provisions that relate to cover crop use with crop insurance:

*3 In lieu of Section 17(f)(5)(ii) of the Common Crop Insurance Basic Provisions, haying or grazing a cover crop will not impact eligibility for a prevented planting payment provided such action did not contribute to the acreage being prevented from planting.

**Insurance Availability**

Insurance shall attach to a crop following a cover crop when the cover crop meets the definition provided in the Basic Provisions, was planted within the last 12 months, and is managed and terminated according to NRCS guidelines. If growing conditions warrant a deviation from the guidelines, producers should contact either Extension or the local NRCS for management guidance. For information on cover crop management and termination guidelines, refer to the Cover Crop Termination Guidelines published at [http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops/](http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops/).

The last Special Provision, restated above, effectively ties the 4-page USDA NRCS document about cover crops, crop insurance and NAP coverage to the policy.

**Prevented Planting – To File or Not to File**

Depending on the year, many crop growers say that the Prevented Planting provisions in their corn and soybean policies are its most valuable provision. This depends on the producer, however, and what they need to produce for their operation. Also pertinent are USDA RMA’s changing rules. They recently have determined that a producer can graze cover crops planted on ground where farmers have filed for Prevented Planting without planting. Haying or harvesting the cover crop before November 1 still results in a reduced Prevented Planting payment, though.

For dairy producers in the situation where a wet spring has resulted in either a Prevented Planting filing or uninsured corn silage, some producers are turning to sorghum for silage. While it still means dropping crop insurance coverage (only grain sorghum is covered in New
York State, and only in 17 counties), brown midrib sorghum is catching on in popularity as a July-planted crop. It’s rapid growth seems to off-set the benefit of a payment, at least on hilly ground. Others find that planting and harvesting a cover crop for forage is worth forfeiting the payment.

Whatever the weather throws at New York’s producers, more have been signing up for crop insurance every year, as the understanding grows that the farmer is not locked into the policy until the July 15 acreage reporting deadline, well after making the multiple planting decisions that are always based on spring planting.

I hope you are not tired of hearing about risk management. It is an important topic, and all aspects of agriculture seem to be bouncing between the extremes. We have organized the “Tile Drainage School” on November 12, to address once aspect of crop risk management. Many farmers understand the value of tile drainage, and many are improving their farms and profitability by installing miles of it. I have included an articles and websites to some resources about tile drainage to get you thinking about tile drainage and so you can formulate your questions for the speakers at the Tile Drainage School in November.

Ev Thomas (retired from the Miner Institute) has an excellent presentation, “Influence of Tile Drainage on Crop Yield” available online at [http://www.whminer.com/Outreach/Tile%20Drain%20Conference/Influence%20of%20drainage%20of%20crop%20yield%20-%20thomas.pdf](http://www.whminer.com/Outreach/Tile%20Drain%20Conference/Influence%20of%20drainage%20of%20crop%20yield%20-%20thomas.pdf). One interesting point that he makes, along with the obvious increases in yield and profit due to tile drainage, is that the variability of crop yields from year to year is reduced with tile drainage. Despite dry and wet years, crop yields do not swing wildly. The table below shows the difference in yield good years and bad years among fields at the Miner Institute (in Chazy, NY).

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Surface Drained</th>
<th>Tile Drained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swanton fine sandy loam</td>
<td>7 t/a</td>
<td>3 t/a</td>
</tr>
<tr>
<td>Rhinebeck silty clay loam</td>
<td>5 t/a</td>
<td>2 t/a</td>
</tr>
</tbody>
</table>

Corn silage yield stability over 3 years in tons/acre @35% dry matter (yield difference between low & high years)
Other useful resources on tile drainage:
A short history of tile drainage and where we are at today (by Eric Young, Miner Institute, published in “Progressive Farmer”), entitled “Digging Up Tile Drainage Roots: 179 Years and Flowing”:

A set of four factsheets from Iowa State University can be found at:
http://www.uwdiscoveryfarms.org/OurResearch/AgriculturalTileDrainage.aspx

**Understanding the Economics of Tile Drainage**
By John Hofsted, Iowa State University, File C2-90, Written July, 2010

Designing a Subsurface Drainage System

The purpose of subsurface drainage is to lower the water table in the soil. The water table is the level at which the soil is entirely saturated with water. The excess water must be removed to a level below the ground surface where it will not interfere with plant root growth and development. Root growth requires air to be present in the soil. Both water and air need to be present in the spaces between the soil particles, often in equal proportions. If water fills all of these spaces (saturated), there is no room for air.

Tile drainage should be designed so the water table between tile lines can be lowered within 24 hours after a rain to a level that will not cause crop injury. Generally, most field crops are not injured if the water table is lowered to at least six inches below the ground surface in the first 24 hours after a rain. During the second day after a rain the water table should be lowered to approximately one foot and on the third day to 1.5 feet below the ground surface.

The soil types in an area to be drained greatly influence the type of system that will be installed and indicate if special problems should be anticipated.

Tile drains are placed at uniform depths where possible. The topography of the land influences the grades available, and it is often possible to orient the drains within the field to obtain a desirable grade. The grades should be sufficient to result in a non-silting velocity yet be flat enough that the maximum allowable velocity rate is not exceeded and the drain is not subjected to excessive pressure flow. Too much flow will cause erosion around the drain.

A subsurface drainage system will function only as well as the outlet for the drainage water. When planning a drainage system, it is essential that suitable outlets are available or there are opportunities to develop outlets. Outlets may be large underground tile mains, open ditches or natural waterways. Outlets may be provided in watersheds where a drainage district has been created. However, many of these outlets may be old and overused. This is especially a problem in the prairie-pothole region of Iowa where there are a lot of small sloughs of standing water and very little slope or access to natural waterways.
Patterns of subsurface drainage systems
Select a drainage pattern that best fits the topography and the groundwater conditions. Some of the basic systems are shown in Figure 2.

The herringbone system (b) consists of parallel tile laterals that enter the main at an angle, usually from both sides. This system is used for long, relatively narrow wet areas such as those next to flat drainageways. The parallel or gridiron system (a) is similar to the herringbone system except that the laterals enter the main from only one side. This system is used on flat, regularly shaped fields with uniform soil types. The double-main system (c) is a modification of the gridiron and herringbone systems. It is used where a depression, which is frequently a natural watercourse, divides the field. A random system (d) is used where the topography is undulating or rolling and contains isolated wet areas.

Investment Analysis
The major reason for installing subsurface drainage is to improve the productivity of the farmland. Higher yields translate into more returns. This is especially true in recent years due to higher grain prices. So the investment decision is based on whether the higher crop returns will justify the investment in subsurface drainage. A secondary benefit is that fields will dry out quicker, allowing planting and harvesting to be completed earlier in the spring and fall. It also provides a larger window of time for a farmer to plant and harvest the crop allowing it to be done in a more efficient manner in terms of time and money. This is especially advantageous for farmers who have large acreages to cover.

Specific advantages of tile drainage are:

1. More consistent yields

Allows for more efficient use of resources
Reduces financial risk
2. Earlier and more timely planting

3. Improved harvesting conditions
4. Less wear and tear on equipment
5. Less power required for field operations
6. Better plant stand
7. Less plant stress
8. Fewer plant diseases
9. Less soil compaction

Another major advantage of tile drainage is the increase in sale value of the land. If the land will be sold in the future, the advantages listed above will be capitalized into the value of the land.

Subsurface drainage is a long-term investment. The investment is made up-front but the benefits are spread over many future years. So the investment decision should be made with the time-lag in mind.

The most difficult part of computing a tile investment analysis is estimating the yield response from the improved drainage. The size of the expected yield improvement dramatically impacts the economic feasibility of installing tile drainage, as shown in the example below.

Example:
A 10 bushel per acre yield response from corn and a 4 bushel per acre yield response from soybeans will provide an average annual return of $35 for corn at a price of $3.50 price ($3.50 x 10 bu. = $35) and $36 for soybeans at a price of $9 ($9 x 4 bu. = $36). If the yield responses are 20 bushels for corn and 8 bushels for soybeans, the returns are double.

There are additional annual costs associated with these higher yield levels. For example, more fertilizer may be required to support these higher yields. Also, more hauling, drying and storage is required. In addition, there may be costs associated with the maintenance of the drainage system. So these additional costs need to be deducted from the returns listed above to compute a “net” return per year from installing drainage.

Estimating future returns
In the analysis above we assumed that the annual income stream will stay constant throughout the entire life of the tile. However, this may not
be the case. Corn and soybean yields have increased over recent decades as shown in Figure 3. Corn yields have increased by 2.4 percent and soybean yields by 1.8 percent per year since 1980. Most experts expect this trend to continue, if not increase. The impact of trend yield increases over the life of the tile drainage can be substantial. The yield response to tile drainage can be estimated by comparing the area to be drained to portions of the field with similar soil types that are already adequately drained or don’t need drainage.

Investment analysis methods
Below are two ways of computing the economic returns from investing in subsurface drainage.

1) Payback Period – This is a relatively simple analysis. It is computed as the number of years required to repay the original investment in tile drainage.

Example:
If the cost of installing tile drainage is $500 per acre and the expected annual net cash return in crop returns from tile drainage is $100 per acre, the payback period is 5 years ($500 / $100 = 5 years).

The payback period does not take into account the “time value of money” from the time the tile is purchased until the returns are received (interest on the money). If money is borrowed to install the tile, the debt payment (interest and principle) is subtracted from the annual cash return and only the equity portion of the investment is used to compute the payback period.

2) Internal Rate of Return (IRR) – The IRR is based on future cash flows rather than future profits (ROI).

Example:
The $100 additional cash return over the lifetime of the tile is compared to the $500 tile investment and results in an IRR of 20 percent.

If money is borrowed to install the tile, the debt payment (interest and principle) is subtracted from the annual cash return and only the equity portion of the investment is used in the computation. The IRR takes into account the time period between the time of the investment and the future years in which the annual returns are received. The IRR is based on the concept of “time value of money” which states that money received now is of more value than money received at some point in the future.

Income tax implications
The methods outlined above do not take income taxes into account, so it is a “before tax” analysis. However, income taxes have a significant impact on the returns that can be expected from an investment in tile drainage. Combining your marginal tax rates for federal and state income taxes, along with self-employment tax (when appropriate), provides an estimate of the how much of your returns will be paid to the government.

In general, the additional revenue (e.g. grain sales from additional production) generated from tile drainage is taxable income and the added costs (added fertilizer, tile maintenance, etc.) are tax deductible. So the added “net” return is taxable income. In addition, the annual deprecia-
tion of the tile investment is tax deductible. The government allows land owners to depreciate tile over a period of 16 years on a fixed schedule. In situations where the investor is actively involved in the farming operation (e.g. farmers owner/operator), much of the investment may be deducted in the year of installation through an IRS provision called Section 179. After taxes have been taken into account in determining annual net returns, the resulting returns are considered to be “after tax.”

Typical Tile Investment Strategies
A variety of investment strategies have emerged for the installation of tile drainage. Some of these are based on installations over a period of time. Others are investment arrangements between tenants and landlords on rented land.

Investment timing strategies
1) Install subsurface drainage on the entire field With this strategy, the decision is made to install drainage tile on the entire field or farm. Bids and designs are obtained from various tilers, and the decision is made to move forward with tiling the entire field or farm.

2) Design the entire drainage system but install over a period of years – This is similar to the strategy above in that the drainage system for the entire field or farm is designed up-front. However, the actual investment and installation of tile drainage is spread over a period of years, often as income becomes available.

3) Invest a fixed amount of money in drainage With this strategy, the investment decision is based on spending a fixed amount of money on drainage. The system is then designed to get the most drainage benefit from the limited amount of money. Although this may optimize the benefit from the investment, it often leads to a “patchwork” system as subsequent investments are made over a period of years and does not provide for the best overall drainage system.

Landlord/tenant strategies
1) Landlord Investment Strategy – The traditional landlord/tenant investment strategy is for the landlord to make the tiling investment and charge the tenant a higher cash rental rate. The higher cash rental rate is due to higher yields achieved from the drainage and provides the landlord with a return on his/her tiling investment.

The additional cash rent can be computed from the estimated increase in net return from tile installation. For example, if the cash rental rate is currently based on the typical rate in the local community, the new rate will be the typical rate plus the additional net return from the estimated increase in net returns from drainage. The additional cash rent can be computed based on a fixed rate of return from the tile investment. For example, if the tiling investment is $500 per acre and a rate of return of 8 percent is desired, the additional cash rent is $40 per acre ($500 x 8% = $40). If the cash rental rate is currently based on the typical rate in the local community, the new rate will reflect this typical rate plus $40.

2) Tenant Investment Strategy – The tenant makes the tile investment on the landlord’s farm. Because the landlord makes none of the investment, the cash rental rate does not increase due to the increase in productivity. The additional net returns go to the tenant as compensation for the tiling investment.
A major concern for the tenant is whether he/she will have access to the land for a long enough period of time to justify the capital investment. One approach is to enter into a long-term lease between the two parties. However, individuals often do not want to lock themselves into a lease for this length of time. In Iowa, farm leases of five or more years in length must be recorded and multiple-year leases may not exceed 20 years.

Another option is to continue with one year leases but execute an ancillary contract dealing specifically with the tiling. Under this contract the tenant receives a pro-rata buyout of the tiling investment from the landowner if he/she ceases to rent the farm during the lifetime of the tile.

For example, assume the tiling investment is $400 per acre and the life of the investment is 20 years. If the tenant ceases to rent the land after five years, he/she receives a payment of $300 per acre. Leaving after 15 years results in a payment of $100 per acre and after 20 years there is no payment.

The length of the buyout period is negotiable between tenant and landlord. The buyout payment can be made by the landlord. An alternative is for the new tenant to make the buyout payment to the tenant that is leaving and take over the remaining life of the contract.

3) Shared Investment Strategy – The landlord and tenant share the tiling investment and use a crop-share lease. The investment is shared in the same proportion as the crop is shared in the leasing arrangement (e.g. 50/50). With this arrangement, each party receives the additional net returns in the same proportion as the investment. An arrangement is made where the tenant will receive a prorated buyout if he/she leaves the farm before the useful life of the tile is expended. An alternative is for the landlord to make the investment and modify the crop share lease provisions to reflect the change in contribution.

Getting Started
If the tiling will be performed by an outside contractor, get bids from a variety of tile contractors. Have them prepare the tile layout for your farm and then provide a bid for doing the job. You need to compare both the bid and the layout when choosing among contractors.

Prepare a plan
The person doing the drainage design should prepare a plan and construction notes for the contractor. The plan should be corrected for any modifications during construction. The plans should include a map showing the locations, sizes and grades of all lines and appurtenances. Contractors with GPS equipment can provide detailed tile maps. Profiles or construction notes
of all mains and sub-mains should be included. One or more copies of the final plan and notes, along with construction modifications, should be given to the landowner. The owner should keep two copies. File one copy with your legal papers of the land and keep a working copy with your farm records. If plans, notes and maps are lost or misplaced, it will cause considerable confusion and difficulty in the future when the drainage system needs to be repaired or re-built.

Contact USDA
You need to get approval from the United State Department of Agriculture (USDA) for any farmland that will be installed with tile drainage. Start the process by contacting your county Farm Service Agency (FSA) office and provide them with a description of the exact acreage on which you are planning to install tile drainage. This information will be provided to the Natural Resource Conservation Service (NRCS) to make a determination if any “wetlands” are included in the drainage area. Land areas considered to be “wetlands” by USDA cannot be tile drained. After its investigation, NRCS will provide you with a Certified Wetland Determination.

Tile Drainage Inspection and Maintenance

1) Inspection – Subsurface drainage systems do not require extensive maintenance, but the maintenance that is required is extremely important. If subsurface drains are working, water will stand in the field for only a short time after a heavy rain. If water stands for a few days, the drain may be partly or completely blocked.

2) Cleaning outlet ditches – Many subsurface drainage systems fail because outlet ditches are blocked. If the outlet ditch is filled with sediment, a survey should be conducted to determine the extent of the cleanout work.

3) Cleaning surface inlets – Poorly constructed surface inlets are subject to severe damage and require frequent repair. Inlet covers often become sealed with trash and should be checked frequently. Clean the covers after a heavy rain and replace them carefully.

4) Repair blowouts – Holes that have developed over subsurface drains should be repaired at once. Otherwise, large amounts of soil may wash into the line and block the entire system.

5) Remove sediment – Sediment traps can be used for subsurface drains laid in fine sand or silty soils. If cleaned regularly, traps keep soil from filling the lines.

6) Protect drain outlets – Gullies commonly form at unprotected outlets of subsurface drains. Gullies may damage the field, silt up the drainage ditch and reduce the flow of water from the subsurface drain.

7) Control rodents – A flap gate or fixed pin guard can be used to prevent rodents and other small animals from entering and blocking outlets.
8) Control tree roots – Trees such as willow, elm, soft maple, cottonwood and other water-loving trees within approximately 100 feet of the drain should be removed. A clearance of 50 feet should be maintained from other species of trees.

9) Ochre accumulations in the drain – Ochre, which is an iron oxide, may block the drain when iron in solution moves from the soil to the drain and accumulates.