Planter Maintenance Tips for 2019
Mark Hanna, ISU Extension Ag Engineer

Importance of planters in reduced-tillage and no-till
Many producers have found through trial and error that a great deal of emphasis must be placed on the soil-engaging components of the planter since the planter replaces some tillage equipment operations used in the past. Rather than planting in a prepared seedbed, the planter can be used to create a furrow with the right depth, place the seed uniformly in the furrow, and establish adequate seed-to-soil contact. Some “first-time” no-till planter operators are disappointed to see seed placement at 1/2- or 3/4-inch depths, rather than the 1 1/2 to 2-inch depths, according to the settings on the planter. The problem is that if there is not enough weight on the seed openers, or the seed openers have not been maintained to keep a narrow profile with sharp edges, the row unit may be “resting up” on the openers without the depth wheels touching the soil surface.

Check the planter’s double-disc seed openers
The seed opener is responsible for opening a consistent furrow and achieving consistent seed placement. Worn beveled edges on seed opener discs tend to let soil and residue into the furrow and be more difficult to insert at desired planting depth. Make sure the discs meet sufficiently at the soil entry point and have a good bevel remaining to slice through soil and crop residue. If planting into cornstalks or heavy residue, row cleaners can be used to push residue aside ahead of the seed opener. Operate row cleaners so they move mainly residue with little soil movement, turning about three-fourths of the time rather than fully engaged into the soil.

Planter maintenance tips:
- Check your manual and talk to your equipment dealer about the best strategies for planting in no-till or heavy residue.
- Talk to experienced producers in your area about preparing your planter for soil type.
- Be flexible and adjust planters as necessary to deal with changes in soil moisture and residue levels.
- Be aware of soil moisture conditions; water for residue “hair-pinning” under the seed opener or soil sticking to the soil-engaging components of the planter.
Planter Maintenance continued...

**Down pressure**

Pneumatic diaphragms or down-pressure springs transfer weight from the toolbar planter frame to seed openers to penetrate the soil. Transfer just enough down pressure from the frame on parallel links to make sure depth gauge wheels are firmly resting on the soil surface. Too little pressure results in shallow seed placement, whereas too much pressure needlessly compacts soil near the seed furrow. Be especially aware of "smearing" of the seed-furrow sidewall, which indicates that the soil is too wet to plant. Too much down pressure or planting in wet soils will result in compacting the seedbed, making emergence and root development difficult. If using an automated down force system, monitor your system and use just enough down force to keep row-unit depth wheels in contact with the soil surface, but no more than is necessary.

**Planter calibration checklist:**

1. Check for appropriate seed depth and soil penetration. As soil conditions change with different locations, soil types, or the weather, it is important that operators check seed placement behind the planter for depth, spacing, and seed-to-soil contact.

2. Knowing the optimum population is critical in achieving potential yield and your money's worth out of any seed variety. A planter's population monitor in the cab is one way to monitor population, but get on the ground and do spot checks for uniform population and seed depth.

3. Inspect the seed opener and adjust as necessary. Although you may have correctly set the depth adjustment, depth wheels may not be firmly in contact with the soil surface and the planter unit may be riding up on the seed opener. Additional down-pressure or weight may be necessary in firm soil conditions for the seed opener to penetrate to desired planting depth.

4. Look at cover disc and pack wheel tension. Seed-to-soil contact is usually controlled by coverage and compaction of press wheels and covering discs. Planters have an adjustable down-pressure spring to vary the amount of surface pressure and coverage for supplying adequate soil contact. Spring pressure may need to be increased in drier surface soil for adequate soil contact and to help bring moisture up to the seed. Pressure should be decreased after surface soil moisture has been recharged by rainfall to avoid compacting soil around the seed.


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**Sampling Your Drinking Water - ISU Publication PM1335**

Safe drinking water is important to your health. But how can you tell if your well and water system provide safe water? The answers are to periodically inspect the water system for defects and have a water sample tested for harmful contaminants by a laboratory, Operators of public water systems watch constantly for defects that could allow contaminants to enter. Any water samples are analyzed frequently to ensure that federal drinking water standards for public water systems are met. Many Iowans, however, get their drinking water from private water systems. If your drinking water comes from a private water supply, it’s up to you to make sure the system is properly inspected and tested for safety.

If manmade chemicals or other special contaminants are suspected, consult your county sanitarian, the University Hygienic Laboratory, the Iowa Department of Public Health, or the Iowa Department of Natural Resources about particular water tests that may be helpful.

Some contaminants may be present during only part of the year. If you collect a water sample at a time when they are not likely to be present, you probably won’t find them. To assess the year-round safety of your drinking water, you must collect the sample when contaminants are most likely to be present. Coliform bacteria and nitrate are most likely to be found during wet weather, when runoff and excess soil moisture carry contaminants into shallow groundwater sources or through defects in your well. Late spring and early summer are good times to test for bacteria and nitrate.

For the complete article go to: [https://store.extension.iastate.edu/.../Sampling-Your-Drinking-Water](https://store.extension.iastate.edu/.../Sampling-Your-Drinking-Water)
Winter Burn on Evergreens
Laura Jull, UW-Madison Horticulture

What is winter burn? Winter burn is a common problem of evergreens including those with broad leaves (e.g., boxwood, holly, rhododendron), needles (e.g., fir, hemlock, pine, spruce, yew) and scale-like leaves (e.g., arborvitae, false cypress, juniper) grown in open, unprotected locations and exposed to severe winter conditions. Evergreen plants that are marginally hardy in a location (i.e., not well-adapted to local winter conditions) are at increased risk for winter burn. Winter burn can be so severe that affected plants may die and/or require replacement.

What does winter burn look like? Winter burn symptoms often become apparent as the snow melts and spring temperatures rise. Foliage starts to brown at the tips of branches with browning progressing inward toward the center of the plant. On broad-leaved evergreens, leaf edges typically brown first, followed by browning of entire leaves. Foliage facing south, southwest or west is most often affected. Symptomatic foliage often begins to drop off starting in spring and continuing through mid-summer as new foliage is produced. In extreme cases, entire plants can brown and die.

What causes winter burn? There are many factors that can contribute to winter burn. In general, plants with shallow or poorly-developed root systems that do not efficiently take up water (e.g., recent transplants) are more prone to winter burn. Warm fall temperatures that delay the onset of plant dormancy can also contribute to winter burn. Under such conditions, plants are not prepared for the subsequent rapid onset of freezing winter temperatures, and as a result damage to foliage occurs. Similar cold injury can occur mid-winter when temperatures drop sharply at sunset causing foliage that has warmed during the day to rapidly cool and freeze. In addition, on sunny winter days, foliage (particularly foliage facing the sun) can begin to transpire (i.e., naturally lose water through the foliage). Because the ground is frozen, plant roots cannot take up water and replace the water that has been lost from the foliage. As a result, foliage dries and browns. Foliage under snow or facing away from the sun and direct winds is usually not damaged. Strong winter winds can lead to additional water loss making winter burn more severe. Colder than normal winter temperatures and longer than normal winters can also be factors in the development of winter burn, especially if below normal temperatures occur into April (the time of year when plants normally come out of dormancy and are most susceptible to winter injury). Finally, exposure of plants to salt used to deice roads, driveways and sidewalks during the winter can make plants more prone to winter burn injury.

How do I save a plant with winter burn? For evergreens such as arborvitae, boxwoods, junipers and yews, prune out dead, brown, damaged or dying tissue in mid-spring after new foliage is produced. If new foliage has not yet emerged by spring, scratch the bark on affected branches and look for green tissue underneath. Also gently peel back the bud scales to look for inner green bud tissue. If the stem or bud tissue is green, buds on the branch may still break to form new foliage. If the tissue is brown, the branch is most likely dead and you should prune the branch back to a live, lateral bud or branch. Such buds and branches may be far back inside the canopy and pruning may remove a substantial amount of the plant. Pines, spruces and firs typically produce new growth at branch tips in spring that will replace winter burn-damaged needles, and thus pruning may not be required on these evergreens. After a couple of growing seasons, new foliage will fill in the areas that were damaged. If an entire evergreen is brown, recovery is unlikely and the plant should be replaced with something (e.g., a deciduous shrub or tree) that is better-suited to the site.

How do I avoid problems with winter burn in the future? Use a variety of strategies to prevent winter burn before winter arrives. Plant the right plant in the right place. Buy plants that are rated as cold hardy for your location and are well-adapted to local growing and soil conditions. Plants exposed to drying winter sun and winds are more likely to be injured. Therefore, avoid planting winter injury sensitive evergreens, particularly those that require shade or that are marginally cold-hardy, in exposed, sunny, windy areas. Plant them on the northeast or east side of a building or in a protected courtyard. Plant boxwoods, hemlocks, rhododendrons, and yews in partial shade to provide them added protection from winter sun and wind.

For the complete article go to https://hort.extension.wisc.edu/articles/winter-burn/
Because of limited fall 2018 anhydrous ammonia fertilizer application, fertilizer infrastructure including transportation, distribution, and application may be stressed this spring. A review of application equipment considerations can help ensure that your nitrogen fertilizer is properly and safely applied. This article focuses on anhydrous ammonia equipment.

Anhydrous ammonia contained in a field application tank is a high-pressure liquid that converts to a liquid-gas mixture as pressure drops while traveling to the knife outlet. Safety when using anhydrous ammonia is a primary consideration. Direct skin exposure can cause caustic burns because ammonia rapidly dissolves in water. Long sleeves and pants, lined rubber gloves, and unvented goggles are standard personal protective gear. Exposure of eyes to anhydrous ammonia can result in blindness, and inhalation can be fatal. A properly fitted respirator with ammonia-approved cartridges is recommended for operators who frequently work with valves and other connections. Because ammonia is under pressure inside hoses, fittings, and knives it is important to regularly inspect equipment and keep it in good repair. A 5-gallon water supply should be readily available and a 6-ounce plastic squeeze bottle should be carried on the operator for immediate treatment of an accidental exposure.

Know wind direction and stay upwind when operating valves. When working with hoses, minimize handling hoses filled with ammonia. When connecting hoses, follow this order: first connect all hoses, then tighten bleeder valves, and lastly open valves beginning with the furthest downstream and work upstream. The last valve opened should be the one releasing ammonia into the hose. When disconnecting a hose, first close the valve supplying ammonia to the line and then successive valves downstream to the disconnect. This approach should help avoid trapping a large amount of ammonia in the line. Next open bleeder valves in the same order valves were closed before finally disconnecting the line. Small amounts of chilled, liquid ammonia frequently remain in ammonia plumbing even after bleeding the system until all ammonia is warmed enough to volatilize. Respect ammonia plumbing and use appropriate personal protective equipment.

Ammonia should be injected into soil deeply enough to avoid surface vapor losses, and below or away from the crop seed zone to reduce the potential of seedling injury. Telltale ammonia odor or the white vapor trail of water condensing in air that is cooled by escaping ammonia gas indicates deeper placement or more aggressive sealing with covering discs or "beaver-tail" tabs is required. Hoses from the distribution manifold to injection knives should be of equal length to ensure even distribution. Hoses that need to be coiled, such as those stretching a short distance from the manifold to a nearby knife, should be coiled in a horizontal plane.

Research at Iowa State University indicates improved distributor/manifold styles beyond an older open-chamber style manifold improve distribution uniformity. If using a conventional open-chamber manifold, hoses from adjacent applicator shanks should be connected to different regions around the outlet ring to improve distribution rate across the swath. A heat-exchanger flow controller is typically used instead of a regulator to improve rate control of total flow through the applicator. If using a variable-orifice regulator, plan to adjust the regulator setting as tank pressure varies with temperature throughout the day.

Two field application tanks are often used on a single running gear in high-capacity systems. Unless plumbing is constructed with attention to limiting excess-flow valve capacity and effects of a plumbing cross-over, hazardous release of ammonia can continue from the tanks for a lengthy period of time if a line breaks. Excess-flow valves should be properly sized (45 gal/min flow rate maximum or less for most cases) to help avoid creating a dangerous release situation.
Spring Lawn Care
Adam Thoms, Department of Horticulture, Iowa State

Spring is finally here and a little work now will help maximize your yard for appearance and performance throughout the summer. April is a great time to fertilize your yard to help it green up, and prevent summer annual weeds with an application of a preemergent herbicide.

A slow release fertilizer is the best option for many homeowners. A fertilizer label will include what type of fertilizer is in the bag, slow release fertilizers include sulfur-coated urea, methylene urea, IBDU, and natural organic fertilizers. Try to apply 0.75 lbs. of nitrogen per 1,000 square feet in April. Fertilizer analysis is listed on the bag as three numbers, such as 19-2-20. This analysis means that 19% of that bag is nitrogen, 2% is P2O5, and 20% of that bag is K2O. To figure out how much fertilizer you will need, you need to divide the rate of nitrogen per 1,000 square feet you want to apply by the amount of nitrogen analysis on the fertilizer bag. In the example above, we would divide 0.75/0.19 to get how much actual fertilizer is needed. In this case you would need 3.9 lbs. of 19-2-20 fertilizer to apply 0.75 lbs. of nitrogen per 1,000 sq. ft.

One of the most problematic weeds in yards is crabgrass. If you had crabgrass last year, it has already dropped seed for this year. The best way to control crabgrass is with an application of a preemergent herbicide, the key is to apply the preemergent herbicide before crabgrass germinates. Crabgrass will germinate once soil temperatures are above 55 degrees F for at least three days and nights. Typically this happens around mid-April, but that can vary with weather. In a yard, crabgrass will normally germinate near sidewalks first.

With warmer temperatures, also comes the need to mow the yard. Setting your mower at 2.5 to 3 inches height of cut is optimum for most turfgrasses in Iowa. You never want to remove more than 1/3 of the leaf material in one mowing. This means when the grass reaches 4 inches you should mow it back to 3 inches. Typically you will need to mow once a week in the spring to avoid violating removing more than 1/3 of the leaf tissue. Additionally, clippings that are one to one and a half inches long will fall back into the turf canopy and don’t need to be bagged. These clippings have nutrients in them, and help feed the yard. If mowing leaves piles of clippings in the yard, try to spread them out so they don’t smoother the turfgrass. Also make sure the mower blade is sharp when you start the growing season. Most lawn mowers only need a blade sharpened once or twice a year. A dull blade will tear the turfgrass, this creates the potential for diseases and a higher water use rate. Finally, make sure the mower has a clean air filter to make sure the mower can run at peak operating ability.

After application of any fertilizer make sure to sweep the fertilizer off of the hard surfaces to ensure minimal runoff. The same care should be taken after mowing the yard. Make sure to sweep clippings off of the hard surfaces. These clippings contain nutrients, and should be kept out of storm sewers. Grass clippings also can be a traction hazard for motorcycles and should be removed from roads to prevent this hazard. If you have broadleaf weeds like dandelions that you want to eliminate in the spring you will want to mow the yard twice first. This will help remove dead tissue, and ensure the plants are actively growing and will take up the herbicide. The best time to control broadleaf weeds is in the fall, spot spraying can be done in the spring for weeds that you missed in the fall. If you decide to use a weed and feed type product, make sure the foliage is wet so that the herbicide can stick to the plants and be taken up by the plant. Liquid products should be applied to dry foliage.

Adding additional water is also an important step to consider in the spring. Turfgrass needs about one inch of water a week to continue active growth. Often in the spring you don’t need to add any additional water. If you have an irrigation system, make sure you have rain controls that will keep the system off when it has rained. A good way to see if the yard need water is to walk on the yard and see if you leave footprints in the turfgrass. If the turfgrass stands right back up, it does not need any additional water, but if you leave footprints that is a sign that the turfgrass needs water. A little water stress on the turfgrass will actually force the roots deeper into the soil and help during drier times during the growing season. If you do need to add water, you will want to water deep and infrequently. Try to add all the water in one or two days and then wait for a week until adding more water. This will continue to support the turfgrass while forcing the roots deeper into the soil.

Try to avoid seeding a yard in the spring if at all possible. Spring turfgrass seeding tends to result in more weed competition, prolonged periods of open soil while waiting for soil temperatures to rise, and summer stress on young seedlings. If you have to seed in the spring make sure to avoid using any preemergence herbicides, which will prevent the turfgrass from germinating as well. A September turfgrass seeding will be much more successful than a spring seeding.