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Fertility & Soil

Wet Soils Increase the Potential for Soil Compaction.... 16

Crops

2010 Wisconsin Corn Hybrid Performance Trials..... 17

Weeds

It's Still Not Time to Skip Residual Herbicides 17

Plant disease

Fusarium Head Blight Alert System 17

Wet Soils Increase the Potential for Soil Compaction

Dick Wolkowski, Extension Soil Scientist

The late heavy snow and persistent rains this spring have saturated Wisconsin soils. Therefore, what producers do in their fields in the next few weeks with respect to traffic management will have a significant effect on the yield potential of their crops. Timely operations are necessary to apply fertilizer and other amendments; conduct appropriate tillage; and then plant to meet the goal of successfully growing a crop. As operations have grown larger, time management becomes an issue and the temptation to be in the field as soon as possible is great. This can increase the risk soil compaction, especially when the axle load of equipment exceeds 10 tons.

The ability to compact a soil increases as the soil water content increases. Highway engineers, for whom compaction is a good thing when constructing roadbeds, utilize the Proctor Test to determine the water content at which the maximum soil bulk density can be obtained. This water content is typically near 80% of saturation, which is roughly equivalent to the "field capacity water content" of the soil or that level found after excess water is drained by gravity. Soils are at or near field capacity this spring making them very susceptible to compaction.

It has been said that you get one chance to make a first impression, and relative to compaction most of the "impression" occurs in the first pass over the soil. Figure 1 shows the penetrometer resistance measured after multiple passes with a 14 ton combine on a silt loam soil at the Arlington Agricultural Research Station. The surface soil was near field capacity water content. These data show distinctly greater penetration resistance down to a depth of 10

inches. The effect with one pass at any depth was 50 – 70% of that measured with six passes. Such compaction destroys aggregates, reduces porosity, and increases the resistance to root growth in the soil; all factors that contribute reduced yield.

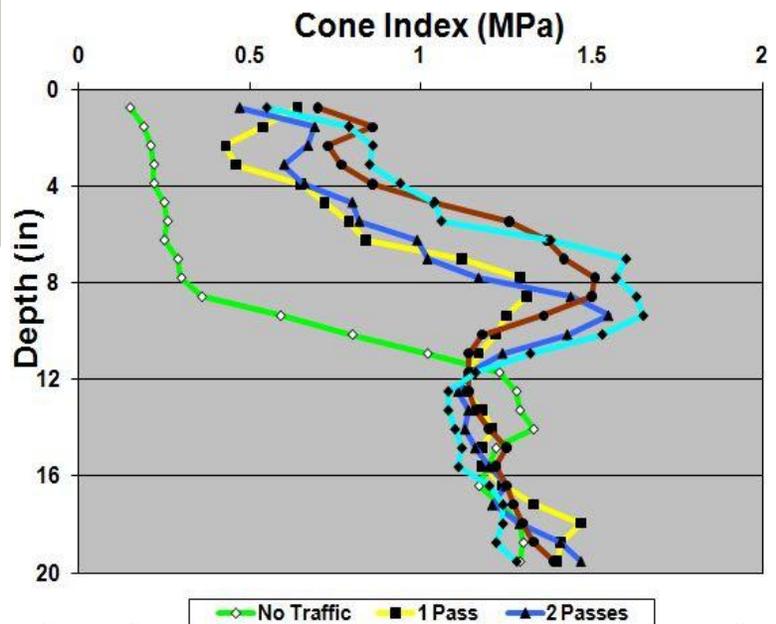


Figure 1. Effect of multiple passes with a 14 ton combine on the penetration resistance of a silt loam soil (Source: UWEX Pub. A3367).

Soil compaction is avoidable. Tips for managing its effects include:

- Delay operations when soils are wet. Often a sunny, breezy day can substantially dry a soil, increase its bearing strength, and reduce the compaction potential.
- Limit load weight. Use lighter equipment whenever possible.
- Tandem axles are better than duals. Adding extra tires may not compensate for increased load and will spread compaction over a greater soil volume.
- Control traffic. Attempt to drive in the same track and avoid taking shortcuts or unnecessary trips over a field.
- Subsoil only when compaction has been diagnosed. Leave untreated check strips to evaluate response.

2010 Wisconsin Corn Hybrid Performance Trials: Grain – Silage – Specialty – Organic

Joe Lauer, Extension Corn Agronomist, UW-Madison Agronomy Dept., Kent Kohn and Thierno Diallo, UW-Madison Agronomy Dept.

Every year, the University of Wisconsin Extension-Madison and College of Agricultural and Life Sciences conduct a corn evaluation program, in cooperation with the Wisconsin Crop Improvement Association. The purpose of this program is to provide unbiased performance comparisons of hybrid seed corn available in Wisconsin. These trials evaluate corn hybrids for both grain and silage production performance.

In 2010, grain and silage performance trials were planted at thirteen locations in four production zones. Both seed companies and university researchers submitted hybrids. Companies with hybrids included in the 2010 trials are listed in [Table 1](#). Specific hybrids and where they were tested are shown in [Table 2](#). In the back of the report, hybrids previously tested over the past three years are listed ([Table 24](#)). At most locations trials were divided into early and late maturity trials, based on the hybrid Relative Maturities **provided by the companies**. The specific relative maturities separating early and late trials are listed in the tables.

Please visit Wisconsin Corn Agronomy to access the complete [2010 Wisconsin Corn Hybrid Performance Trials](#) publication in PDF Format, Excel Format, and the [Current version at the UWEX Learning Store](#)

It's still not the time to skip residual herbicides

Vince M. Davis

In glyphosate-resistant corn and soybean cropping systems, it may seem easy to rely on postemergence glyphosate as your entire weed management program. Even though this strategy may work, and seem easy, it doesn't make it the time to miss the opportunity to control early-season weeds with residual herbicides for several good reasons. Residual herbicides,

1. Protect yield from early-season weed competition
2. Lengthens time before postemergence applications are necessary
3. Reduces the diversity of weed species exposed to postemergence glyphosate
4. Reduces the range of weed sizes at postemergence application timing
5. Extends the 'life' of glyphosate by reducing the potential for resistance development

There are many studies to draw research results from to support these five important benefits above. However, I thought I would focus and share results from research conducted across seven locations in Ohio, Indiana, and Illinois. These results were published very recently in the journal of Weed Technology (Loux et al. 2011; Weed Technol. 25:19-24). Mark Loux and collaborators examined four preemergence herbicide programs in a glyphosate-resistant corn system.

Programs studied were None, Low (atrazine only), Medium (atrazine+metolachlor), and High (atrazine+metolachlor+mesotrione) rates of preemergence herbicides. Postemergence glyphosate was applied at 30" corn or 1 or 2 weeks later. At the first postemergence timing, densities of giant ragweed was 70% lower, lambsquarters was 98% lower, and giant foxtail was 80% lower in the high preemergence program. Moreover, weeds perceived more difficult to control at these locations included redroot pigweed, ivyleaf morningglory, and giant ragweed. Control of these weeds following the postemergence glyphosate was always better (>90%) under the high preemergence program, however, they were only controlled 67 to 83% following glyphosate in the low residual program. Increased weed density, and increased weed size, at the time of glyphosate application were likely the cause of the reduced efficacy. Moreover, in the system that used a high preemergence program, final yield was 10% higher than where no preemergence herbicide was used, and 7% higher where a low rate of preemergence herbicide program was used. That may not seem like much, but that was an average increase (across 7 locations) of 21 bu/acre and 14 bu/acre, respectively.

With the high commodity prices of current times, ensuring maximum yield by controlling early season weeds provides the greatest chance to maximize profit. Several preemergence herbicide program options (corn and soybean) range from \$12 to \$35/acre. The added benefit to protecting yield and profit is diversifying your weed control program, and slowing the evolution of glyphosate resistance. You will hear more from me on that topic at another time.

Fusarium Head Blight Alert System – 2011

Paul Esker, Extension Field Crop Plant Pathologist

The U.S. Wheat & Barley Scab Initiative [FHB Alert System](#) will again be active in 2011. In addition to adding two more states, there will be options for users to customize the system to target their geographical area better. The goal of the alert system is to enable users to have improved notice (i.e., more timely) about the potential for scab outbreaks. The alert system is tied to the [Fusarium Head Blight Risk Assessment Tool](#) and integrates information from predictive models with commentary from state extension specialists.

The tool can be accessed on-line at: http://www.wheatcab.psu.edu/riskTool_2010.html. Alerts can be delivered to you in multiple ways. A form allows you to sign up for cell phone text messages (sms) and/or email alerts. The "National" commentary provides a general overview of the disease situation and is most useful when paired with one or more regional commentaries. You can choose to receive messages from as many regions as you like or select the "All" option to receive all available information.

