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Check Soybeans for Manganese (Mn) Deficiency

Dr. Richard W. Taylor, Extension Agronomist, University of Delaware

An interesting fact came up recently about the research retired Purdue University plant pathologist Don Huber has done linking glyphosate to reduced uptake of several nutrients in field crops and possibly leading to decreased disease resistance. I found the notation that significantly lower tissue levels of the micronutrients manganese (Mn), zinc (Zn), and iron (Fe) are being found in the field crops Huber studied. In Delaware, we frequently see Mn deficiency symptoms on soybeans especially on sandy soil or where the soil pH is maintained near neutral or above.

Manganese deficiency is characterized by dark green veins and light green (mild deficiency) to yellow (moderately severe deficiency) to white (severe deficiency) interveinal leaf tissue. The symptoms often are most severe on the most recently emerged leaves. Manganese deficiency symptoms are similar to the deficiency and toxicity symptoms of some of the other micronutrients.

Yield reductions can be avoided to a large degree by early diagnosis and treatment with foliar application of Mn. Multiple applications of foliar Mn may be needed especially when Mn deficiency is severe. If enough leaf area is present to absorb adequate Mn, a single application of a higher rate (1 to 2 lb Mn/acre) was shown to be effective by Virginia and North Carolina researchers. Ignoring or not catching the problem until later in the season will not only reduce yield potential but also make a foliar application more difficult and possibly more expensive since driving over the soybeans may cause damage on drilled beans. You may need to



Photo 1. Moderately severe interveinal chlorosis on no-till single-crop or full-season soybean. Note dark green veins with tissue between veins yellow. Younger leaves are most affected since Mn is not mobile in the plant (Photo by R. Taylor).



Photo 2. Moderately severe interveinal chlorosis on no-till single-crop or full-season soybean. Note dark green veins with tissue between veins yellow (Photo by R. Taylor).

treat early season symptoms several times since the leaf area available to absorb Mn is limited so always re-scout treated fields to be sure Mn deficiency does not reappear after treatment.

Where the symptoms are widespread and moderate to severe, foliar Mn applied at 1 to 2 lbs Mn per acre can boost yields significantly. Since the crop is still in the vegetative stage, mild to moderate symptoms can be alleviated with a 0.5 lb Mn per acre foliar spray. Researchers in Delaware, Virginia, and North Carolina have shown that soybeans are very responsive to foliar Mn especially when applied well before soybeans begin to bloom.

Even if you do not apply foliar Mn, you should be making note of which fields and where in the field symptoms occur so you can monitor these areas in the future. If wheat or barley are to be planted this fall, careful early monitoring will allow you to apply Mn to the small grains before they are severely injured by Mn deficiency. You should also note the areas so you can do soil testing to determine the underlying problem. Check to see if the native Mn concentration in the soil is too low or whether the soil pH is too high since the higher the pH the lower the availability of Mn in the soil. Also, any factor restricting root growth (compaction, drought, etc.) can aggravate Mn deficiency symptoms and should be corrected.

Dr. Joseph Heckman at Rutgers University has written a series of articles on Mn deficiency in Rutgers Plant and Pest Advisory publication. These publications are available on the web through the Rutgers New Jersey Agricultural Experiment Station. An article (Vol. 16, No. 7, page 3) in the following web link shows research Dr. Heckman conducted comparing manganese sulfate and chelated manganese: <http://njaes.rutgers.edu/pubs/plantandpestadvisory/2010/vc051210.pdf>

My Top 11 Pitfalls in Farming

Bill Whittle, Extension Agent, Farm Business Management – Virginia Cooperative Extension

Over my years in Extension as a farm business management agent I have witnessed many successful and some unsuccessful farming operations. Taking a page from late night talk shows I am going to give you my Top 11 management pitfalls. Except for the first, these are in no particular order but you should notice rather quickly that each pitfall is entwined with the others.

1. **Not knowing your Cost of Production:** COP, or what it costs you to produce one unit is the lynchpin for profit. Every management decision must be weighed against how it affects your COP. Too few farmers know their cost of production and if you do not know your COP, can you truly be in the business of farming?
2. **No plan for transferring the farm to the next generation:** Life happens, but without adequate planning and preparation it may not

happen the way you desire.

Transitioning the farm is a long-term, on-going and arduous process encompassing every segment of the farm and family. You need to start early, involve everyone, and modify as life events provide changes.

3. **Inadequate financial recordkeeping:** If you keep your financial records only for tax preparation, Uncle Sam appreciates your efforts but you have given up a management tool for determining COP and making profitable decisions. Without adequate records for making decisions your outcomes are based on guesses and wishes.
4. **Lack of a clearly defined business plan:** Farmers are great at planning day-to-day production activities but long-term plans get lost in the everyday work. Planting the crop, breeding the cow, and marketing the crop must happen, but determining



how each cog relates to profitability will keep your next generation in business.

5. **Lack of communication:** Farmers tend to be uncommunicative, but family businesses have many official and unofficial partners with a stake in the business. It is important to keep these partners (spouse, children, employees, lender, equipment dealer, farm supply dealer, etc.) aware of what you are doing at least to the level of their involvement.
6. **Avoiding or deferring taxes:** The desire to not pay taxes leads to tax

decisions that may have long-term negative implications rather than decisions that manage for long-term profitability. We often forget that the tax bill will come due sometime in the future.

7. **Lack of financial reserves:**

Typically, both businesses and families lack the financial reserves necessary for weathering tough times. An economic downturn changes the landscape and businesses frequently need to depend on these reserves in conjunction with tools provided by their lender.

8. **Not managing family living expenses:**

The family can be a black hole in sucking up money. The only way to manage that black hole is to know what it costs your family to live and then to manage your resources.

9. **Following your neighbor:**

Farming operations are different and the factors that drive your neighbor's decisions are not the same factors you face. Why should you follow him? I bet he did not get to be successful following his neighbor.

10. **Jumping on the latest/newest/hottest enterprise:**

The learning curve for new enterprises is steep and expensive. A lot of homework needs to be done before launching a new enterprise, and it is rare to see that homework done. Because an enterprise is successful somewhere does not mean you can make it work here. But the reverse is also true. The right idea, coupled with the right resources, markets, and management traits can raise an idea from the kitchen table to a profitable enterprise.

11. **Not training the next generation:**

Farmers are good at teaching the younger generation about production but less so about financial management. This has a lot to do with a lack of communication, murky long-term plans, and an unwillingness to share control. If the farm is going to survive for generations, that training must occur.

Farmers are good at what they do but as with any business they need to constantly strive to do better. The stress of a down economy does not spare any farm and will highlight all shortcomings in financial management. Most farms will survive tough times but only the most efficient will prosper.

NASS Pesticide use data for Soybeans and Wheat Released

Dr. Lee Van Wychen, Weed Science Society of America

In May, USDA's National Agricultural Statistics Service (NASS) published the Agricultural Chemical Use Survey data for soybeans and wheat. During the fall of 2012, NASS conducted the survey among soybean producers in 19 states and wheat producers in 15 states. The information released includes on-farm fertilizer use, pesticide use, and pest management practices. Please see:



http://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Chemical_Use/index.asp

Farmers applied herbicides to 98 percent of soybean planted acres, more widely than insecticides (18 percent) and fungicides (11 percent). The top monitoring practice for managing pests was scouting for weeds which were used on 94 percent of planted acres. Glyphosate was applied to nearly 90% of the soybean acreage last year. For wheat, herbicides were applied to 99% of the durum wheat, 97% of the spring wheat, and 61% of the winter wheat. The most widely used herbicide on durum wheat was bromoxynil on 46% of acres while

fluroxypyr was used on 45% of the spring wheat acreage and thifensulfuron was applied to 14% of the winter wheat acreage.

NASS plans to conduct pesticide use surveys on wheat and soybeans again in 2016 and 2017, respectively. Other planned reviews over the next few years include peanuts and rice (2013), cotton and oats (2014), maize and potatoes (2015) and fruit and sorghum (2016).

Crop Reports

Western

Corn and soybeans are looking very good. Peach harvest is in full swing. Apple harvest is on track to begin in August and is looking good. Sweet corn yields are excellent. We are a few weeks from starting corn silage harvest and yield and quality looks promising. Moisture is a wonderful thing.

Central

Excess moisture was an issue for field work early in the reporting period, but now most areas have excellent conditions. Corn is excellent, with pollination nearly completed and kernel fill progressing. Wheat harvest is done and planting of double crop beans is nearing completion. Full season soybeans are in bloom and setting pods. Pastures look excellent, with most having more than adequate forage for animal consumption. There have been some local reports of late blight.

Northeast

In general field crops are looking good. Corn is mostly pollinated and has done well through a stretch of very warm temperatures; some areas are showing moisture stress since the rains have been mostly scattered, intense thundershowers. Soybeans are in full stride with early fields canopied and beginning to bloom; double crop planting is finished. Early double crop beans are off to a good start. Most areas have had enough dry weather to harvest quality grass and alfalfa hay.

Southern

Attention has turned to the skies once again, with many areas now experiencing moisture stress. The corn crop looks good overall. Soybeans are flowering and setting pods. There have been a lot of catch up double crop beans planted in the last two weeks. There is some moisture left, and farmers are betting on beans getting off to a quick start and that there will be a late frost this year. Double crop sorghum planting has found mixed results with many uneven stands due to variable soil conditions. Grasshopper populations are building in soybeans, but I haven't heard of any fields nearing threshold levels. There is some frogeye leaf spot disease evident in some fields planted to susceptible varieties. Tobacco is nearing harvest. The wet spring and early summer has resulted in black shank causing serious losses for tobacco this year.

Upper Eastern Shore

Wheat bean planting finally is finished (in some fields for the 3rd time). This is the latest that I can remember this many acres of double crop soybeans being planted. At least there is good moisture for germination, but let's hope for no frost till end of October! We still have the potential to produce record corn yields in many areas. As with most summers on the Shore, there are some areas that are getting dry and could use a shower (but not a flood). There are many corn fields with late flushes of weeds, especially grass in low areas and morning glories on heavier

higher organic matter soil with past problems. Keep an eye on these areas as a harvest aide may be needed. Hay harvest continues to be challenging but yields have been great.

Lower Eastern Shore

Harvest is in full swing for potatoes, snap beans, watermelon, cantaloupe and cucumber. Good quality produce is being harvested although the yields from the wet field pockets are considered marginal. Growers are busy finishing up double crop soybean planting before the July 30 crop insurance deadline. Since many farming operations consider themselves behind schedule due to the wet season, there is going to be a considerable number of growers who will extend the soybean planting to first week of August. About 30% of the soybean acres were replanted once and 10% replanted twice. Gray leaf spot in corn is more wide spread than previous years. Spider mites started to show up in full season soybeans. In the next two weeks, scout your fields on regular intervals.

Timeline: This crop report is for the field observations from July 11 through July 26, 2013. Crop Report Regions: Western (Garrett, Allegany and Washington), Central (Carroll, Frederick, Howard, Montgomery), Northeast (Cecil, Harford, Baltimore), Southern (Anne Arundel, Prince George's, Calvert, Charles, St. Mary's), Upper Eastern Shore (Kent, Queen Anne's, Talbot, Caroline), Lower Eastern Shore (Dorchester, Wicomico, Worcester, Somerset).

Agriculture Weather Report

Adam Caskey, Meteorologist

Looking at the U.S. Drought Monitor, the only drought stricken areas in the U.S. are west of the Mississippi River and it looks

like our moist pattern will persist through the first week of August. Guidance points toward several dips in the upper level flow

over the Mid-Atlantic during this time, which would favor disturbances triggering more showers leading to another run of



above average precipitation. My confidence in this is average to below average due to some model inconsistencies.

After a recent heat wave, it looks as though our temperatures will be kept at bay – relative to this time of year, of course. The aforementioned upper-level pattern should lead to an increased chance of near and

below average temperatures through the first week of August. Even a few breaks in the humidity are possible due to frontal passages.

Announcements

Maryland Agriculture is \$8.25 Billion Industry

The impact of agriculture on Maryland's economy amounts to \$8.25 billion annually, according to a recent study published by the Department of Agricultural and Resource Economics in the College of Agriculture and Natural Resources at the University of Maryland.

The study, conducted by Professor Loretta Lynch and graduate student Jeffrey Ferris,

looks beyond the revenue generated from farm products (\$1.8 billion) and takes an in-depth look at how the agricultural and forestry industries weave their way into nearly every sector of Maryland's robust economy.

Using an input-output analysis, the study takes into account the numerous industries that provide supplies and services necessary to process, manufacture and package products grown and harvested from Maryland's farms and

forests. UMD researchers found that for every dollar generated directly by agriculture or forestry industries, 45 cents was added to other sectors in the state; and, for every five jobs generated in these industries, three additional jobs were created around the state. The total economic impact of Maryland agriculture amounted to \$8.25 billion annually and 45,600 jobs. Find more information at, <http://agresearch.umd.edu/CANRP> or https://arec.umd.edu/sites/default/files/docs/Ag_Impact_Download_Version.pdf

Upcoming Events

Cut Flower Tour August 6, 2013

University of Maryland Extension will host a Cut Flower Farm Tour on Tuesday August 6th from 8.00am to 4.00 pm.

The event will begin at the Long Season Statice Farm at Salisbury and will end at Seaberry Farm, near Federalsburg, MD.

During the tour, University of Maryland Extension Specialists will cover major disease, insect and weed identification and control for some of the major cut flower crops seen on the tour. For more information on the program: 301-596-9413.



Third Annual Mid-Atlantic Precision Ag Equipment Day

Mid-Atlantic Precision Ag Equipment Day will be held on Wednesday, Aug. 7, 8:30am – 4.30 pm at Caroline County 4-H Park 8230 Detour Road, Denton, MD 21629.

Farmers from around the region are invited to join us and learn how to make precision agriculture pay in their operation. Practical and informative advice will be given on sprayer and planter section control, variable rate seeding, economics and practical implementation of RTK and GPS, soil mapping, using technology for on-farm research and developing variable rate prescriptions, and much more. This free event is hosted by Maryland, Delaware, Virginia, West Virginia, and Pennsylvania Extension. This event is free and open to the public. Lunch will be provided free of



charge. DE and MD Nutrient Management Credits & CCA credits will be available. For more details and registration please visit, <http://www.enst.umd.edu/news/events>

Western Horticulture Crops Twilight Meeting, Wednesday August 21st

The 2013 Horticulture Crops Twilight Meeting will be held Wednesday, August 21st, from 5:00-8:00 PM, at Western Maryland Research & Education Center, 18330 Keedysville Road, Keedysville, MD 21756

Learn the latest on the Brown Marmorated Stink Bug (BMSB) and Spotted Wing Drosophila on vegetables and fruit, apple seedling evaluations, mobile and stationery high tunnels. Please RSVP to 410-386-2760/888-326-9645 or e-mail mabbott@umd.edu

Small Farm Bus Tour slated for late August

“Explore New Farm Income Opportunities,” on the bus tour Monday, August 26, and Tuesday, August 27. The tour will begin at the Central Maryland Research and Education Center (CMREC) in Upper Marlboro, Md., at 9:30 a.m. on Monday, August 26. Alternatively, interested individuals from the Salisbury/Princess Anne area will depart from the Richard A. Henson Center on the UMES campus at 7 a.m. The registration fee, which covers bus transportation, a farm dinner, educational materials and light refreshments, is \$25 per person. An additional \$25 per person is needed for those who are traveling from outside of the Upper Marlboro/Bowie area, and will need hotel accommodations for one night.

To register online, visit www.umes.edu/1890-mce. All registrations and payments must be received by Friday, August 22. For more information about select tour stops contact Berran Rogers at 410-651-6070 or 6693

WyeREC Horticulture Crops Twilight Meeting

This meeting will be on Wednesday, August 28, 2013, 5:00 pm – 7:30 pm at Wye Research and Education Center, 211 Farm Lane, Queenstown MD 21658.

This educational meeting is intended to provide producers and the general public the opportunity to get a firsthand look at several of the ongoing Horticultural Crops projects at the University of Maryland’s research facility in Queenstown.

Learn the latest on the Brown Marmorated Stink Bug (BMSB) and Spotted Wing Drosophila on fruit and vegetables and updates on disease control in vegetable crops.

Tour of ongoing projects will include Pumpkin IPM Spray Trials, Asian Pear Variety Trial, NC140 Size-Controlling Rootstock Evaluation, Aronia Trials, and Impact of Buckwheat on the mortality of exotic and native Pentatomids in Organic Sweet Corn planting.

Sandwiches and refreshments will be provided. Registration is not required, but will help us to plan for handouts, food and drinks. Reply to: Debby Dant, 410-827-8056 X115, ddant@umd.edu or Michael Newell, 410-827-7388, mnewell@umd.edu



Did You Know

An acre of corn removes 8 tons of harmful greenhouse gas, more than your car produces annually.

SIGN-UP TO RECEIVE “AGRONOMY NEWS”

If you would like to receive this newsletter via email please contact Rhonda Barnhart at rbarnhar@umd.edu. The subject line should be: Subscribe Agronomy News 2013.

If you would like a hard copy please contact your local county extension office to sign-up for the mailing list. The list of local county offices can be found at www.extension.umd.edu.

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