



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetables

Vegetable Transplant Height Control -
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Plant quality is an important factor in obtaining good yields from transplanted vegetable crops. Issues such as transplant age, size, stretch or height, health, and hardiness can be determining factors in the ultimate success of a crop.

One of the most important considerations is managing stretch or height of transplants. The goal is to have a transplant of a size that it can be handled by mechanical transplanters without damage. Transplants should be compact but not stunted. Plants that are leggy or stretched are not desired, due to the potential for damage during transplanting and by wind after transplanting.

Managing transplant height can be a challenge. Growth regulators that are used for bedding plants are not registered for vegetable transplants so other methods must be used. One method that is successful is the use of temperature differential or DIF. DIF is the difference between day and night temperatures in the greenhouse. In most heating programs, a greenhouse will be much warmer in the daytime than nighttime. The greater this difference, the more potential for stretch. Cloudy days and low light levels also encourage stretching. By reducing the day-night temperature difference,

or reversing it (nights warmer than days), you can greatly reduce stem elongation. The critical period during a day for height control is the first 2 to 3 hours following sunrise. By lowering the temperature during this 3 hour period plant height in many vegetables can be controlled (50-70% height reduction). Drop air temperature to 50° - 55°F for 2-3 hours starting just before dawn, and then go back to 60° - 70°F. Vegetables vary in their response to DIF. For example, tomatoes are very responsive, squash is much less responsive.

Mechanical movements over transplants can also reduce size. You accomplish this by brushing over the tops twice daily for about 40 strokes with a pipe or wand made of soft or smooth material (plastic pipe works well). Mechanized systems have been devised to do this. Crops responding to mechanical height control include tomatoes, eggplant, and cucumbers. Peppers are damaged too much with this method.

Managing water can be a tool to control stretch. After emergence when plants have sufficient size, allow plants to go through some stress cycles, allowing plants to approach wilting or start to wilt before watering again. This is an effective method for some vegetables. Be careful not to stress plants so much that they become damaged (avoid severe wilting).

Managing greenhouse fertilizer programs is another tool for controlling height. Most greenhouse media comes with a starter nutrient charge, good for about 3-4 weeks. After that,

you need to apply fertilizers, commonly done with a liquid feed program. Greenhouse fertilizers that are high in ammonium forms of nitrogen will cause more stretch than those with high amounts of nitrate nitrogen sources. Fertilizers that are high in phosphorus will also tend to lead to stretch. By fertilizing with high nitrate and low phosphorus sources, you can reduce stretch considerably. Using a 20-0-20 formulation for the mid-growth period would be an example. Consider using media custom blended with a starter charge that is low in phosphorus and that uses potassium nitrate as the nitrogen source. Watch the transplant crop carefully to avoid too much growth reduction or phosphorus deficiency symptoms and switch to higher phosphorus fertilizers prior to transplanting.

Exposing plants to outside conditions is used for the hardening off process prior to transplanting. You can also use this for height control during the production period. Roll out benches that can be moved outside of the greenhouse for a portion of the day when temperatures are warm and wind conditions are not too severe can help to maintain plant size and create more compact transplants. Growing on wagons that can be moved into and out of the greenhouse is another option. This also creates a system that can be used to harden off transplants prior to setting plants out in the field.

Watermelon Seedling Diseases in the Greenhouse - *Kate Everts, Vegetable Pathologist, University of Delaware and University of Maryland; keverts@umd.edu*

The fungal diseases **gummy stem blight**, **Alternaria leaf blight**, and **anthracnose** can be introduced into the greenhouse on watermelon seed or through inoculum from a previous crop. To minimize the occurrence of these diseases, the greenhouse should be disinfected before planting (benches, walls, walkways, etc.). The seed source should have tested negative for the pathogen with a minimum assay number of 1,000 seeds. Use clean transplant trays (disinfect trays if they will be reused) and new soil. Destroy any volunteer seedlings and keep the area in and

around the greenhouse weed free. Avoid overhead watering if at all possible, or water in the middle of the day so that the plants dry thoroughly before evening. Keep relative humidity as low as possible through proper watering and good air circulation in the greenhouse.

As the seedlings develop, inspect them carefully. Infected seedlings will have small brown lesions on the leaves and/or water-soaked lesions on the stem. Diseases that are transmitted on seed often are randomly located throughout the greenhouse. Initial infections will occur as 'foci' or clusters of diseased plants.



Gummy stem blight infected transplants occur as clusters in an area around the initial infected seedling (foci).

If the seedlings appear diseased, destroy all trays with symptomatic plants. Remove adjoining trays to a separate area for observation. Monitor these seedlings daily and destroy trays where symptoms develop. Do not ship any trays containing plants with disease symptoms. After symptomatic and adjoining trays are discarded, spray the remaining trays with a labeled fungicide and continue applications until plants are shipped.

Bacterial fruit blotch (BFB) of watermelon is caused by a bacterium that also is seedborne. Initial symptoms of BFB are water-soaked areas on the lower surface of the cotyledons. BFB lesions will become necrotic often with yellow halos. Lesions are frequently delimited by veins. Infected seedlings collapse and die. **Angular leaf**

spot, which also is a bacterial disease, occurred in Delmarva's greenhouses several years ago. Symptoms are small, dark brown, irregular lesions on cotyledons or leaves. ALB is favored by cool wet weather. Usually conditions after transplanting to the field do not favor ALB disease development.



Small inconspicuous lesion of bacterial fruit blotch.

Fusarium wilt also can be seedborne. Although I have not seen Fusarium wilt infected transplants in local commercial greenhouses, it has occurred in other states. Symptoms are wilted seedlings that may remain green or become chlorotic (yellow). No lesions are observed along the stem or petiole but the vascular system is discolored and tan, pink or brown. This disease is of special concern because new strains or races can be introduced into an area on seedlings grown from infested seed.

Weed Control in Peas - Mark VanGessel, *Extension Weed Specialist*; mjv@udel.edu

Weed control options remain limited for processing peas. Pursuit, at 1.5 to 2.0 fluid ounces per acre, needs to be used as a pre-plant incorporated or preemergence treatment and is used primarily for broadleaf weeds. Preemergence applications of Command at 8 to 16 fl oz or Dual at 0.5 to 1 pt/A are labeled for control of annual grasses and some broadleaf weeds. Basagran is the only recommended herbicide for postemergence control of broadleaf weeds. Apply Basagran at 1.5 to 2

pints per acre after peas have more than three pairs of leaves. Do not add oil concentrate. Select, Assure II, Targa, or Poast can be used for postemergence grass control.

Agronomic Crops

Soybean Rust Update - Bob Mulrooney, *Extension Plant Pathologist*; bobmul@udel.edu

Little has changed since last week. Kudzu continues to come out of dormancy down South but little to no new infection has been seen yet in some areas. Continue to check the ipmPIPE website at www.sbrusa.net.

Early Fungicide Applications of Headline to Wheat - Bob Mulrooney, *Extension Plant Pathologist*; bobmul@udel.edu

Reprinted with additions for Delaware from EARLY FUNGICIDE APPLICATIONS OF HEADLINE TO WHEAT By Don Hershman in the March 24, 2008 edition of the Kentucky Pest News from the University of Kentucky, College of Agriculture.

This year, BASF is recommending the use of a reduced rate of Headline (3 fl oz/A), applied early (tillering through early stem elongation), for disease control/yield enhancement in wheat. The idea is that the fungicide would be added to the herbicide or herbicide/insecticide mixture that most wheat producers are already putting out for weed and aphid control, respectively. BASF has issued a 2ee recommendation for this use; the target diseases are tan spot, speckled leaf blotch (*Septoria tritici*) and Stagonospora (*Septoria*) leaf and glume blotch.

I have received numerous queries about this recommendation. By way of background, early season fungicide sprays are being recommended in most states where wheat is produced. As a result, this has been a major topic of discussion amongst wheat pathologists this winter. The overall consensus is that this or any fungicide treatment is only profitable if a disease develops at high enough levels to reduce yields. Thus, if

there is little to no disease in a crop, there will be little to no economic benefit from a fungicide application. Similarly, treatments can be applied, but if the timing is off or the rate too low, disease control may be compromised and yield and/or quality losses may still occur.

Now, assuming that one or more diseases can be found in a crop, the next thing to do is to determine if what is being found justifies a fungicide spray now or at some later date. From data I have seen, the only time where an early fungicide application seems to pay off is where tan spot, leaf rust, stripe rust, or powdery mildew is found in a crop early. Tan spot is typically most serious where wheat following wheat is a common production practice. It is often evident in other cropping systems, but I have only seen that disease reduce yields a few times in 24 years in Kentucky. [*It is more common in Kent and New Castle counties but usually comes in late.*] This is probably because most of our wheat is planted behind corn (a non-host crop for tan spot) and our wheat residue deteriorates rather quickly. The few times I have seen tan spot reduce yields is when it came in late in the season. The argument can be made that making early fungicide applications will "nip it in the bud" and this may be true; Headline is excellent against tan spot. However, in my experience, the risk that tan spot will reduce yields in any given field in Kentucky is low. As a result, I would not base my fungicide use decisions on tan spot control unless you see compelling evidence that tan spot control is needed. [*In DE, later fungicide applications at early to late head emergence would probably be better if disease pressure is low or not present.*]

Speckled leaf blotch is not a very aggressive disease in Kentucky [*or DE*], but it can be found in almost every field, every year, at very low levels. Frequently during early spring the disease will develop on the Flag -2 or 1 leaf, but in most years and situations, the disease will shut down due to high temperatures before it reaches the flag leaf. When it does make it to the flag leaf, it does not tend to be very aggressive, again, probably due to the high temperatures that we often see in mid-May through mid-June. Speckled leaf blotch moves rather slowly in the canopy, and it is not hard to control if it appears

that the disease is increasing. There is limited resistance to speckled leaf blotch, but I don't believe there is much evidence to support an early application of Headline for control of this disease.

Year in and year out, Stagonospora (Septoria) leaf and glume blotch, is probably our most important disease. [*This is also true in DE.*] Yields are rarely devastated, but it is common to see 10-20% yield losses, as well as reduced grain quality. However, this disease is more prevalent in mid to late season due to its higher temperature requirements, compared to speckled leaf blotch. The main point is that Stagonospora leaf and glume blotch almost never starts building up steam until after the flag leaf has emerged, and usually later. I seriously doubt that applying any fungicide in the spring, through early stem elongation, will make much difference in the outcome for Stagonospora leaf and glume blotch [*ditto for DE*].

In susceptible varieties, powdery mildew, leaf rust and stripe rust can be devastating, and are very difficult to control if they are allowed to get a foothold in a crop. In some cases, an early application of a fungicide is exactly what is needed to ward off damage due to these diseases. However, in each of these disease situations, the 3 fl oz/A rate of Headline is too low to provide adequate control of these diseases. My guess is that this reality is the reason why BASF has not included these diseases in this particular 2ee recommendation.

With high wheat prices anticipated for early summer, it does not take much of a return to recover the cost of an invested input. I will not argue that applying Headline to a crop early, and at a reduced rate, may result in a slight yield increase that may make the treatment perfectly acceptable. I acknowledge that controlling low levels of several diseases early may, collectively, result in slight yield increases compared to non-treated wheat. All I am attempting to do in this article is to lay out some biological realities that, on the surface at least, are not highly supportive of this treatment. However, the 2ee recommendation being described here assumes that a later fungicide application will be made for late season disease protection. In fact, a

follow-up application is encouraged on the 2ec recommendation. When the two fungicide treatments are applied, there may be more benefit than would be seen from either treatment alone. To be honest, there has been very little research done with tillering to jointing applications of Headline at reduced rates. BASF summarizes the results of numerous side by side studies, but it is difficult to know what to make of the summaries. No disease information is included and the tests come from a range of states and both winter and spring wheat. There is limited data from Kentucky [*and DE*], so we cannot support or reject the treatment based on our experiences here. Thus, we certainly do not have all the answers. If I were farming, I would give the treatment a try on a portion of my crop and make sure I could document the yield impact of the treatment. I would also send in some representative plant samples to a qualified plant disease diagnostic laboratory and ask them to make an overall assessment of the diseases present and their levels.

Weed Control in Forages – Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

If you have not done so yet, be sure to examine your hay, pasture, and alfalfa fields for weed infestations. Earlier applications are much more effective than later, as weeds get larger and start to produce seeds. For grass hayfields or pastures, weed control options include dicamba (Banvel or Clarity), 2,4-D, Overdrive, Crossbow, or Cimarron. Cimarron and Crossbow provide residual control, while the other products do not.

For pure alfalfa fields, Buctril, 2,4-DB, Pursuit or Raptor are labeled. Pursuit and Raptor will provide both postemergence control as well as residual control. For mixed stand of legumes and grasses, Pursuit is an option.

Be sure to read the label and follow all precautions concerning grazing and haying restrictions as well as overseeding and re-seeding restrictions.

Weed Control for No-Till Soybeans – Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

Time to consider your options for no-till soybean burndown programs, and it is particularly important if you have glyphosate-resistant horseweed (or marestail). Weed control for no-till soybeans has become more complicated as glyphosate-resistant horseweed has spread and species-shifts have occurred because of over reliance on glyphosate for soybean weed control. A new fact sheet “Approaches to Pre-Plant Weed Control in No-till Soybeans” is available at www.rec.udel.edu/weedscience/Fact%20Sheets/web/NT_soybeans_08_WF19.pdf. This fact sheet discusses the need for a combination of non-selective herbicide plus a plant growth regulator (2,4-D or dicamba) plus a residual herbicide for consistent weed control. In addition, the disadvantages of waiting until late spring to spray no-till herbicides are discussed.

Recent Changes to Acetochlor Labels – Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

Acetochlor is a preemergence herbicide for corn that controls annual grasses and some broadleaf weeds. It is in the following products: Harness, Harness Extra, Degree, Degree Extra, Topnotch, Fultime, Keystone, Surpass, TopNotch, and SureStart. These products have had the rotational restrictions modified, allowing more crops to be planted the following spring (previously only soybeans and sorghum). The label now allows for rotation to: alfalfa, clover, barley, potatoes, oats, tobacco, others.

However, the groundwater restrictions have not changed. The restrictions pertain to groundwater quality. The restrictions are based on depth of groundwater within one month of planting and the combination of soil type and organic matter. Do not apply acetochlor if the groundwater depth is within 30 feet and you have sands with less than 3% organic matter, loamy sands with less than 2% organic matter, or sandy loam with less than 1% organic matter.

Pre-Packaged Mixtures for Corn - Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

There have been changes in formulation and ratios of products for many pre-packaged herbicides over the past few years. As a result, check the label for your product of choice since often the new formulations recommend lower use rates than what was previously labeled. Below is a chart on rates of the most common pre-packaged mixtures used in the area, general use rate, and the amount of products they are providing:

Herbicide	Rates	Atrazine	Chloroacetamide (grass herbicide)
Bicep II Magnum or Cinch ATZ	1.6 qts	1.24 qt	1.0 pt Dual II Magnum
Fultime	3.0 qts	1.2 qt	2.25 qt Topnotch
Guardman Max	1.5 qts	1.3 qt	13.5 oz Outlook
Keystone	2.6 qts	1.5 qt ¹	2.4 qt Topnotch ²
Harness Xtra 5.6L	1.7 qts	1.1 qt	0.76 qt Harness
Lumax	2.5 qts	0.625 qt	1.76 pt Dual II Magnum AND 5.4 oz Callisto ³
Lexar	3.0 qts	1.3 qt	1.3 pt Dual II Magnum AND 5.4 oz Callisto ³
SureStart	3 pt/A	none	0.88 pt Surpass 2 fl oz Stinger 0.45 oz wt Python

¹The atrazine formulation in Keystone is not available in other products.

²Not a true comparison since Topnotch is a capsule suspension formulation and the acetachlor in Keystone is a suspo-emulsion formulation.

³Callisto is not a chloroacetamide.

Soil-Applied Herbicides for Soybeans - Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

Over the past year, a number of herbicide combinations have been registered for soil-application with soybeans. These products are prepackaged or co-packs of existing herbicides. Most of these products control a wide-spectrum of broadleaf weed species, but they are not very effective for grass control. The rate of these products depends on the need. Higher rates will provide a longer period of weed control. All of these products have recommended rates for use with Roundup Ready soybean (given below); but higher rates should be used if applications are made more than 2 weeks prior to planting. Higher rates should also be used if non-Roundup Ready soybeans are planted.

Product name	Rate (oz/A)	Contains	Rate	Also contains	Rate
Synchrony XP	1.5 oz/A	Classic	1.3 oz/A	Harmony GT	0.14 oz/A
Canopy	3.0 oz/A	Classic	1.3 oz/A	Sencor	2.57 oz/A
Canopy EX	2.0 oz/A	Classic	1.8 oz/A	Express	0.18 oz/A
Valor XLT	3.0 oz/A	Classic	1.2 oz/A	Valor	1.8 oz/A
Gangster	3.0 oz/A	FirstRate	0.5 oz/A	Valor	2.5 oz/A
Authority First or Sonic	3.2 oz/A	FirstRate	0.3 oz/A	Authority	2.7 oz/A
Authority MTZ	14 oz/A	Authority	3.4 oz/A	Sencor	5 oz/A
Boundary	1.25 pt/A	Dual Mag	0.82 pt/A	Sencor	4.2 oz/A
Prefix	2 pt/A	Dual Mag	1.1 pt/A	Reflex	0.95 pt/A

Grain Marketing Highlights - Carl German,
Extension Crops Marketing Specialist;
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USDA Releases Planting Intentions and Quarterly Grain Stocks Reports

U.S. farmers intend to plant 86 million acres of corn for all purposes in 2008, down 8 percent from last year. If realized, ending stocks for the '08/'09 marketing year are projected to decline on the order of 600 to 700 million bushels from the '07/'08 marketing year, estimated at 700 to 800 million bushels. Quarterly corn stocks were reported at 6.860 billion bushels, up 13 percent from March 1, 2007 and below the low end of pre-report trade estimates.

U.S. soybean acreage was reported at 74.78 million acres, projected to increase 18 percent from last year. If realized, ending stocks of U.S. soybeans for the '08/'09 marketing year will rise by about 84 million bushels to total 224 million bushels by the end of the '08/'09 marketing year, as compared to 140 million bushels projected for the current marketing year. Quarterly soybean stocks, reported at 1.428 billion bushels, are down 20 percent from a year ago and above the high end of pre-report estimates.

U.S. wheat acreage, already known, was reported at 63.8 million acres, an increase of 6 percent or about 3.4 million acres more than last year. If realized, ending stocks for all wheat are projected to increase by about 12 million bushels year-to-year ('07/'08 to the '08/'09 marketing year). Quarterly wheat stocks, reported at 710 million bushels were less than last year's 857 million bushels but above pre-report expectations.

Summary

The markets are expected to remain volatile. Long-liquidation is said to be occurring in today's trading for soybean and wheat futures. The weather market may already be starting considering that it is currently too wet and too cold in many parts of the country to begin corn planting, including the Corn Belt. Of course, even fewer acres of corn, due to delayed plantings, would send shock waves through the system resulting in higher corn prices. Fewer corn acres would translate into more bean acres

and lower bean prices. Perhaps the only sure thing at this stage of the game is that commodity traders will be paying close attention to planting progress reports to gage how many corn acres actually go into the ground this spring.

For technical assistance on making grain marketing decisions contact Carl L. German, Extension Crops Marketing Specialist.

Announcements

Small and/or Beginning Farm Series Workshop: Using Small Scale Tillage Equipment and Mowers

Thursday, April 10, 2008 6:00 p.m.
DSU Smyrna Outreach and Research Center
884 Smyrna-Leipsic Rd., Smyrna, DE

See and have the chance to operate a variety of equipment that is just the right size for small acreage.

Light refreshments served.

Please call (302) 857-6462 to register.

This workshop is part of the 2008 Small/ Beginning Farm Workshop Series held by Delaware State University. For complete information on the workshops planned, see the brochure at <http://www.rec.udel.edu/update08/announcements/smallfarmbrochure2008.pdf>

Certified Pesticide Applicators Test

Wednesday, April 23, 2008 8:00 a.m. - noon
Delaware Department of Agriculture
2320 S. DuPont Highway, Dover, DE

For additional information got to <http://ag.udel.edu/extension/pesticide/index.php>

Or contact Susan King swhitney@udel.edu or Larry Towle at larry.towle@state.de.us.

New Newsletter for New Castle County Growers

Introducing 'Notes to the Farm', a quarterly newsletter from New Castle County Cooperative Extension focusing on agricultural subjects such as sustainable agriculture, current issues facing farmers, agronomic updates, livestock, marketing information and other important topics to the agriculture industry. The newsletter will also highlight a calendar of events in the region.

Check out the first issue online at:

<http://www.rec.udel.edu/update08/announcements/notestothefarmspring2008.pdf>

To obtain a copy of the newsletter, please contact New Castle County Cooperative Extension at (302) 831-2506 to be added to our mailing or e-mail lists.

If you have an event that you would like included in the calendar of events in the Summer 2008 issue, please send dates, details and contact information to Anna Stoops at stoops@udel.edu by June 30, 2008.

For Current Agricultural Information from the UD Kent Co. Extension Office Visit www.kentagextension.blogspot.com

Recent Topics:

- Indicators favor a strong corn market this year
- Cutting seed potatoes and healing the cutting wound
- Spring is here - observations from the field
- Wheat growth stages in the spring
- Aphids in small grains
- Some notes from the field
- Plant families and plants toxic to grazing animals
- Spring manure applications and compaction
- Poultry research into replacements for antibiotics
- Pests in alfalfa at this time

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of March 27 to April 2, 2008

Readings Taken from Midnight to Midnight

Rainfall:

0.06 inch: April 1

Air Temperature:

Highs Ranged from 78°F on March 28 to 46°F on March 30.

Lows Ranged from 58°F on April 1 to 30°F on March 30.

Soil Temperature:

52°F average.

(Soil temperature taken at a 2" depth, under sod)

Additional Delaware weather data is available at <http://www.rec.udel.edu/TopLevel/Weather.htm>

Weekly Crop Update is compiled and edited by Emmalea Ernest, Extension Associate - Vegetable Crops

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