Vegetable Crop Update - #1

May 26, 2004

Potato Crop Update – Alvin J. Bussan, Potato and Vegetable Production Systems Specialist, UW-Madison, Horticulture Department, 608-262-3519, cell 608-225-6842 or e-mail ajbussan@wisc.edu

I always find the quick transition of Mother Nature from one extreme to another to be amazing. Many growers irrigated the crop prior to emergence during the first part of May because the lack of precipitation led to dry soil conditions. A mere 2 or 3 weeks later and some are dealing with recent rainfalls that exceed 3 or 4” and trying to determine the appropriate course of action. Dealing with variable weather conditions is one of the many challenges of growing potatoes, but for most of the fields and trials I have been walking through, the crop is off to a good start.

All the potato trials I planted have emerged at the Hancock Agricultural Research Station. Some potato varieties in trials planted prior to May 20th emerged by May 13 to 15 and have already reached 5 or more inches in height. However, a number of trials have just emerged in the past week. There are some differences in emergence time amongst varieties. Russet Burbank emerged 5 to 7 days prior to Freedom, Defender, or Bannock Russet. I will provide more information on the differences in early growth amongst the new varieties and breeding lines over the next several weeks.

The stand of nearly all my trials appears to be in good shape with 95% of plants emerging. I was especially glad to see good stands with Defender and Bannock Russet. Defender has not emerged well in trials the last 2 years, and Bannock has been reputed to emerge slowly. Emergence was likely improved in these varieties by delaying the planting date of the processing trial.

I do have some stand issues and uneven emergence in Atlantic, Russet Burbank, and Russet Norkotah in unrelated trials that I am trying to diagnose with the aid of Walt, Chuck, and Larry. You may want to inspect your fields to make sure the crop has or is emerging uniformly and try to avoid any stand issues.

With the crop emerged, many growers have begun side dressing their potatoes and have already hilled potatoes. If you received excessive rain or downpours you may want to walk some fields to make sure hills have not washed and that a second hilling is not necessary. If you already plan to hill a second time you can likely wait to repair any damage to the hills until that time. However, if you only plan to hill once and potato hills have been eroded by heavy rains in your fields you may want to repair those when soil conditions are favorable.

At this point in the growing season ET rates have been minimal as the crop is still only at 10% canopy closure. However, crop sensitivity to drought stress will be at its greatest in 15 to 20 days shortly after tuber initiation and at the beginning of tuber bulking. The
WPVGA and the Potato Research Exchange sponsored an irrigation school the last part of March. Handouts from the different speakers are available for anyone interested in receiving a copy. A major focal point of that meeting was for growers to inspect their irrigation systems and have them serviced prior to peak demand period for water to make sure the pivots are operating effectively when the time comes to irrigate.

*Antigo.* We have not been able to plant at Antigo yet and it looks like it will be another 3 to 5 days before soil conditions will be favorable to do so. That assumes we will receive minimal precipitation in that time period and our good friend the sun will shine to help dry things out.

*Spooner.* Phil Holman planted potatoes for us at Spooner on May 5th. I am glad to initiate a small trial at Spooner this year and look forward to following the crop during the course of the season.

*Muck.* Gumz Muck Farms has allowed us to conduct a trial on one of their fields again this summer. We were able to plant the trial with the help of Chuck Kostichka last week. However, we found water standing in the furrows when we stopped by yesterday. Rains in excess of 5 to 6 inches fell in the Portage area last weekend. We will continue to monitor the crop over the course of this summer.

Potato Fertility Update – Keith Kelling, Department of Soil Science, University of Wisconsin-Madison

**Potato Nitrogen Management Considerations Following the 21-24 May Rains**

The rains from this past weekend (2.47 inches at Hancock) have caused many growers to ask if they need to supplement their usual nitrogen and perhaps potash management programs with some additional fertilizer. Some considerations that should be included in the evaluation process are: (1) stage of growth of the crop; (2) form and timing of previous nitrogen applications; (3) placement of previous nitrogen or potassium applications; and (4) quantity of rain received.

Most growers are aware that nitrogen in the nitrate form is most vulnerable to leaching, whereas ammonium or ammonia-forming sources are less so. Urea, on the other hand, can leach as a neutral molecule before it converts to ammonium. This conversion (hydrolysis) is typically 70 to 90% complete in about 5 days. Furthermore, the transformation from ammonium to nitrate (nitrification) is also quite rapid (10 to 20 days) when temperatures are warm and a nitrification inhibitor is not used. We also know that the soils in the Central Sands hold about an inch of water per foot of soil and that nitrogen placed in or on the hill is less prone to leach than is nitrogen in the furrows. Similarly, row-placed potash is less likely to leach than broadcast material. For early-season catastrophic leaching to occur, it usually takes more than 3 inches of rainfall.
It is my impression that most of the Central Wisconsin crop is at 7 to 14 days after emergence (dae) or less. This means that most of you have only applied the N with the starter and perhaps an emergence application. The critical stage of potato growth (40 to 70 dae), where 70 to 80% of the nitrogen and potassium is taken into the plant, is still 2 to 3 weeks down the road. If the emergence nitrogen was applied more than 7 to 10 days before the deluge, it has likely been converted to nitrate, and if these fields also received more than 3 inches of rain, much of this nitrogen probably leached.

For these reasons, I am suggesting that where these conditions existed, and where the grower has already applied at least 30% of their N and expects to raise a full-season crop, an additional 30 to 50 units of nitrogen should be applied at last hilling or with the water. The crop should then be monitored weekly until 65 dae by using petiole nitrate testing. The tri-state (Minnesota, Michigan, and Wisconsin) petiole calibrations are presented in the table that follows. If the results drop below the critical value, additional nitrogen should be added at that time.

Where less rainfall was received or where the fertilizer was applied in a less leachable form and closer to the rainfall event, we suggest delaying an additional application until called for by petiole testing results.

With respect to additional potash, the fields most at risk would be those where most of the potash was fall broadcast. Where a significant amount of the potassium was banded at planting, we would not expect severe losses. Petiole calibrations for potassium are also available.

Optimum ranges of nitrate-nitrogen concentrations (dry weight and sap basis) in potato petiole at various stages of growth.

<table>
<thead>
<tr>
<th>Stage of growth(days after emergence)</th>
<th>Dry weight basis</th>
<th>Sap basis</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Norkotah</td>
<td>Norland</td>
</tr>
<tr>
<td></td>
<td>% NO$_3$-N</td>
<td>ppm NO$_3$-N</td>
</tr>
<tr>
<td>30</td>
<td>2.5-2.8</td>
<td>2.0-2.3</td>
</tr>
<tr>
<td>40</td>
<td>2.3-2.5</td>
<td>1.7-2.2</td>
</tr>
<tr>
<td>50</td>
<td>1.8-2.3</td>
<td>1.2-1.6</td>
</tr>
<tr>
<td>60</td>
<td>1.3-1.9</td>
<td>0.8-1.1</td>
</tr>
<tr>
<td>70</td>
<td>0.8-1.1</td>
<td>0.5-0.8</td>
</tr>
</tbody>
</table>

Potato Disease Update - W. R. Stevenson, Department of Plant Pathology, UW-Madison, Tel. No. 608-262-6291, Email: wrs@plantpath.wisc.edu

Spring rains are supposed to bring flowers and not concerns about late blight. However, we are accumulating severity values much faster than I would like to see for this point in the growing seasons. As you recall, we base our blight warnings and spray initiation on
the accumulation of 18 severity values since crop emergence. Weather stations are now in place at Grand Marsh, Hancock, Plover and Antigo. We have enough data from the Hancock site to calculate Severity Values and will soon have at least 7 days of data for all sites. As of 5/25/04 at the Hancock site for potatoes planted on April 14 and emerging May 12 there are 17 severity values. For potatoes planted on April 21 and emerging May 17, there are 11 severity values. For potatoes planted on April 28 and emerging May 22, there are 7 severity values. This should be cause for concern. While there was no late blight identified in Wisconsin during 2003, there was late blight found in at least two states selling seed potatoes into our state. Thus with this potential source of inoculum and ideal weather conditions during the past two weeks, there is good reason to think about several steps you can take to prevent an early season outbreak of late blight.

1) Check your farm to make sure that all chips and debris from your seed cutting operation are fed to livestock or buried to insure that this material does not become a source of late blight inoculum. Even the smallest pile of chips, if contaminated with an infected chip, can produce an incredible amount of inoculum. Strategically placed, this inoculum can lead to an early season epidemic, something we don’t want to happen.

2) Check your farm and adjoining fields for remnants of cull potatoes or potatoes discarded due to poor markets. There has been and likely will be substantial amounts of potatoes without a home. Spreading them on farmland where they can’t be killed or sprayed with fungicide is inviting a real problem later in the year. All cull piles need to be properly disposed of before May 20 according to WDATCP Rules. Disposal of large amounts of tubers is going to be difficult, but growers are urged to use their best judgment so that we are not creating a much worse problem that will haunt us through the current growing and storage seasons.

3) Consider applying a precautionary spray with a low label rate of protectant fungicide. There are many alternative materials that can be used, but the point is to get some protection on the foliage of some of the older plantings. We will likely hit 18 severity values on these older fields in the next few days, so this seems like a wise precaution.

4) Initiate scouting of production fields as soon as the crop emerges. Missing plants, sprouts that begin to emerge and die back and girdled sprouts with a fuzzy growth near brown lesions should be checked for the presence of the late blight pathogen. Suspect samples can be submitted to our Disease Diagnostic Lab in the Plant Pathology Department, UW-Madison. Let’s hope that we don’t need that service in the near term.

You can keep tabs on severity value and P-Day accumulation at our four sites at the following web address: (http://www.plantpath.wisc.edu/wivegdis/index.htm). We’ll have the site started after 5/27/04.
Processing Beans

Over the past several years we have conducted numerous trials with a biological material (Contans, Intercept) for the suppression of white mold, *Sclerotinia sclerotiorum*. The bottom line from this extensive research is that the material generally works as well as a single spray with fungicide applied at bloom. The concept is a good one – infect and rot the *Sclerotinia* sclerotia before they can produce airborne spores that infect the bean blossoms. We continue to evaluate this promising material and growers are beginning to effectively use this novel approach for white mold control. In recent weeks, another biological has appeared on the market that I have never evaluated and have no experience with. Reports from at least one user indicate that this alternative biological material is difficult to spray and does not remain in suspension. Until we know more about this new biological, all I can say is “beware” of the claims and ask for data before you buy.