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TOMATO INFO

PLANTING UNDER WET WEATHER

With wet weather conditions, it is clear that planting is delayed for our area and will likely affect harvest schedules and perhaps production levels as well. As planting resumes, soil compaction concerns should not be overlooked. Maintaining a healthy root environment is key to achieving high production. While we remain uncertain of weather conditions to follow, the prolonged high temperatures of last summer should serve as a reminder that vigorous root systems are needed to support high tonnage. Regardless of irrigation method, irrigation practices are affected by soil structure. Even drip irrigation systems buried below the plant line, while least affected by soil compaction in the furrows, may still be affected by soil compaction created by seedbed prep and transplanting in wet conditions.

While it is difficult for growers to patiently wait for soils to dry, delaying the planting is preferable to mucking plants or seed into slick, wet, cold soils.

I subscribe to the approach of delaying planting and consequently harvesting a higher percentage of green fruit as opposed to creating compacted soil conditions by tilling and planting into wet soils in a rush to meet harvest deliveries, while yielding a potentially smaller crop with poor plant growth. The prescription is not simple when holding transplants which continue to elongate in height while becoming more root-bound. The logistics of holding plants at greenhouse facilities is surely a problem. Ensuing delivery schedules are backlogged. Disease potential increases. And clearly, by delaying planting, there is no guarantee that wet weather conditions aren't prolonged by a later series of untimely storms.

What's a grower to do? To cope, keep drains open and delay ground prep until the last moment. If transplanting under wet soil conditions, be aware that minimal work is needed ahead of the planter. Conservation tillage experiments on the UC Davis campus and in grower fields suggest that little ground prep is needed to ensure a good transplant stand of tomatoes. Minimally, a fluted coulter mounted ahead of the transplant shoe to loosen the soil can make a seedbed. Post-plant herbicide options exist with Matrix or Sencor (and Sandea for nutsedge). Roundup or some contact material should be used to start with a clean bed prior to planting.

WINTER-GROWN COVER CROPS

Cover crops: do they have a fit for earlier planting? With living mulches, the answer varies on their effectiveness in drying the soil. Common cover crops of grasses or legumes actively use soil moisture as transpiration for growth, thus helping to dry the soil. Drawbacks exist. Soil surface is often muddy because the vegetative cover blocks evaporative drying. Additionally, the crop residue can present tillage challenges with trash management. Thus winter-grown cover crops deplete soil moisture in the top foot or more, while the surface inch or more tends to

remain muddy long after the surface is dry in conventional, bare-ground beds. *The soil moisture scenario is similar to the summertime vine training operation where tomato plants are transpiring rapidly thus depleting deeper soil moisture, while vines are covering the furrow, thus maintaining a muddy furrow surface.* With conventional tillage approaches to seedbed preparation, cover crops are not well suited for early planting schedules in our area where substantial springtime rainfall is likely, but unpredictable.

An advantage of cover crops is their potential to reduce early-spring rainfall run-off by trapping water within the field as well as depleting soil moisture through plant transpiration. The cover crops may well improve soil quality by increasing organic matter level, soil microbial activity and soil structure. The cover crop may also fix N or trap soil nutrients for the succeeding crop.

UC Extension Specialist Tim Hartz and I are evaluating triticale as a fall-planted, grass cover crop ahead of tomato. These evaluations are being conducted on the Davis campus as well as in small plantings in commercial fields. The grass grows vigorously, but is easily killed with Roundup in the spring to limit growth.

TOMATO VARIETY REPORT: STATEWIDE 2005

Our annual statewide processing tomato variety evaluation trial report for 5 early and 5 mid-maturity trial locations is available on the UC web site. The report is 18 pages as a 57-kilobyte file. We were not able to provide the report earlier.

http://vric.ucdavis.edu/issues/newissue.htm

BACTERIAL SPECK

Bacterial speck was a problem with our persistently rainy 2005 late spring season. If wet, cool weather conditions continue this spring, applications of copper will be needed to reduce disease levels. Early, preventive treatments are more helpful than post-infection sprays. Applications timed before rain events are better than after. If allowable, adding Dithane to the tank mix with copper improves control slightly. The chemical control program is only a protectant, not an eradicant. Good coverage is important.

While results are preliminary, research with Mike Davis in local grower fields with Jason Hatanaka and Tsutsui Farms suggest that low levels of speck can impact marketable yields. We measured a linear decrease of about 0.7 ton from each 10% increase in leaf area diseased by speck. We plan on confirming last year's results as well as evaluate recommendations from midwestern and southeastern Universities. Their program favors a more aggressive control strategy with weekly applications of tank mixes of copper with mancozeb. Every other spray period includes the addition of Actigard, a plant defense response inducer. The disease pressure in their rainy regions may require weekly applications of tank mixes over several months, depending on weather. We're most interested in the value of Actigard as a modification to our current program. At best, our current chemical control program is only fair. With dry, warm weather, the problem subsides. Growers using sprinkler irrigation may prolong the problem.

UC Plant Pathologist Mike Davis' survey of isolates collected in 2005 indicated nearly all of the speck isolates were able to cause disease on the current race 0 resistant varieties. If this persists, the value of current speck resistance in varieties is greatly diminished.

As an aside, a few Floridian growers are applying bacteriophages (viruses that infect bacteria) that are tailored to control the specific bacteria in their fields. This

biological control approach appears to be effective, but complex. Additionally, the phages are sensitive to UV light and weather degradation, so application is timed near sunset and mixed with milk and sugar supplements. Recommended application frequency is twice per week combined with an Actigard application at 14-day intervals.

Yield reductions have apparently been linked to Actigard use in northern Florida and southern Georgia in 1999 and earlier, but have not been documented since. My own small field evaluation of Actigard applied weekly over 6 weeks to 5 popular varieties did not show any ill effects beyond a slight delay in maturity. Disease was not present in the local test in 1999.

DODDER RESISTANT VARIETIES

Field and greenhouse work by UCD Weed Ecologist Tom Lanini provides additional information on dodder management.

From a UC web site: Dodder is a parasitic plant; its seedlings must attach to a suitable host to survive. In addition to tomatoes, other known hosts of dodder include safflower, sugarbeets, alfalfa, asparagus, honeydew melon, onions, carrots, nightshades, and numerous other broadleaf weeds. Rotations are generally not effective in eliminating dodder because it has a wide host range and its seeds can remain viable for years. However, rotation to non-host crops such as cotton, corn, cereals, and garlic can help reduce the seed population. The standard way to control dodder has been to destroy the host tomato plants as soon as dodder attachment is observed. If dodder is flowering, remove the host plants from the field as well.

Most dodder germinates between March 1 and May 20; so delayed planting can reduce problems with dodder. Transplanting in the late season can serve well.

Dr. Lanini's continuing study of variety tolerance provides useful information for managing infested fields. Dodder is often able to attach on resistant varieties, however hand removal of attached dodder may not be needed. This is because dodder that attach to resistant varieties eventually appear thin-stranded, poor-colored and usually die within 3 weeks. As a distinction, Tom notes that dodder with healthy early growth on tomatoes will likely continue to grow well throughout the season and thus should be removed.

The reported resistant varieties are: H 9492, H 9553, H 9992 and newly evaluated H 9888, H 1100 and several Seminis experimentals.

ROADSIDE WEED CONTROL

Glyphosate-resistant ryegrass appears to be well established in our area, especially along many roadsides. Tom Lanini evaluated a collection of ryegrass from 60 Central Valley sites spanning from Fresno to Butte County. The collection of seed was made in 2004, primarily along roadsides, but close to production fields. From these seeds, he grew 4 to 6-inch high potted plants and subjected them to various dosages of Roundup. Less than 10% of the populations were killed with 0.75 lbs/acre of Roundup (22 fluid oz. of Roundup WeatherMax equivalent). Less than 15% of the population was killed at the 2X rate of 1.5 lbs. Over 15% of the populations were not completely killed with 12 lbs/acre. From Yolo, Solano and Sacramento counties, only 2 of the 17 local collections had populations that were completely controlled with less than 3.1 lbs of Roundup. The first report of ryegrass

resistance was confirmed in a Butte orchard setting in 1998. How quickly resistance developed and spread. The ryegrass species is reported to be *Lolium multiflorum* or a hybrid crossed with *L. rigidum.*

Bottom line: resistance to Roundup® in ryegrass is pervasive especially in the Sacramento Valley.

What's the point? Changes in weed control management may well be needed where this winter annual ryegrass persists. Care should especially be taken with the weed control program along ditch lines and roadways where repeatedly sprayed ryegrass now dominates and appears less controlled by glyphosate.

Seed from common lambsquarters were also collected and evaluated for Roundup resistance. The results were less clear, with plant size at time of treatment an influencing factor.

Submitted by,

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