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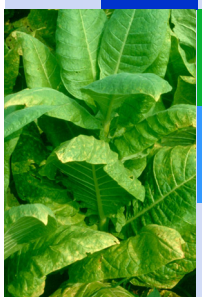
UK COOPERATIVE EXTENSION SERVICE
University of Kentucky – College of Agriculture

Tobacco News



Special points of interest :

- Recent weather a challenge for tobacco transplant producers
- High evaporate rates can leave behind fertilizer salt deposits
- Delaying fertilization requires adequate distribution
- Damaged root tip promotes spiral roots
- Cold injury is no more than bud damage which causes growth problems and releases ground suckers
- Add light to help prevent Premature bloom
- A Dist 4 meter can prevent damage

Other stories Inside this issue:

Hot weather and bright sunlight early caused symptoms later *by Gary Palmer*

Managing a greenhouse can be a challenge due to the fluctuation of temperature during the spring in Kentucky. Often it can be more difficult to cool a greenhouse during hot sunny days than to keep it warm during cold nights.

Transplants are still showing symptoms from the hot sunny week in March. Late germinating seedlings were the most susceptible since smaller plants had more contact with the salt deposits on the surface of the media. Salt can desiccate the small plants that turn tannish brown from the damage. Larger plants may also show salt damage on leaves that touch the dividers between cells. These areas are efficient evaporators and the crystalline salt deposits can often be seen and felt on these areas. Salts may vary in color from light tan to shades of orange and dark brown.

Delayed addition of fertilizers till approximately 10 days after seeding may reduce fertilizer salts injury and could reduce algal growth in the float beds also.

If fertilization is delayed, adequate distribution when adding the fertilizers is necessary. A sump pump may be the best solution for adequate distribution. Mixing the fertilizer in a five gallon bucket and dumping the solution into the a few areas may lead to hot spots and under fertilized areas. If adding a 20% nitrogen water soluble fertilizers to a float, use 4.2 lb per 1000 gal of water. To determine water volume:

Trays X Depth of water (in)

Fertilizer salts accumulate on dividers between cells as water is wicked onto the surfaces and evaporates leaving the salts behind. Colors can vary, but the crystalline salts can be felt.

Spiral root promoted by dry conditions *by Gary Palmer*

A hot, sunny start, particularly within the critical germination stage of the seed, can promote spiral root by restricting the breakdown of the pellet. Anything that prevents the right amount of moisture necessary for the pellet to become soft enough for the seed to emerge can cause damage to the emerging root tip, the primary area that is influenced by gravity. Most pellets are made of diatomaceous earth, a naturally occurring product derived from silica based deposits of sea creatures. On a microscopic level this material is very sharp and has been used as insect and parasite control. A germinating seed may have to force its root tip through this sharp material, if the seed pellet is particularly hard, the media doesn't wick properly or is compacted, or if conditions are hot and sunny causing the media surface to dry faster than it can wick. The damaged tip can no longer sense gravity and will spiral rather than grow into the soil normally. Pellets have improved, but hot, dry conditions this year may have dried the pellet and the media surface enough to promote spiral root development. Hopefully spiral root number are not as bad as in prior years. A good media can help prevent spiral roots.

Cold damaged buds release suckers *by Gary Palmer*

A yellow, stunted bud is unable to produce normal hormones which control leaf growth and control of side shoots or suckers

Very little actual freeze damage was reported. However, expansion areas reported the brunt of the damage possibly due to less greenhouse space and more outside beds.

Although freeze damage was low, cold injury is common. Cold injury is no more than bud damage that occurs when plants are exposed to a wide range in temperature. Look for leaf distortion and pale white to yellow buds. Damaged bud can not produce the normal hormones called auxins that control leaf development. Plants have to grow into the damage and symptoms may not reach full impact until four to six days later after bud damage.

Sucker development is also maintained by these hormones and, just like at topping, suckers are released when the bud is damaged by cold weather. Unless damage is severe the bud should recover and reestablish control over the suckers.

However, once suckers are released any hormonal imbalance may cause suckers to grow. The most common time is shortly after transplanting. If conditions are not favorable for root and plant growth, ground suckers may grow.

Setting plants deeply tends to reduce the development of ground suckers. MH free sucker control programs may also allow ground suckers to grow unimpeded since run down products may not reach ground sucker buds.

Dealing with premature bloom *by Gary Palmer*

"A do nothing approach may be your best bet for managing premature bloom."

Premature bloom is a problem best prevented rather than trying to control it after blooms start to appear. Bloom initiation occurs weeks before actual flowers emerge. These blooms can be set early if conditions favor bloom set. A chemical call phytochrome builds up during dark periods. Days are short during transplant production and extended cloudy, rainy periods can add to this promoting floral induction. Phytochrome is very sensitive to light and a brief period of light during the night can degrade the phytochrome to safe levels preventing floral induction and premature bloom. Lights in a greenhouse set to come on for an hour or so during the night may be enough to prevent premature bloom

Once plants begin to bloom, most producer want to do something to correct the problem. There are four options.

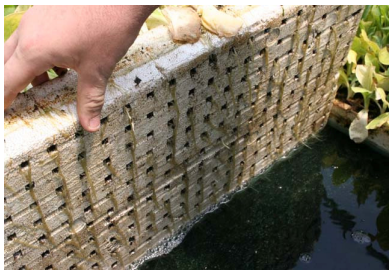
1. Remove flowering plants allowing plants on either side to compensate.
2. Cut blooms off to allow a sucker to become the new leader.
3. Cut plants off at ground level leaving one sucker
4. Do nothing and let plant correct itself

All of these options work. A new leader forms in most cases proving that a do nothing approach may be best. While yield from affect plants may be reduced, several usable leaves may be produced.

Using a DiST 4 meter *by Gary Palmer*

Proper use of a conductivity meter can keep transplants health.
(*The DiST 4 brands of meter is used as an example and other brands of meter should produce similar*

A DiST 4 meter measures electrical flow or conductivity between two electrodes located under the black cap. If we know how a particular fertilizer affects conductivity, we can estimate the amount of fertilizer in the water. Non-fertilized water should be check first to determine the conductivity of between 0.1 and 0.5 mS. Fertilizer differ in their conductivity, but the most common 20-10-20 will increase conductivity by 0.33 mS for every 50 ppm nitrogen. To reach 100 ppm an increase of 0.67 is needed above the initial ready. Therefore, if the initial reading is .4, the final reading should be 1.07. Initial readings above 0.9 should be avoided due to salt damage.



Symptoms of Pythium root rot on tobacco seedlings. Note adherence of affected roots to the bottom of the float tray.

Keeping Ahead of Pythium Root Rot in Float Beds
By Kenny Seebold

Pythium root rot (PRR) is the most common and important disease that we encounter in the float system, and we are beginning to get reports of outbreaks around KY.

The first symptoms of PRR, which normally appear when water temperatures rise above 70 ºF, are yellowing and stunting of transplants in well-defined areas of a float bay; damping-off can occur in severe cases. Roots and sometimes lower stems of plants with PRR take on a darkened, necrotic appearance; roots may have a slimy appearance and will adhere to the bottoms of trays. Infected roots will eventually slough off and some re-growth may be observed; however, new roots likely will become infected.

Sanitation is an important part in the management of PRR in the float system. Adequate sanitation of recycled trays (bleach or steam) is necessary to prevent outbreaks of disease. Avoid introducing soil into float bays, as *Pythium* spp. can be present in soil matter. NEVER use pond or surface water to fill float beds as water from these sources is likely contaminated with *Pythium* and other plant pathogens such as *Phytophthora* or *Fusarium*. Make sure that shoes and tools are cleaned before bringing them into a transplant facility.

"NEVER use pond or surface water to fill float beds ."

Managing Pythium Root Rot with Terramaster 4EC
By Kenny Seebold

Terramaster 4EC is the only labeled fungicide for management of Pythium root rot in the float system. Terramaster is highly effective against Pythium when used preventively.

For preventive use, apply 0.7-1 fl oz of product per 100 gal of float water 2-3 weeks after seeding (when roots first enter the water). A second treatment of 0.7-1 fl oz per 100 gal of water can be made 3 weeks after the first, and a final application of 0.8 fl oz can be made two weeks after the second treatment (if needed). Do not apply Terramaster later than 8 weeks after seeding; mix thoroughly in float bays to minimize the risk of plant injury.

"Rescue" applications of Terramaster (see product label) to diseased plants will halt further development of disease and symptomatic seedlings will likely recover. However, the higher rates of Terramaster used in rescue treatments increase the risk of plant injury AND recuperating plants may still harbor *Pythium*. For these reasons, preventive applications of Terramaster are preferred.

"Terramaster is highly effective against Pythium when used preventively."

Blue mold on tobacco seedlings.

Blue Mold Update
By Kenny Seebold

The North American Plant Disease Forecast Center began tracking blue mold at the end of March, 2007. The following is a summary of reporting available on the NAPDFC web site (www.ces.ncsu.edu/depts/pp/bluemold/).

Active blue mold has been confirmed in western Cuba (Pinar del Rio). The threat to U.S. production areas is low at this time. No active blue mold has been reported in the U.S.

Damping-Off Reported on Seedlings

By Kenny Seebold

We've seen some wild weather in Kentucky over the past few weeks. A heat wave followed by freezing temperatures has stressed tobacco seedlings around the state. Along with a number of disorders associated with temperature extremes, we have diagnosed several cases of damping-off caused by Rhizoctonia solani.

Damping-off first appears as a water-soaked lesion at the base of the plant. Later, the lesion will take on a sunken, brown appearance and will eventually girdle the plant. Girdled seedlings will fall over and die. The entire stem of affected plants may show discoloration, and decay may spread into leaves. Leaves alone may become infected and will develop water-soaked lesions that enlarge, often spreading to stems of young seedlings.

Good sanitation is the best way to manage soreshin in the float system. Tray sanitation can help kill overwintering pathogen. Proper ventilation and fertility are important considerations as well. Some suppression can be achieved with Dithane DF, which is applied at a rate of 0.5 lb/100 gallons of finished spray solution (or 1 level tsp per gal) once plants have reached the size of a dime. Begin applications before symptoms appear and continue on a 5-day schedule until transplanting.

Symptoms of damping-off on young tobacco seedlings.

Collar Rot May Become a Problem Soon

By Kenny Seebold

We are beginning to see the full extent of the damage done to tobacco during the recent, severe cold spell. Along with the "normal" problems associated with cold damage, we can expect that stressed or injured plants will be more prone to attack from *Sclerotinia sclerotiorum* (causal agent of collar rot). Collar rot may appear in the coming days because we are heading into a period when favorable conditions for disease development are likely.

Collar rot is favored by cool, damp weather. Collar rot first appears as small, dark green, water-soaked lesions at the base of stems. Clusters of infected plants will appear and will be yellowed and wilted. The cluster is usually grapefruit-sized (4-6" in diameter). Signs of the fungus can be found at the base of plants or on debris in trays and include a white, cottony fungal mass and black sclerotia.

There are no fungicides labeled for Sclerotinia collar rot on tobacco transplants. Growers should attempt to make the float system environment less favorable to *Sclerotinia*. Good ventilation (airflow) will go a long way in keeping collar rot in check. Fertility should be kept at around 100 ppm (N); excessive levels of N can lead to a lush canopy that will take longer to dry and will be more susceptible to disease. Avoid buildup of clippings on trays. Clippings and diseased plants should be discarded at least 100 yards from the transplant facility, or buried. Keep a weed-free zone around float beds. Over 300 species of plants are hosts to *S. sclerotiorum*, making many weeds potential hosts for this pathogen.

"There are no fungicides labeled for Sclerotinia collar rot on tobacco transplants. Growers should attempt to make the float system environment less favorable to Sclerotinia."

Symptoms of Sclerotinia collar rot on tobacco seedlings. Note accumulation of fungal mass (mycelium) at base of plants.