Dry Start Is Overriding Force for State’s Tobacco Crop
by Gary Palmer

Tobacco is native to dry areas and wild tobacco can be found in the South West and other dry areas. This gives us a clue as to the type of environment that tobacco can tolerate. We know that some of our worst tobacco crops started wet. Under wet conditions a tobacco plant may not produce an adequate root system or the root system may be damaged by constantly wet soils, a condition called wet feet. One of the worst tobacco crop years was 1983 where rainfall totals for May averaged above 10 inches. This was followed by a severe drought, what we would call the worst case scenario.

The more water a tobacco crop receives early the more it will need the rest of the season due to root development issues. On the other hand, the less it gets early the less it will need to make a crop. A good example of this is the 1994 crop which by all accounts was a dry year, but one of the highest yielding crops in many years.

The 2007 crop is similar to the start that occurred in 1988. (See table below) The season started very dry in 1988 and little rain fell until approximately the 10 & 11th of July. Tobacco producers were ready to give up. Tobacco was in a severe drought mode prior to the 10th of July and appeared lost. However, when state yield are compared, the 1988 crop was our second largest behind the 1994 crop. Some crops that were irrigated during the drought did not yield as much as neighboring crops that were not irrigated. Some say that tobacco is a weed and you never want to count it out. Years like 1988 and 2007 seem to support that hypothesis.

“...\(A\) dry year will scare you to death and a wet year will starve you to death\(\)“

### Rainfall Comparison: 1988 vs. 2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Lexington</th>
<th>Glasgow</th>
<th>Louisville</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>3.02</td>
<td>1.21</td>
<td>2.17</td>
</tr>
<tr>
<td>June*</td>
<td>0.56</td>
<td>2.11</td>
<td>0.94</td>
</tr>
</tbody>
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Rainfall in inches *June is for a partial month through the 27th.
Black Shank and the Drought of 2007
by Kenny Seebold

The 2007 growing season has been a difficult one for Kentucky’s tobacco farmers, particularly because of the drought that has gripped the state. As would be expected, dry conditions are beginning to take a toll on tobacco in the field from a physiological standpoint. We also have seen a significant increase in the number of reports of black shank over the past week to ten days. In early June, a relatively small amount of black shank had been reported across Kentucky; however, during the week of June 18 the number of cases of the disease increased dramatically. Although we consider black shank to be a wet-weather disease, severe damage can occur during a drought and this is the scenario we now face. The plants that are now dying from black shank were likely infected during one of the few rain events that took place earlier in June. Under dry conditions, plants with moderate levels of disease will not be able to take up enough water to survive and will wilt quickly. Once wilted, heat and a lack of soil moisture result in sudden and widespread mortality of plants. Wilting and death can be so sudden that plants remain green when they die, not showing the yellowing that is characteristic of black shank.

The classic blackening of the stem from which black shank takes its name can be less pronounced as well during a drought because of the quick disease cycle. It is not uncommon to find few symptoms above the soil line. Instead, girdling lesions can be observed at or near the root tip and this is why water uptake is restricted, causing plant death during the drought. Even a tobacco variety with high levels of resistance to the black shank pathogen (*Phytophthora nicotianae*), such as ‘KT 204’, will suffer greater-than-anticipated losses during a drought. Infected plants pose another risk to healthy plants around them because they represent a source of inoculum that can explode should significant rainfall occur later in the season.

Growers with black shank can apply the soil fungicide mefenoxam as a rescue treatment. Two products, Ridomil Gold EC and Ultra Flourish, are available and can be applied at first cultivation (if applicable) and at layby. Rescue applications of mefenoxam will be most effective if a variety with moderate-to-high levels of resistance has been planted, such as ‘TN 86’, ‘TN 90’, or ‘KT 204’. The rate for Ridomil Gold is 1 pt/A (per treatment), while Ultra Flourish, which contains half the amount of mefenoxam found in Ridomil Gold, is labeled at 1 qt/A (per treatment). Applications should be directed at the soil and stems of plants. The fungicide should be incorporated as quickly after application as possible, either mechanically or by irrigation (natural rainfall or overhead irrigation). Soils need adequate levels of moisture to activate mefenoxam and permit its uptake into the plant. Secondary spread of black shank is considerably less likely in a drought than in rainy weather; however, heavy rains or irrigation could result in heavy losses to black shank in fields with even low levels of disease, so mefenoxam should be applied in advance of anticipated moisture events.

The black shank pathogen can be moved easily on equipment and feet! Growers need to sanitize properly when moving between infested and clean fields.

“Although we consider black shank to be a wet-weather disease, severe damage can occur during a drought”

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Effective Use of Quadris to Manage Target Spot and other Foliar Diseases by Kenny Seebold

The hot and dry weather that has gripped Kentucky over the past few months is not generally conducive to the spread and development of foliar diseases of tobacco such as blue mold, target spot, and frogeye leaf spot. Given the weather, many producers are asking about the need for fungicides and when should a spray program be initiated. Prior to the labeling of Quadris on tobacco, our foliar fungicide options were aimed mainly at blue mold and did not provide acceptable control of foliar diseases like target spot and frogeye. As we’ve seen in recent years, target spot has become a serious problem in some parts of Kentucky, and is causing significant yield losses in fields with a history

“Target spot has become a serious problem in some parts of Kentucky.”

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(Continued on page 4)
More Nitrogen Needed?
By Bob Pearce

Tobacco is growing slower than usual due to the dry weather prevalent across the state. This has some growers asking themselves if they should apply additional nitrogen (N) if and when the rains come. The short answer to this question is probably not. In the short term N is lost from the soil in 3 ways: denitrification, leaching and ammonia volatilization. The first two require high soil moisture and or heavy rains to result in significant N losses and thus are not likely under drought conditions. That leaves volatilization as the most likely mode of N loss from tobacco fields.

Volatilization losses generally occur when urea-N is converted to ammonium at the surface of the soil. Volatilization losses generally occur when urea-N is converted to ammonium at the surface of the soil. In certain cases if urea fertilizers are applied to a moist soil and are then subjected to a period of drying N losses can be significant. If the urea is incorporated, the losses are limited as the ammonia gas is absorbed by the soil before it can escape to into the air. If the urea is not incorporated as little as ½ inch of rain will carry it far enough into the soil that losses will be limited.

In mid-June we measured nitrate levels on a no-till tobacco field to which 545 lbs of urea (250 lbs actual N) per acre had been applied in early May. Approximately 200 lbs. nitrate-N per acre was found in the top 3 inches of soil, indicating that the added N was still available in the soil. The bottom line is that the potential for N loss has been low and there should be little need for additional N to be applied. In fact, additional N could result in rank green crops if rains occur late in the season and potentially lead to poor curing.

Early Season Drought Conditions May Lessen Effectiveness of Herbicides and Increase Carryover Potential to Rotational Crops By Andy Bailey

The extreme drought that most regions have experienced from mid May to late June has not only slowed the early growth of tobacco, it has also lessened the effectiveness of herbicides that were applied near setting time. Many growers have already commented that their weed control so far this year has been less than expected. Any herbicide that is applied before weeds emerge needs soil moisture to become “activated” to control weeds effectively. These herbicides must be in soil solution in order to be absorbed by plants. Under drought conditions, many herbicides bind tightly to soil particles and are unavailable for plant uptake. When moisture finally does become available, residual herbicides bound to soil particles may be released in large amounts, possibly increasing injury to tobacco plants and increasing the potential for carryover and injury to rotational crops.

Moisture also helps distribute herbicides to different depths in the soil surface where weed seeds are found. Under drought conditions, more weeds escape control because lack of moisture limits herbicide uptake by plants and also limits herbicide distribution. Herbicides may remain bound to soil particles in a very concentrated layer on the soil surface, which also increases the potential for herbicide carryover. Dry conditions also slow the breakdown of herbicides by soil chemicals and microbes, allowing herbicides to persist longer in the field. Always pay close attention to rotational restrictions given on herbicide labels, particularly in dry years.

For most herbicides, we consider rainfall of at least 0.25 inches in the first week after application to be ideal for activation. Many herbicides will still work, although not as effectively, if rainfall doesn’t occur for several weeks. This is sometimes referred to as “reach back”, when weeds emerge later in the season and then quickly die as they absorb herbicides in the soil as moisture becomes more available. Spartan 4F is well known for this, and weeds such as yellow nutsedge can commonly be seen emerging under dry conditions in a Spartan-treated field, only to die when moisture becomes available. Herbicides that require mechanical incorporation such as Prowl and Devrinol still need some moisture, but are somewhat less dependent on rainfall since we are bringing these herbicides more into contact with the soil moisture that is available.
Tobacco Plants in Late Plowed Field Suffers the Most During Drought
by Bob Pearce & Gary Palmer

In an effort to squeeze the most productivity out of a piece of ground some tobacco growers try to get a cutting of hay off their cover crop before plowing it under. While similar production practices in many years would pose few problems, this year’s drought made these situations critical for tobacco plant survival. Severe stand loses have been seen in fields where wheat, rye or even sod were turned late. These fields were often dryer than other fields at the time of transplanting. Quality transplants, extra transplant water and deeper transplanting depth were helpful to reduce losses but even then plants had a difficult time surviving due to the hot temperatures and drying winds in late May and early June.

Bigger tougher plants tolerated the conditions better than smaller, younger, spindly plants with high nitrogen content. Planting depth is a key management component for improving the chances of plant survival. Shallow transplanting often results in rapid drying of the root ball and mid-day wilting leading to stem scald and potentially plant death. Deeper planting places the root ball in a position where water loss is slower giving the transplant more time to establish new roots and provides protection from stem scald. Tobacco plants will even produce new roots on the portion of buried stem. A planting depth study being conducted at the Spindletop Research Farm clearly shows the impact of planting depth on early growth. This study will be followed to determine if there is an impact on final yield.

To set plants at the appropriate depth growers need to start by regularly clipping float plants to prevent them from becoming too tall and leggy. Transplanter shoes and wheels may need to be adjusted from one field to another depending on soil conditions and transplant height. Some tobacco growers have had difficulty adjusting their carousel transplanter and have opted to go back to the older finger type setters. Regardless of the type of transplanter used the grower must have a working knowledge of the adjustments that are available to insure proper transplant depth.

Effective Use of Quadris to Manage Target Spot and other Foliar Diseases by Kenny Seebold

(Continued from page 2)

of the disease.

When dealing with blue mold, we generally start fungicide applications when favorable conditions are present for development and spread of the disease AND when we know that the pathogen is present or is likely to move into our area. Managing target spot effectively takes a different approach, however. The pathogen that causes target spot, Thanatephorus cucumeris, can be introduced into the field on transplants (very common in Kentucky) and can carry over between crops. Farmers who have had problems with target spot in the past are thus very likely to see the disease every year. Generally, severe target spot late in the growing season can be traced back to low levels of disease early on. Relatively small numbers of target spot lesions on tobacco at 4-5 weeks after setting can produce high levels of spores under favorable conditions after the row middles close. At this point, significant shading and humidity predominate and allow the target spot fungus to infect a great deal of the lower-to-middle leaves, resulting in yield loss. Heavy defoliation can occur after topping following a good rain if target spot is severe in the lower portion of the plant.

Quadris is an effective tool for managing target spot if applied at the correct time. Preliminary research has shown us that a single, early application of 8 fl oz/A, made 5-6 weeks after setting and before the row middles close, can suppress disease greatly at topping time. However, a second application at 8-12 fl oz/A may be needed prior to topping to protect tobacco until harvest. Quadris is a protectant fungicide, and good coverage is critical to success.

Apply in a spray volume of at least 20 gallons/A early, and increase spray volume to at least 50 gallons/A for late-season treatments. If possible, use drop nozzles to allow for effective coverage of the entire plant.