How the Agroclimate.org Peanut Leaf Spot Advisory Tool works

North and South Carolina

The leaf spot advisory for the Carolinas uses the algorithm currently employed by North Carolina State University and the NC State Climate Office for their advisory system[1]. This algorithm was developed for computers and revised in Virginia beginning in the 1980s[2], based in turn on an earlier method developed in Georgia[3]. It continues to be available online in Virginia today[4]. The advisory relies on relative humidity (RH) and temperature to determine if conditions have been conducive to disease.

In this system, when the average temperature is between 61° and 90° Fahrenheit and the RH is 95% or above for any given hour, the environment is considered favorable for disease development. If the temperature is outside this range or the humidity falls below 95%, conditions are unfavorable. In extreme cases in which temperatures are over 99°F or RH is below 40%, the pathogen begins to die. Therefore three conditions are specified in this system: *favorable*, *unfavorable*, and *lethal*. When the user clicks on a weather station, the condition for each hour at the location over the last 24 hours is presented in graph form.

For spray advisory purposes, it is important to note that the first fungicide application of the season should be made *unconditionally* at any location once the very early pod stage (R3) is reached. After this the advisory tool may be used to eliminate unnecessary sprays.

A fungicide spray is advised once a total of 48 hours of favorable conditions have accumulated, counted from the "**set date**." The set date is the most recent of:

a) Ten days after the last spray; OR
b) Five consecutive hours of lethal temperatures (>99°F); OR
c) Eight consecutive hours of lethal humidity (<40%)

If it has been less than ten days since a spray, then the set date will be in the future, ten days after that spray date. The tool will say that your plants are protected and no spray is advised.

In other words, weather conditions favorable for disease are ignored for ten days after a fungicide application, or if the pathogen is killed by conditions (b) or (c). Once the fungicide is no longer effective and/or conditions are no longer lethal, favorable hours are counted (they need not be consecutive). After 48 favorable hours occur, disease development is likely and a spray is recommended.

---

[1] See http://ncsupeanut.blogspot.com and http://www.nc-climate.ncsu.edu/cronos/peanut/leafspotInterface.php

[2] Cu, R.M., and P.M. Phipps. 1993. Development of a pathogen growth response model for the Virginia leaf spot advisory program. Phytopathology 83:195-201.

[3] Jensen, R.E., and L.W. Boyle. 1966. A technique for forecasting leafspot on peanut. Plant Dis. Rep. 50:810-814.

[4] See http://webipm.ento.vt.edu/cgi-bin/infonet1.cgi