

# Peanut Leaf Spot Disease Biology

## Early leafspot (*Cercospora arachidicola*)

Spots first appear on the upper surface of lower leaves as faint brown to black pinpoint dots. As the dots enlarge to become brown to dark-brown circular spots, a yellow "halo" generally develops as a border around each spot. This disease is frequently seen as early as June 1 in both North Carolina and Virginia. Spots with an irregular shape can also develop on leaf petioles and plant stems. Defoliation and reduced yield at harvest can result if this disease is not controlled by fungicide sprays. Leaves that fall to the soil surface may trigger epidemics of certain soilborne diseases such as Southern stem rot.



## Late leafspot (*Cercosporidium personatum*)

Like early leafspot, this disease can also cause defoliation, reduced yield, and increased incidence of certain soilborne diseases such as Southern stem rot. As the name implies, late leafspot is most prevalent during the later part of the growing season. Spots are generally darker in color than early leafspot and commonly show no yellow halo.



## **Peanut Leaf Spot Disease Cycle**

The fungi that cause early and late leafspots reproduce and infect by means of microscopic spores called conidia. Both fungi are capable of producing tremendous numbers of spores on infected plant parts. Spore production is favored by high humidity. Primary inoculum that causes the initial leafspot infections during the growing season are spores produced on infested peanut residue in the soil. Visible spots develop 10 to 14 days after infection. New spores are produced in spots on infected leaves. These spores will subsequently infect plants and produce secondary infections. Spores are spread by wind, splashing rain, and insects. Leafspot can increase rapidly under favorable conditions as several secondary cycles may occur per season. Abundant peanut residue in fields where peanuts are cropped continuously often results in early and rapid development of leafspot. The first appearance of leafspot and its continuous progress throughout the growing season are heavily dependent upon weather conditions. Environmental conditions required for both types of leafspot are warm temperatures and long periods of high humidity or leaf wetness. Wet periods of sufficient duration to support infection usually consist of dew periods at night or extended rainy periods. When adequate moisture is present, leafspot infections may occur in a relatively short period when temperatures are warm, but a longer wet period is required when temperatures are cool. For these reasons, potential for damage from leafspot is greater where levels of humidity and rainfall are high. Frequent irrigation with small amounts of water can also create prolonged periods of high humidity and leaf wetness favorable for infection.

## The Oklahoma Peanut Leaf spot Model in $\mu$ METOS

modification is a tool that has been developed to aid growers in proper timing of fungicide application for *early leafspot*, a foliar disease of peanuts. The model calculates daily "infection hours" on base of 24 hours of temperature, relative humidity and leaf wetness figures. An infection hour is defined as one hour with relative humidity greater than or equal to 90% or leaf wetness *and* temperature between 18.8°C (60.5°F) and 30°C (86°F). 36 infection hours since the last fungicide application or since 30 days after planting is the threshold for a repeated or the first spray application.

The model points out how many days have been needed to accumulate 36 infection hours. If this is equal with days since planting minus 30 the first spray is required. If this is equal with days since last fungicide application minus 10 a spray repetition is needed.

### Model Input:

Temperature  
relative Humidity  
Leaf wetness

### Model Output:

Daily infection hours  
Numbers of last days to reach 36 infection hours

# The Oklahoma Peanut Leaf spot Model in $\mu$ METOS

modification:

## $\mu$ METOS and $\mu$ LINK presentation:

$\mu$ METOS presents the daily number of infection hours and the days needed to accumulate 26 infection hours during the last period.

$\mu$ LINK presents the same 2 figures in a table and in a graph.

Peanut Early Leaf Spot  
Infection Hours, Number Days for IH=36

M-DD IH Nbd

Label

|      |   |   |
|------|---|---|
| 5-12 | 5 | 5 |
| 5-12 | 7 | 4 |

|      |    |     |
|------|----|-----|
| M-DD | IH | Nbd |
| M-DD | IH | Nbd |

1th Screen

# The Oklahoma Peanut Leaf spot Model in $\mu$ METOS modification:

## **Rules for the early leafspot advisory are as follows:**

It is recommended that growers wait until at least 30 days after planting before even considering spraying their peanuts for early leafspot.

*If a grower wishes to apply a first fungicide at 35 days after planting and then follow the advisory, that is acceptable; otherwise, the Model will not recommend a first spray until 36 infection hours have accumulated since 30 days after planting.*

Once the peanuts are 30 days old, the Oklahoma Peanut Leafspot Model should be consulted on a *regular*, if not daily, basis. In addition, after a fungicide application, the model should be consulted regularly beginning 10 days after the spray date.

If a given field cannot be sprayed within 3 days of a model spray recommendation, then spray on a 14-day schedule.

Use only highly effective fungicides (Bravo, Folicur, or Tilt/Bravo). If another fungicide is used, spray on a 14-day schedule.

If levels of early leafspot exceed 25% infection (leaflets with spots or defoliated), revert to a 14-day schedule.

If late leafspot, web blotch, or pepper spot are identified, revert to a 14-day schedule.

Be alert to weather forecasts. Spray if rain is in the forecast and a field is close to reaching 36 infection hours.

Maintain the spray program until 14 days before the anticipated harvest.

