

# TIMELY INFORMATION

## Agriculture & Natural Resources

January 28, 2009

PP-690



### 2010 Peanut Disease Risk Index

Albert Culbreath, John Beasley, Robert Kemerait, Eric Prostko,  
Tim Brenneman, Nathan Smith, Scott Tubbs,  
Rabiu Olatinwo and Rajagopalbabu Srinivasan  
The University of Georgia, College of Agricultural and Environmental Sciences

Barry Tillman  
The University of Florida, Institute of Food and Agricultural Sciences

Austin Hagan  
Auburn University

#### **Distributed by**

**Austin Hagan**  
**Professor and Extension Plant Pathologist**  
**Auburn University**

Losses to tomato spotted wilt across the peanut production region of the southeastern United States, which were estimated at 0.5%, were the lowest recorded since 1990. Peanut growers may achieve such excellent management of this disease through combined use of Peanut Rx and TSWV-resistant peanut varieties.

The Spotted Wilt and the Peanut Fungal Disease Risk Indices were combined in 2005 to produce the Peanut Disease Risk Index to help peanut producers develop field specific disease management programs. The Peanut Disease Risk Index, developed by researchers and Extension specialists at the University of Georgia, the University of Florida, and Auburn University, is now officially known as "PEANUT Rx". The 2010 version of PEANUT Rx has been fully reviewed and updated by the authors based upon data and observations from the 2009 field season. Most changes that have been made can be found in the cultivar/variety section of the Index.

As in the previous versions of the Disease Index, growers will note that variety selection, planting date, plant population, good crop rotation, tillage, and other factors can have a tremendous impact on the potential for a disease outbreak in a specific field.

### **Tomato Spotted Wilt of Peanut**

When tomato spotted wilt virus (TSWV) infects a host plant, it often causes a depilating and sometimes fatal disease. This virus infects an unusually large number of plant species including several important crops such as peanut, tobacco, tomato and pepper. The only known method of TSWV transmission is via certain species of thrips that have previously acquired the virus by feeding on infected plants. Factors leading to the rapid spread of this disease in the Southeast are very complicated and no single treatment or cultural practice gives consistently effective control. However, research continues to identify factors that influence the severity of TSWV in individual peanut fields.

### **Peanuts and fungal diseases: an unavoidable union**

Successful peanut production in the southeastern United States requires that growers use a variety of tactics and strategies to minimize losses to disease. Weather patterns across the Southeast, including high temperatures, high humidity and the potential for daily showers, creates a near-perfect environment for outbreaks of fungal diseases such as early and late leaf spot, rust, *Rhizoctonia* limb rot, white mold, and *Cylindrocladium* black rot (CBR). If peanut growers fail to control fungal diseases, crop loss in a given field may exceed 50%.

**Strategies for managing fungal diseases** of peanut typically depend on multiple fungicide applications during the growing season. Typically, fungicide applications should begin approximately 30 to 40 days after planting when crop growth stage and weather patterns support the development of leaf spot diseases. The length of time in which a fungicide can protect the peanut plant from infection by leaf spot fungi is dependent on the properties of the fungicide and on weather conditions. Many growers will begin treating for white mold and CBR approximately 60 days after planting. With attention to proper timing of applications and complete coverage of the peanut canopy, growers can expect good to excellent control of leaf spot and reasonable control of soilborne diseases. Although control of leaf spot may approach 100%, growers typically can only expect about 60-70% control of white mold with effective fungicide programs.

**Weather** plays a major role in disease development. Most fungal diseases will be more damaging during periods of increased rainfall and of less concern during drier periods. **When weather conditions are very favorable for disease, severe epidemics may occur in fields where a disease was not thought to be a problem. When weather conditions are unfavorable for fungal activity, disease severity may be low even in fields where it has been common in the past.** The AU-Pnuts leaf spot advisory that has been used to manage diseases in peanut is based on this relationship between disease and weather. Even those growers who do not use AU-Pnuts recognize the need to shorten the time between fungicide applications in wet weather.

## **Factors Affecting the Severity of TSWV on Peanut**

### **Peanut Variety**

No peanut variety is immune to TSWV but many have partial resistance. In addition to resistance, (reduced disease incidence), some varieties have some degree of tolerance (reduced severity in infected plants) as well. Higher levels of resistance and tolerance are anticipated since peanut breeding programs are now evaluating potential new varieties for response to TSWV.

Peanut variety selection can have a major impact on fungal disease. The variety 'Georgia Green' is currently planted on much of the peanut acreage in the Southeast. However, newer varieties from the University of Georgia and the University of Florida breeding programs not only have improved resistance to TSWV, but to

fungal diseases as well. For example, York, 'Georgia-07W' and 'Georgia-03L' have better leaf spot and white mold resistance than Georgia Green, while 'Georgia-02C' has superior resistance to *Cylindrocladium* black rot (CBR) compared to 'Georgia Green'. Just as none of the current varieties is immune to TSWV, none are immune to fungal diseases. However, improved resistance should lead to reduced disease severity. It is important to remember that improved resistance to one disease does not mean that the variety also possesses superior resistance to all diseases.

### **Planting Date**

Thrips populations and peanut susceptibility to infection are at their highest in the early spring. The timing of peanut emergence in relation to rapidly changing thrips populations can make a big difference in the incidence of TSWV for the remainder of the season. Optimum planting dates vary from year to year, but in general, early-planted and sometimes late-planted (early to mid-June) peanuts tend to have higher levels of TSWV than peanuts planted in mid- to late May. It is important for larger acreage peanut farmers to spread their harvest season. While staggering of planting dates may be necessary to avoid TSWV, it may be more effective to plant varieties with different time-to-maturity requirements as closely as possible within a low-risk time period. If peanuts must be planted during a high-risk period, try to minimize the risk associated with other index factors.

Planting date can affect the severity of fungal diseases in a field. Earlier planted peanuts (April-early May) tend higher levels of white mold than later planted peanuts. Earlier planted peanuts are likely to be exposed to longer periods of hot weather, favorable for white mold, than later planted peanuts which will mature in cooler late summer or early fall weather. The threat from leaf spot is generally more severe on later-planted peanuts. Reasons for this include the warmer temperatures later in the season that are more favorable for the growth and spread of the leaf spot pathogens and higher inoculum (number of spores) levels near early-planted peanuts.

### **Plant Population**

An association between skippy stands and higher TSWV levels was noted soon after the disease impacted peanut yield. More recently, research has confirmed the relationship between plant population and TSWV incidence. Low and high plant populations may actually have the same number of infected plants, but the percentage of infected plants is greater at low plant populations. In other words, a higher plant population may not reduce the number of infected plants, but it will increase the number of healthy plants that compensate for infected plants. In some cases, low plant populations may increase numbers of thrips per plant thereby increasing the risk of infection. When plant populations fall to two plants per foot, severe losses to TSWV have been observed even when other factors would indicate a low level of risk. Getting peanuts quickly up to a uniform stand is a function of not only seeding rate but also seed quality, soil moisture, soil temperature and planting depth.

Plant population has less impact on fungal diseases. However, white mold increases when the space between the crowns of individual plants decreases because the shorter spacing allows for greater spread of the white mold fungus, *Sclerotium rolfsii*.

### **Insecticide Usage**

In general, use of insecticides to control thrips vectors has been ineffective in suppressing TSWV. In theory, lowering overall thrips populations with insecticides should slow in-field spread of TSWV. However, insecticides have proven to be ineffective at suppressing primary infection, which accounts for most virus transmission in peanut fields. Despite the overall disappointing results with insecticides, phorate (Thimet 20G and Phorate 20G), has demonstrated consistent, low-level suppression of TSWV. The mechanism of phorate's TSWV suppression is not known, but the level of thrips control obtained with phorate is not greater than that obtained with other insecticides. Phorate may induce a defense response in the peanut plant that allows the plant to better resist infection or inhibits virus replication.

## Row Pattern

Seven to ten-inch twin row spacing, utilizing the same seeding rate per acre as single row spacing, has become increasingly popular in Georgia. Research on irrigated peanuts has shown a strong tendency for significantly higher yields, a one to two point increase in grade and reductions in spotted wilt severity that have averaged 25-30%. The reason for this reduction in spotted wilt is not fully understood.

Row pattern, either single or twin rows, also has some effect on the potential for disease in a field. In work at the Coastal Plain Experiment Station, white mold is more severe in single (six seed per foot) than in twin rows (three seed per foot). White mold often develops in a field by infecting sequential plants within the same row. Planting the seed in twin rows rather than single rows increases the distance between the crowns of the peanut plants and delays the spread of white mold from plant to plant. The difference in leaf spot between single and twin row peanuts appears to be negligible.

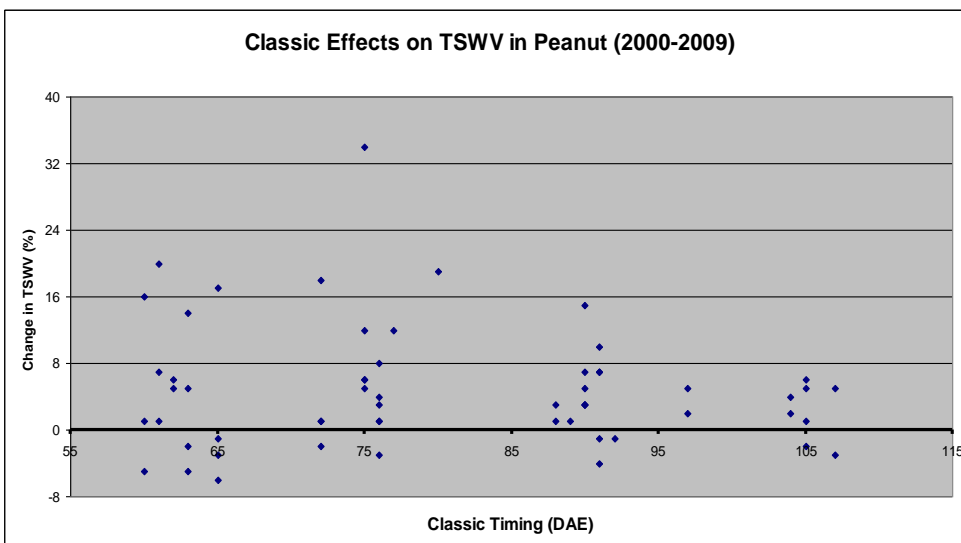
## Tillage

Tillage can make a big difference in peanut yields. There are many different methods to choose from, each with its own merits and disadvantages for a given situation. Strip tillage has been shown to have some strong advantages (including reduced soil erosion and reduced time and labor required for planting), but in some situations, yields have been disappointing. Unbiased tillage research is difficult to accomplish, but studies have consistently shown that peanuts grown in strip till systems have less thrips damage and slightly less TSWV. On-farm observations have confirmed these observations. We do not suggest that growers should change their tillage method just to reduce spotted wilt, but we have included tillage in the risk index in an attempt to better identify total risks.

Conservation tillage, such as strip tillage, can reduce the amount of disease in a peanut field. For a number of years it has been recognized that TSWV is less severe in strip-tilled than conventional tilled fields. In addition, leaf spot is also less severe in strip-tilled fields than in conventionally tilled fields, so long as peanut is not planted in consecutive years. Although the exact mechanism is unknown, the appearance of leaf spot is delayed in strip-tilled fields. Conservation tillage does not eliminate the need for fungicides to control leaf spot, but helps to insure added disease control from a fungicide program. White mold was not increased in strip tillage above conventional tillage when peanut was grown in rotation with cotton. *Rhizoctonia* limb rot was not evaluated; however cotton is a host for *Rhizoctonia solani* and the cotton debris would likely serve as a bridge between crops. Disease management is only one of many factors that a grower must consider when choosing to practice either conventional or conservation tillage. However, if a grower decides to practice conservation tillage with peanut production, he can expect lower levels of leaf spot in many instances.

## Classic® Herbicide

Research and field observations over the past several years have confirmed that the use of Classic (chlorimuron) can occasionally result in an increased expression of tomato spotted wilt of peanut. Results from 17 field trials conducted from 2000 to 2008 are presented in the following graph:



Classic caused an 8% or less increase in tomato spotted wilt about 81% of the time and an increase of more than 8% about 19% of the time. Consequently, these results indicate that the effects of Classic on TSWV are minimal in comparison to the other production practices that influence this disease. Consequently, late-season Florida beggarweed populations that have the potential to reduce harvest efficiency and fungicide spray deposition should be treated with Classic. To date, other peanut herbicides have not been shown to have an influence on TSWV.

### **Crop Rotation**

Crop rotation is one of the most important tactics to reduce disease in peanuts as well as other crops. To a point, increasing the number of years between peanut crops in the same field reduces disease levels and increases yield. Fungal pathogens that cause leaf spot, *Rhizoctonia* limb rot, and white mold survive between peanut crops on peanut crop debris, as survival structures in the soil, and on volunteer peanuts. The time that passes between consecutive peanut crops allows for the degradation of the peanut crop debris, thus depriving the fungal pathogens of a source of nutrition. Also, fungal survival structures and spores that are present in the soil have a finite period of viability before they die. Fields with longer crop rotations will have less pressure from leaf spot diseases, *Rhizoctonia* limb rot, white mold, and perhaps CBR, than fields with shorter rotations, or no rotation at all. A minimum of two years between peanut crops will greatly reduce yield loss to diseases as well as reduce fungicide costs.

Choice of rotation crops, along with the length of the rotation, will have an impact on the potential for disease in a field. Rotation of peanut with ANY other crop will reduce the potential for early leaf spot and late leaf spot because the causal fungi do not attack other crops. Rotation of peanuts with cotton, or a grass crop such as corn, sorghum, or bahiagrass, will reduce white mold damage because this pathogen does not infect these crops, or at least not very well. Cotton will not reduce the occurrence of *Rhizoctonia* limb rot. Other crops, such as tobacco and many vegetables are quite susceptible to diseases caused by *Rhizoctonia solani* and will not help to reduce the severity of limb rot in peanut.

**Special note:** Soybean may be a popular crop for growers in 2010. Growers must remember that soybeans and peanuts are affected by many of the same diseases. Planting peanut after soybeans will increase the risk for CBR or peanut root-knot nematodes and will not reduce the risk to white mold and *Rhizoctonia* limb rot.

### **Field History**

The history of disease, particularly white mold and CBR, in a field can be an important hint at the possibility of disease in the future, for much the same reason as noted in the crop rotation section above. Fields where growers have had difficulty managing disease in the past, despite the implementation of a good fungicide program, are more likely to have disease problems in the future than are fields with less histories of disease.

There is some difference between white mold and *Rhizoctonia* limb rot with regards to field history. Where white mold has been a problem in the past, it can be expected to be again in the future. Without crop rotation, white mold outbreaks should become increasingly severe. *Rhizoctonia* limb rot is a disease that is more sensitive to environmental conditions, especially rainfall and irrigation, than white mold. Therefore, the severity of *Rhizoctonia* limb rot is likely to be more variable than white mold from year to year based upon the abundance of moisture during the season.

### **Irrigation**

Irrigation is a critical component of a production system to maintain consistently high peanut yields. However, water applied to a crop with irrigation is also beneficial for the spread and development of diseases caused by fungi such as leaf spot, *Rhizoctonia* limb rot, and white mold. *Rhizoctonia* limb rot is likely to be more severe in irrigated fields with heavy vine growth; the increase in white mold may be less obvious. High soil temperatures as well as variable soil moisture levels from irrigation affect the severity of white mold.

Fungi causing leaf spot diseases need water for several important reasons, including growth, spore germination and infection of the peanut plant, and in some cases, spread of the fungal spores. Use of irrigation extends the period of leaf wetness and the time of conditions favorable for leaf spot diseases compared with a non-irrigated field. In two otherwise similar fields, the potential for disease is greater in the irrigated field.

### Measuring TSWV Risk

Many factors combine to influence the risk of losses to TSWV in a peanut crop. Some factors are more important than others, but no single factor can be used as a reliable TSWV control measure. However, research data and on-farm observations indicate that when combinations of several factors are considered, an individual field's risk of losses due to TSWV can be estimated. There is no way to predict with total accuracy how much TSWV will occur in a given situation or how the disease will affect yield, but by identifying high risk situations, growers can avoid those production practices that are conducive to major yield losses. The University of Georgia Tomato Spotted Wilt Risk Index for Peanuts was developed as a tool for evaluation of risk associated with individual peanut production situations. When high-risk situations are identified, growers should consider making modifications to their production plan (i.e. variety, planting date, seeding rate, etc.) to reduce their level of risk. **Using preventative measures to reduce risk of TSWV losses is the only way to control the disease. After the crop is planted, there are no known control measures**

The index combines what is known about individual risk factors into a comprehensive, but simple, estimate of TSWV risk for a given field. It assigns a relative importance to each factor so that an overall level of risk can be estimated. The first version of the index was developed in 1996 and was based on available research data. Small plot studies and on-farm observations have been used to evaluate index performance each year since release of the first version. In research plots where multiple TSWV management practices were used, as little as 5% of the total row feet were severely affected by TSWV compared to over 60% in high-risk situations. Yield differences were over 2000 lbs. per acre in some cases. Results of these and other validation studies have been used to make modifications in all subsequent versions of the index. Future changes are expected as we learn more about TSWV.

Keep in mind that the risk levels assigned by this index are relative. In other words, if this index predicts a low level of risk, we would expect that field to be less likely to suffer major losses due to TSWV than a field that is rated with a higher level of risk. A low index value does not imply that a field is immune from TSWV losses. Losses due to TSWV vary from year to year. In a year where incidence is high statewide, even fields with a low risk level may experience significant losses.

### Measuring Risk to Fungal Diseases of Peanut

The index presented here is based upon better understanding of factors that affect disease incidence and severity. It is designed to help growers approximate the level of risk that they face from foliar and soilborne diseases in the coming season. More importantly, it should serve as an educational tool that allows the grower to predict the benefits of different management practices he makes in hopes of producing a better crop.

The risks associated with leaf spot, white mold and Rhizoctonia limb rot diseases are determined independently in the Peanut Disease Risk index. The magnitude of points associated with each variable is not linked between soilborne and foliar disease categories. However, the points allotted to each variable in the PEANUT Rx are weighted within a disease category according to the importance of the variable (such as variety or field history) to another variable (such as planting date). For example, within the category for leaf spot diseases, a maximum of 30 points is allotted to the variable "variety" while 0 points is allotted to the variable "row pattern". The magnitude of points assigned within each category and to each variable has been checked to ensure that the total number of points assigned to a field is consistent with research and

experience. For example, while it would be possible for a non-irrigated field planted to ‘Georgia Green’ to fall in the lowest risk category, a field of irrigated ‘Georgia Green’ could be in a category of “medium risk” but not “low risk”.

**NOTE:** When weather conditions are favorable for fungal diseases, especially when rainfall is abundant, even fields at initial “low risk” to fungal diseases may become “high risk”.

## PEANUT Rx

For each of the following factors that can influence the incidence of tomato spotted wilt or fungal diseases, the grower or consultant should identify which option best describes the situation for an individual peanut field. An option must be selected for each risk factor unless the information is reported as “unknown”. A score of “0” for any variable does not imply “no risk”, but that this practice does not increase the risk of disease as compared to the alternative. Add the index numbers associated with each choice to obtain an overall risk index value. Compare that number to the risk scale provided and identify the projected level of risk.

### Peanut Variety

| Variety <sup>1</sup>           | Spotted Wilt Points | Leaf Spot Points | Soilborne Disease Points |          |
|--------------------------------|---------------------|------------------|--------------------------|----------|
|                                |                     |                  | White mold               | Limb rot |
| Flavorrunner 458 <sup>2</sup>  | 50                  | unknown          | unknown                  | unknown  |
| NC-V 11                        | 35                  | 30               | 30                       | 25       |
| AT-215 <sup>*,2</sup>          | 30                  | 30               | 30                       | unknown  |
| Georgia Green                  | 30                  | 20               | 25                       | 15       |
| Florida Fancy <sup>*,2</sup>   | 25                  | 20               | 20                       | unknown  |
| McCloud <sup>2</sup>           | 20                  | 25               | 20                       | unknown  |
| AP-4 <sup>*</sup>              | 20                  | 20               | 15                       | unknown  |
| C-99R <sup>4</sup>             | 20                  | 15               | 15                       | 25       |
| AT 3085RO <sup>2</sup>         | 15                  | 30               | 25                       | unknown  |
| Georgia-05E                    | 15                  | 20               | 25                       | unknown  |
| Georgia Greener <sup>*,3</sup> | 15                  | 20               | 20                       | unknown  |
| Georgia-02C <sup>2,3,5</sup>   | 15                  | 20               | 10                       | 20       |
| Georgia-03L <sup>5</sup>       | 15                  | 15               | 10                       | 20       |
| AP-3 <sup>4</sup>              | 10                  | 25               | 10                       | 25       |
| Georgia-06G                    | 10                  | 25               | 25                       | unknown  |
| Florida-07 <sup>2</sup>        | 10                  | 20               | 15                       | unknown  |
| Georgia-07W <sup>*</sup>       | 10                  | 15               | 10                       | unknown  |
| Tifguard <sup>6</sup>          | 10                  | 15               | 10                       | unknown  |
| York <sup>2</sup>              | 10                  | 10               | 5                        | unknown  |
| Georganic                      | 5                   | 10               | 10                       | unknown  |

*\*Data for these new varieties is limited and risk ratings will undergo changes as needed in the future.*

*<sup>1</sup>Adequate research data is not available for all varieties with regards to all diseases. Additional varieties will be included as data to support the assignment of an index value are available.*

*<sup>2</sup>High oleic variety.*

*<sup>3</sup>Georgia-02C and Georgia Greener have better resistance to *Cylindrocladium black rot (CBR)* than do other peanut varieties.*

*<sup>4</sup>AT3085RO is less resistant to CBR and are not recommended for fields where this disease is a problem.*

*<sup>5</sup>The malady referred to as “funky” or “irregular” leaf spot tends to be most severe in Georgia-02C and Georgia-03L. Although symptoms can look like early leaf spot, the cause “funky” leaf spot is unknown. Disease losses are not typically associated with funky leaf spot.*

*<sup>6</sup>The new variety Tifguard has excellent resistance to the peanut root-knot nematode*

## Planting Date

| Peanuts are planted: | Spotted Wilt Points <sup>1</sup> | Leaf Spot Points | Soilborne Disease Points |          |
|----------------------|----------------------------------|------------------|--------------------------|----------|
|                      |                                  |                  | White mold               | Limb rot |
| Prior to May 1       | 30                               | 0                | 10                       | 0        |
| May 1 to May 10      | 15                               | 0                | 5                        | 0        |
| May 11-May 31        | 5                                | 5                | 0                        | 0        |
| June 1-June 10       | 10                               | 10               | 0                        | 5        |
| After June 10        | 15                               | 10               | 0                        | 5        |

## Plant Population (final stand, not seeding rate)

| Plant stand                 | Spotted Wilt Points <sup>1</sup> | Leaf Spot Points | Soilborne Disease Points |          |
|-----------------------------|----------------------------------|------------------|--------------------------|----------|
|                             |                                  |                  | White mold <sup>2</sup>  | Limb rot |
| Less than 3 plants per foot | 25                               | NA               | 0                        | NA       |
| 3 to 4 plants per foot      | 15                               | NA               | 0                        | NA       |
| More than 4 plants per foot | 5                                | NA               | 5                        | NA       |

<sup>1</sup> Plant when soil temperatures and moisture levels favor rapid, uniform seedling emergence. Less than optimum conditions at planting can result in poor stands or delayed, staggered emergence, which can increase spotted wilt. Note: twin rows are considered to be one row for purposes of determining number of plants per foot of row.

<sup>2</sup> Higher final plant populations increase white mold risk.

## At-Plant Insecticide

| Insecticide                          | Spotted Wilt Points* | Leaf Spot Points | Soilborne Disease Points |          |
|--------------------------------------|----------------------|------------------|--------------------------|----------|
|                                      |                      |                  | White mold               | Limb rot |
| None                                 | 15                   | NA               | NA                       | NA       |
| Other than Thimet 20G or Phorate 20G | 15                   | NA               | NA                       | NA       |
| Thimet 20G, Phorate 20G              | 5                    | NA               | NA                       | NA       |

An insecticide's influence on the incidence of TSWV is only one factor among many to consider when making an insecticide selection. Phorate and Thimet will not control peanut root-knot nematode.

## Row Pattern

| Peanuts are planted in: | Spotted Wilt Points | Leaf Spot Points | Soilborne Disease Points |          |
|-------------------------|---------------------|------------------|--------------------------|----------|
|                         |                     |                  | White mold               | Limb rot |
| Single rows             | 15                  | 0                | 5                        | 0        |
| Twin rows               | 5                   | 0                | 0                        | 0        |

## Tillage

| Tillage pattern | Spotted Wilt Points | Leaf Spot Points | Soilborne Disease Points |          |
|-----------------|---------------------|------------------|--------------------------|----------|
|                 |                     |                  | White mold               | Limb rot |
| conventional    | 15                  | 10               | 0                        | 0        |
| reduced*        | 5                   | 0                | 0                        | 5        |

\* For fungal diseases, this does not apply for reduced tillage situations where peanut is following directly behind peanut in a rotation sequence. Limb rot can exist on some types of crop debris and use the organic matter as a bridge to the next peanut crop.

\*\*"Funky" or "irregular" leaf spot tends to be more severe in conservation tillage than in conventional tillage, though this malady is not typically associated with yield losses.

**Classic® Herbicide**

|                    | Spotted Wilt Points | Leaf Spot Points | Soilborne Disease Points |          |
|--------------------|---------------------|------------------|--------------------------|----------|
|                    |                     |                  | White mold               | Limb rot |
| Classic Applied    | 5                   | NA               | NA                       | NA       |
| No Classic Applied | 0                   | NA               | NA                       | NA       |

**Crop Rotation with a Non-Legume Crop**

| Years Between Peanut Crops* | Spotted Wilt Points | Leaf Spot Points | Soilborne Disease Points |          |
|-----------------------------|---------------------|------------------|--------------------------|----------|
|                             |                     |                  | White mold               | Limb rot |
| 0                           | NA                  | 25               | 25                       | 20       |
| 1                           | NA                  | 15               | 20                       | 15       |
| 2                           | NA                  | 10               | 10                       | 10       |
| 3 or more                   | NA                  | 5                | 5                        | 5        |

*\*All crops other than peanut are acceptable in a rotation to reduce leaf spot. Cotton and grass crops will reduce the severity of white mold. Rhizoctonia limb rot can still be a significant problem, especially with cotton, under a longer rotation with favorable conditions, e.g. heavy vine growth & irrigation/ rainfall. Rotation with soybeans can increase risk to white mold, Rhizoctonia limb rot, and CBR. Rotation with grass crops will decrease the potential risk of limb rot; tobacco and vegetables will not.*

*Note that rotation of peanuts with soybeans may lower the risk for leaf spot diseases, but may increase the risk to CBR or peanut root-knot nematodes and only has minimal impact on risk to white mold or to Rhizoctonia limb rot.*

**Field History**

| Previous disease problems in the field?* | Spotted Wilt Points | Leaf Spot Points | Soilborne Disease Points |          |
|--|---------------------|------------------|--------------------------|----------|
|  |                     |                  | White mold               | Limb rot |
| NO                                       | NA                  | 0                | 0                        | 0        |
| YES                                      | NA                  | 10               | 15                       | 10       |

*\* "YES" would be appropriate in fields where leaf spot and/or soilborne diseases were a problem in the field despite use of a good fungicide program.*

**Irrigation**

| Does the field receive irrigation? | Spotted Wilt Points | Leaf Spot Points | Soilborne Disease Points |          |
|------------------------------------|---------------------|------------------|--------------------------|----------|
|                                    |                     |                  | White mold               | Limb rot |
| NO                                 | NA                  | 0                | 0                        | 0        |
| YES                                | NA                  | 10               | 5*                       | 10       |

*\* Irrigation has a greater affect on Rhizoctonia limb rot than on white mold or Cylindrocladium black rot (CBR).*

## Calculate Your Risk

Add your index values from:

| Variables                      | Spotted Wilt Points | Leaf Spot Points | White Mold Points | Rhizoctonia Limb Rot Points |
|--------------------------------|---------------------|------------------|-------------------|-----------------------------|
| Peanut Variety                 |                     |                  |                   |                             |
| Planting Date                  |                     |                  |                   |                             |
| Plant Population               |                     | ----             |                   | ----                        |
| At-Plant Insecticide           |                     | ----             | ----              | ----                        |
| Row Pattern                    |                     |                  |                   |                             |
| Tillage                        |                     |                  |                   |                             |
| Classic <sup>®</sup> Herbicide |                     | ----             | ----              | ----                        |
| Crop Rotation                  | ----                |                  |                   |                             |
| Field History                  | ----                |                  |                   |                             |
| Irrigation                     | ----                |                  |                   |                             |
| Your Total Index Value         |                     |                  |                   |                             |

### Interpreting Your Risk Total

Point total range for tomato spotted wilt = 35-155.

Point total range for leaf spot = 10-100.

Point total range for white mold = 10-95.

Point total range for Rhizoctonia limb rot = 15-75.

## Risk

|   | Spotted Wilt Points | Leaf Spot Points | Soilborne Points |              |
|---|---------------------|------------------|------------------|--------------|
|   |                     |                  | white mold       | limb rot     |
| <b>High Risk</b>  | <b>≥115</b>         | <b>65-100</b>    | <b>55-80</b>     | <b>45-75</b> |
| High Risk for fungal diseases: Growers should always use full fungicide input program in a high-risk situation.   |                     |                  |                  |              |
| <b>Medium Risk</b>  | <b>70-110</b>       | <b>40-60</b>     | <b>30-50</b>     | <b>30-40</b> |
| Medium Risk for fungal diseases: Growers can expect better performance from standard fungicide programs. Reduced fungicide programs in research studies have been successfully implemented when conditions are not favorable for disease spread.  |                     |                  |                  |              |
| <b>Low Risk</b>   | <b>≤65</b>          | <b>10-35</b>     | <b>10-25</b>     | <b>15-25</b> |
| Low Risk for fungal diseases: These fields are likely to have the least impact from fungal disease. Growers have made the management decisions which offer maximum benefit in reducing the potential for severe disease; these fields are strong candidates for modified disease management programs that require a reduced number of fungicide applications. |                     |                  |                  |              |

## Examples of Disease Risk Assessment

### Situation 1

A grower plants **Georgia Green** (30 spotted wilt points, 20 leaf spot points, 25 white mold points, 15 limb rot points) on **May 5** (15 spotted wilt points, 0 leaf spot points, 5 white mold points, 0 limb rot points), with **two years between peanut crops** (0 spotted wilt points, 10 leaf spot points, 10 white mold points, 10 limb rot points) on **conventional tillage** (15 spotted wilt points, 10 leaf spot points, 0 white mold points, 0 limb rot points), **single row spacing** (15 spotted wilt points, 0 leaf spot points, 5 white mold points, 0 limb rot points), in an **irrigated field** (0 spotted wilt points, 10 leaf spot points, 5 white mold points, 10 limb rot points) with a **history of leaf spot disease**, but **not soilborne diseases** (0 spotted wilt points, 10 leaf spot points, 0 white mold points, 0 limb rot points) using **Classic<sup>®</sup> herbicide** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), **Temik 15G at-plant insecticide** (15 spotted wilt points, 0 leaf spot points, 0 white

mold points, 0 limb rot points) with a **final plant population** of 2.8 plants per foot of row (25 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points).

**Points:**

Spotted wilt: **120** (high risk) leaf spot: **60** (medium risk), white mold: **50** (medium Risk), Rhizoctonia limb rot: **35** (medium risk).

**Situation 2**

A grower plants **Georgia-02C** (15 spotted wilt points, 20 leaf spot points, 10 white mold points, 20 limb rot points) on **May 15** (5 spotted wilt points, 5 leaf spot points, 0 white mold points, 0 limb rot points), with **three years between peanut crops** (0 spotted wilt points, 5 leaf spot points, 5 white mold points, 5 Rhizoctonia limb rot points) on **strip tillage** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 5 limb rot points), **twin row spacing** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), in an **irrigated field** (0 spotted wilt points, 10 leaf spot points, 5 white mold points, 10 limb rot points) with **no history of leaf spot disease or soilborne disease** (0 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points) with **NO Classic® herbicide** (0 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), **phorate at-plant insecticide** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points) with a **final plant population** of 4.2 plants per foot (5 spotted wilt points, 0 leaf spot points, 5 white mold points, 0 limb rot points).

**Points:**

Spotted wilt: **40** (low risk), leaf spot: **40** (medium risk), white mold: **25** (low risk), Rhizoctonia limb rot: **40** (medium risk).

**Situation 3**

A grower plants **Georgia Green** (30 spotted wilt points, 20 leaf spot points, 25 white mold points, 15 limb rot points) on **May 15** (5 spotted wilt points, 5 leaf spot points, 0 white mold points, 0 limb rot points), with **one year between peanut crops** (0 spotted wilt points, 15 leaf spot points, 20 white mold points, 15 limb rot points) on **conventional tillage** (15 spotted wilt points, 5 leaf spot points, 0 white mold points, 0 limb rot points), **twin row spacing** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), in an **irrigated field** (0 spotted wilt points, 10 leaf spot points, 5 white mold points, 10 limb rot points) with **a history of leaf spot disease, white mold, but not Rhizoctonia limb rot** (0 spotted wilt points, 10 leaf spot points, 15 white mold points, 0 limb rot points) with **NO Classic® herbicide** (0 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), **Orthene insecticide** (15 spotted wilt points, 0 leaf spot points, 0 white mold, 0 limb rot points) with a **final plant population** of 3.5 plants per foot of row (15 spotted wilt points, 0 leaf spot points, 0 white mold, 0 limb rot).

**Points:**

Spotted wilt points: **85** (medium risk), leaf spot risk: **65** (high risk), white mold: **65** (high risk), limb rot: **40** (medium risk).

**Situation 4**

A grower plants **AP-3** (10 spotted wilt points, 25 leaf spot points, 10 white mold points, 25 limb rot points) on **April 28** (30 spotted wilt points, 0 leaf spot points, 10 white mold points, 0 limb rot points) with **one year between peanut crops** (0 spotted wilt points, 15 leaf spot points, 20 white mold points, 15 limb rot points) on **strip tillage** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 5 limb rot points), **twin row spacing** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points) in a **non-irrigated field** (0 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points) with **a history of leaf spot, white mold, and Rhizoctonia limb rot** (0 spotted wilt points, 10 leaf spot points, 15 white mold points, 10 limb rot points), with **NO Classic® herbicide** (0 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), using **Thimet at-plant insecticide** (5 spotted wilt points, 0 leaf spot points, 0 white mold, 0 limb rot

points) with a **final plant population** of 4.4 plants per foot of row (5 spotted wilt points, 0 leaf spot points, 5 white mold, 0 limb rot).

**Points:**

Spotted wilt risk: **60** (low risk) leaf spot risk: **50** (medium risk), white mold: **60** (high risk), limb rot: **55** (high risk).

**“Planting Windows” to Attain Low Risk for Spotted Wilt**

If planting date were the only factor affecting spotted wilt severity, growers would have no flexibility in when they planted. Fortunately, other factors are involved and by choosing other low risk options, growers can expand their planting date window. Remember, the goal is to have a total risk index value of 65 or less, regardless of which combination of production practices works best for you. The following table demonstrates how the planting date window expands as other risk factors go down. For example, where a grower achieves a good stand, uses strip tillage and twin rows, and Thimet, but does not use Classic, he may plant a “10” or “15” point variety at ANY time in the season and still be at “Low” risk for spotted wilt.

|   | Points assigned to the peanut variety of interest   |               |            |
|---|---|---------------|------------|
|   | 20  | 15            | 10         |
| <b>Production practices and final stand</b>                               | <b>Planting date options to achieve a “LOW RISK” for Spotted Wilt using above varieties</b> |               |            |
| Poor stand, conventional tillage, single rows, Temik, Classic is used     | NONE  | NONE          | NONE       |
| Average stand, twin rows, conventional tillage, Thimet, no use of Classic | May 11-25   | May 11-June 5 | May 1-June |
| Good stand, strip tillage, twin rows, Thimet, no use of Classic           | After May 1   | ANY           | ANY        |