

# Pest Alert

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## JULY 25 VEGNET REPORT COLORADO CORN DISEASES PHYTOPHTHORA ROOT ROT SHOWS UP

### JULY 25 VEGNET REPORT

During the last week, daily high temperatures averaged in the upper 80s to mid 90s at most sites in the region, except for Center with an average of 76. During the last week, rainfall averaged less than 0.50 inches at most sites; however, Fort Morgan, Peckham, Rocky Ford and Tribune each received more than 1 inch. A few sites received a trace or no rain last week, and included Avondale, Grand Junction, Yuma and Garden City. The upcoming week is forecasted at average moisture and above average temperature at most sites.

Continue to scout crops at least 1 – 2 times weekly for evidence of early outbreaks or secondary activity of pests. Check with your local consultants and other experts on crop status and the initiation or maintenance of disease protection strategies when either disease is confirmed in the nearby region and/or a disease threat does exist. Remember to rotate fungicide chemistry when possible to avoid selection of fungicide-resistant strains.

#### **DRY BEAN Pests:**

As of July 25, the dry bean crop continues with early to mid pod phases, and there are still no reports of rust problems in the region. Bacterial brown spot continues to be a major problem in many parts of eastern Colorado, western Kansas and southwestern Nebraska; and common bacterial blight is taking advantage of the warm, moist conditions in some bean fields throughout the region. Maintain the copper bactericide program on a 7 – 10 day schedule throughout early to mid pod fill phases, especially for light red kidney and yellow beans. Ground-rig applications are preferable until row closure; then rely upon aerial sprays (4 – 5 gal of water/A) or chemigation (less than ¼ in of water/A) until the risk of infection is low due to absence of disease and/or persistent hot, dry conditions.

On ground with a history of white mold planted to susceptible, vine-type pintos or great northern, consider application of a white mold fungicide (Topsin, Benomyl) at 100% to full bloom to protect blossoms from becoming colonized by the fungus and initiating white mold infection beneath the plant canopy after row closure. Emphasize irrigation water management to extend intervals between irrigations to reduce excess surface moisture beneath the plant canopy. White mold infection should begin to appear in fields with a history of the disease that are in 100% bloom to early pod stages.

### **ONION Pests:**

As of July 25, many transplanted fields are in various stages of harvest. Bacterial diseases like Soft Rot persist in the Front Range area, and Xanthomonas Leaf Blight continues to persist in the Arkansas Valley. Once confirmed, fungicides like the EBDCs (Maneb, Mancozeb, Dithane, Penncozeb) tank mixed with copper based bactericides (Kocide, Champ, Nu Cop among others) at full labeled rates have been extremely effective, especially when a non-ionic surfactant is added in sufficient gallonage.

The disease model (PRI = 300, RH = > 95%) suggests that Purple Blotch may occur in some regions in transplanted fields, and now possibly in some seeded fields as well. Continue to scout fields at least once, and preferably twice, a week for early signs of disease in the field or region. Maintain applications of protectant fungicides including the EBDCs, coppers, Bravo and Rovral in high gallonage plus adjuvant for good coverage on a 7 to 10 day interval. Rotate fungicide chemistry every other application.

If Downy Mildew reappears in the region, continue to include EBDCs and/or Ridomil tank mixes in the spray program. However, recent high temperatures have reduced the threat of serious damage by Downy Mildew.

### **POTATO Pests:**

The Early Blight and Late Blight disease models exceeded the threshold earlier this month for many sites in northeastern Colorado, even assuming a late May emergence date with hours greater than 80 % relative humidity.

Maintain protectant sprays (EBDCs, Bravo, Polyram, Quadris, etc.) on a 5 to 7 day interval for Early Blight. There are still no reports of Late Blight in Colorado or neighboring states, but maintain an aggressive Early Blight fungicide program which will also provide initial protection against the Late Blight pathogen. If Late Blight is detected in your region, incorporate newer chemistry such as Acrobat and others.

Early fields of potatoes are now being desiccated in northeastern Colorado. Thoroughly destroy foliage and potential sources of inoculum which can threaten later maturing fields downwind. (Schwartz)

## **COLORADO CORN DISEASES**

Corn diseases are not normally a problem under Colorado irrigated corn growing systems. But in recent years the occurrence of gray leaf spot (*Cercospora zea-maydis*) has increased in eastern Nebraska and eastern Kansas. It was reported last week in central Nebraska and in a few instances the lesions are reported to have moved to the ear leaf. In susceptible varieties this fungus disease can have considerable impact on yield. Weather conditions, warm and wet, are essential for the fungus to develop and spread.

The University of Nebraska has recently put out a new fact sheet on gray leaf spot. Cooperative Extension **NebGuide G1384, *Gray Leaf Spot of Corn*** provides details on the risk factors associated with the fungus and the disease it causes. While some of this information is relevant to Colorado, it is important to remember that we seldom see the same kinds of foliar problems that occur in Nebraska and Kansas. The disease is usually found only in warm/hot humid areas. Other than the 2 non-confirmed reports from Lamar and Burlington in 1997, we have not found it in Colorado. But with the unusual rain patterns we are having this season there is potential for this disease to occur in Colorado and fields should be monitored.

Gray leaf spot symptoms show as small lesions on maturing corn leaves. They are pale brown or gray to tan, the lesions are narrow (initially between the larger veins) and somewhat rectangular. The spots may coalesce in time resulting in dead leaves. First symptoms are seen on the lower leaves. The fungus survives in the debris in the field and is more prevalent in reduced tillage systems. Also the fungus can also attack barnyardgrass, Johnsongrass and other Sorghum spp.

Gray leaf spot management is based on use of resistant varieties in areas where the disease is known to occur. Reduction of field debris with tillage and rotation are both important in reducing fungus survival. If a situation develops where the disease starts to develop and weather is forecast to continue warm and wet, fungicides may be necessary (I have never recommended a foliar fungicide on corn to this date!). Jim Stack, University of Nebraska Extension pathologist at Clay Center, points out that Tilt, Penncozeb 75DF and Penncozeb 80WP are all labeled for gray leaf spot on corn. Jim further notes (CropWatch 7-23-99) that Novartis has received a 24C label for Tilt. Tilt is the only fungicide with the ability to eradicate the fungus once the plant is infected and just as important, can be applied up to 30 days prior to harvest.

As of now gray leaf spot and other foliar diseases pose no problem for Colorado growers. Generally even if found, they are usually so late in the season that for all practical purposes cause no significant loss of yield or quality.

In the past virus and virus-like diseases have rarely been found. In the case of the new High Plains Disease, little to no threat to field corn production is posed. If it does occur it is easily managed with variety selection and other cultural management tactics. It has caused some damage and concern on the west slope and should be monitored there.

There are three groups of problems that on occasion cause some damage in corn in Colorado. These are:

***Plant emergence failure (damping-off)***                      ***Stalk rots***                      ***Smuts***

### **Plant emergence failure or damping-off diseases**

I was told that earlier this season some instances of poor stands resulted from failure of plants to emerge or seedlings death developed. While frequently diagnosed as damping-off, such problems are not always a problem caused by damping-off fungi. Both soil moisture and temperature can be involved as well as compaction and or soil surface crusting. Damping-off fungi can have an effect if seed is planted early and exceptional wet and cool weather develops, which in many areas was just the problem we had this spring. Usually the water mold type fungi, ***Pythium*** species, and/or ***Fusarium*** fungi are associated with seed rot and damping-off. Some of this can be prevented with appropriate seed treatments. But a seed treatment is not the only or sometimes not a solution.

Proper seed bed preparation, moisture and time of planting are critical. Planting into a dry seed bed and then trying to irrigate the corn can also cause problems with crusting and in some parts of fields rotting due to excessive water and or poor drainage.

### **Stalk rots**

There are actually several stalk rot fungi and at least one bacterial stalk rot found in Colorado. In some instances any one of these can cause severe damage and yield loss. The most important stalk rot diseases and their causal agents are:

Fusarium stalk rot-

*Fusarium moniliforme*  
*Fusarium subglutinans*

Gibberella stalk rot-

*Gibberella zeae* (*Fusarium graminearum*)

Charcoal stalk rot-

*Macrophomina phaseolina*

Bacterial stalk rot-

*Erwinia* spp

Goss's wilt-

*Clavibacter michiganense* subsp. *nebraskense* (syn. *Corynebacterium nebraskense*)

While resistant varieties are available for most of the stalk rots there are times when a particular situation gives rise to a stalk rot problem that was not expected.

Fusarium stalk rots are always found to some degree or less. Usually the amount of damage is associated as much with the cultural practices as with varieties. Crop stress is a critical factor in predisposing corn to damage from the *Fusarium* stalk rot fungi. In many instances corn can support a certain level of *Fusarium* invasion without showing a significant loss of yield or quality.

Gibberella stalk rot is potentially the most damaging under Colorado conditions. Fortunately it does not consistently develop and therefore is not an annual problem. While proper rotations, variety selection and stress management will minimize damage, current corn growing practices do not utilize rotations as effectively as is possible.

Charcoal stalk rot is generally found only in the southern part of the state but in some years has been found in dry land corn on the plains. It is a heat and stress driven disease and appropriate stress management practices will help to minimize damage.

Bacterial stalk rot is only found when temperatures are high (90 F or above) during the night and fields are heavily fertilized or heavy manure applications have been used. This disease has only been found in a few fields a couple of times over the last 15 years and is not a major problem over a wide area.

Goss's wilt has not been seen for several years but showed up this year (see last week's Pest Alert) and last year. It is always associated with highly susceptible varieties, lack of rotation and low to minimum tillage.

Stalk rot management depends on variety selection, rotation and stress management.

## **Smut diseases**

There are two smut diseases of corn in Colorado. These are:

Common smut caused by *Ustilago maydis*

Head smut caused by *Sphacelotheca reiliana*

The two smut diseases are very different in both the way they attack the plant and the way the plant is affected. Common smut infections come from wind borne spores and infect the plant locally through

wounds. Common smut is not systemic or seed borne. Head smut infections in contrast, come from soil borne spores and develop systemically through the seedling into the mature plant.

Common smut infects any part of the plant while head smut shows only in the tassels and the ears. Head smut, if infection occurs early, will also cause considerable stunting of the plant.

Smut management generally depends on resistant varieties. Certain cultural practices will help to minimize damage but are not always successful.

### **Other**

In 1997 a unique fungus stalk rot disease was found in the east and southeast areas of the state. Pyrenochaeta stalk rot, caused by *Pyrenochaeta terrestris*, causes shallow, dark brown, blotchy lesions that blend with reddish areas as the plant matures. These lesions commonly are found at the base of the stalk and frequently below the soil line. Mature lesions will have very small dark pepper-grained-sized fungal bodies. The disease is considered of little importance and no specific management tactics are recommended.

High plains disease is a new virus disease of corn and wheat that was first found in the Wiggins area in 1993. Subsequent research has shown it to be principally spread by the wheat curl mite and in very rare cases, by seed. Management is easily accomplished through variety selection, vector suppression and planting timing and location.

### **Corn diseases under Colorado conditions are readily managed with:**

Rotations	Variety selection	Clean seed selection
Seed treatment (Brown)	Tillage	Stress management

### **PHYTOPHTHORA ROOT ROT SHOWS UP**

It is not surprising with the wet spring and early summer we have had that we are starting to get samples of Phytophthora root and crown rot on vegetables. The first ones that came in we're on peppers. There, a purple color develops on the stem at the soil level followed by a sudden wilting without any yellowing or chlorotic stage between. Splashing rain or irrigation then moves the fungus to the stems, leaves and fruit with subsequent spotting and rotting developing.

The fungus survives in plant debris and on other hosts such as tomato, eggplant and cucurbits. The other case we have encountered is in a pumpkin field that was wilting. There was a root rot and the pith of the roots were a reddish pithy color and texture. The lower and poorly drained areas of the field were most effected. This crown and root rot stage is associated with over irrigated, poorly drained fields and, in this case, excessive earlier rainfall.

The same fungus, *Phytophthora capsici*, causes both diseases. The disease is managed by planting on raised beds, irrigation management (sometimes running water in alternate rows) and appropriate fungicide (metalaxyl) use. The judicious use of a good rotation system (avoid tomato, pepper and eggplant for a least 3 years) is essential. (Brown)

## CONTRIBUTORS

**K. George Beck**, Extension Weed Specialist, Perennial and Range (970) 491-7568;  
gbeck@lamar.colostate.edu

**William M. Brown**, Extension Plant Pathologist, IPM and General (970) 491-6470 ;  
wbrown@ceres.agsci.colostate.edu

**Whitney S. Cranshaw**, Extension Entomologist, Urban and Horticulture (970) 491-6781;  
wcransha@ceres.agsci.colostate.edu

**Sandra McDonald**, Extension Specialist, Environmental and Pesticide Education (970) 491-6027;  
smcdonal@lamar.colostate.edu

**Scott J. Nissen**, Extension Weed Specialist, Row Crops (970) 491-3489;  
snissen@lamar.colostate.edu

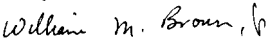
**Frank B. Peairs**, Extension Entomologist, Field Crops (970) 491-5945;  
fbpeairs@lamar.colostate.edu

**Howard F. Schwartz**, Extension Plant Pathologist, Row and Vegetable Crops (970) 491-6987;  
hfspp@lamar.colostate.edu

**Philip H. Westra**, Extension Weed Specialist, Row Crops (970) 491-5219;  
pwestra@ceres.agsci.colostate.edu

Where trade names are used, no discrimination is intended, and no endorsement by the Cooperative Extension Service is implied.

Sincerely,

  
William M. Brown, Jr.  
Extension Plant Pathologist