

CORN, SOYBEAN, AND ALFALFA HOTSPOTS IN 2000

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The Plant Disease Diagnostics Clinic (PDDC) at the University of Wisconsin-Madison provides disease identification and control recommendations for agricultural producers and agribusinesses in the state of Wisconsin. In 2000, approximately 8% of the PDDC's samples were field and forage crop samples, including field corn, soybeans, and alfalfa. Heavy rains in May and June provided ideal conditions for the development of a variety of field and forage crop diseases.

Field Corn

The majority of field corn samples processed by the PDDC originated in southern Wisconsin (Columbia, Dane, Dodge, Grant, Green, Iowa, Jefferson, Lafayette, Rock and Sauk Counties), with limited samples from the central tier of counties (Brown, Chippewa, Clark, Dunn, Eau Claire, Fond du Lac, Monroe, Pierce, Waupaca, Waushara and Wood Counties) and only a single sample from the far north (Washburn County). In general field corn disorders were similar across the entire state and could be divided into three major categories: root rots, leaf blights and stalk rots.

Root rot-type problems began to appear early in the season, in the form of seedling blights. Fungi such as *Pythium* and *Fusarium* began attacking the roots and crowns of young plants in May and June, during the period of heavy rains, and caused substantial stand losses, and overall stunting and poor growth in many areas. Root rots continued to be a problem even late in the growing season. Older corn plants submitted to the PDDC in August and September had substantial browning and decay of root tissue. In some instances the level of decay was so severe that it contributed to lodging problems at some locations.

Leaf blight samples were heaviest in June, but continued to trickle in throughout the growing season. By far the most common foliar problem was anthracnose leaf blight (caused by the fungus *Colletotrichum graminicola*). In virtually every situation where anthracnose was detected, the sample had come from a field where corn had been cropped for two successive years. Other fungal leaf spots/blights that occurred on field corn during the 2000 season included eyespot (caused by *Kabatiella zae*), Northern corn leaf spot (caused by *Bipolaris zeicola*), yellow leaf blight (caused by *Phyllosticta maydis*), common rust (caused by *Puccinia sorghi*) and brown spot (caused by *Physoderma maydis*). Bacterial leaf spots/blights included single samples of holcus spot (caused by *Pseudomonas syringae* pv. *syringae*) and Stewart's wilt (caused by *Erwinia stewartii*).

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By the end of 2000 growing season, stalk rots had become a major problem. *Fusarium graminearum* that had been active in roots early in the season moved into the stalks, leading to severe problems with Gibberella stalk rot. *Colletotrichum graminicola* that had been a problem on leaves early in the season, also moved into the stalks leading to anthracnose stalk rot. As a result of increased stalk rot problems, lodging became an issue in many areas.

Soybeans

Soybean samples processed by the PDDC were fairly evenly divided between counties in southern Wisconsin (Columbia, Dane, Dodge, Grant, Green, Rock and Washington Counties) and central Wisconsin (Adams, Brown, Buffalo, Calumet, Fond du Lac, Manitowoc, Marathon, Outagamie, St. Croix, Trempealeau, Waupaca, Waushara and Wood Counties) with only three samples coming from northern Wisconsin (Marinette County).

Many clients submitted samples after noting foliar symptoms of Septoria leaf spot (caused by *Septoria glycines*). However, this disease tends to be a secondary problem and an indicator of plant stress caused by more serious diseases. In 2000, the primary cause of stress was Phytophthora root rot (caused by *Phytophthora sojae*). Other root rot pathogens, such as *Pythium* spp. and *Fusarium* spp., were often associated with plants with Phytophthora root rot. These pathogens may also have been contributing to overall soybean stress. As with root rots in corn, heavy rains early in the growing season were a major factor in the development of root rots of soybean.

Another recurring disease on soybean samples this year was stem blight (caused by *Diaporthe phaseolorum*). Bleached stems with rows of black dots (reproductive structures of the causal fungus) are characteristic of this disease, and these symptoms/signs began to appear on samples submitted in late August. Stem blight samples continued to arrive at the PDDC into October. Other diseases/injuries of soybean that were submitted to the PDDC this summer included white mold (caused by *Sclerotinia sclerotiorum*) and injury from the herbicide dicamba.

Alfalfa

Like soybean samples, alfalfa samples processed by the PDDC were fairly evenly divided between counties in southern Wisconsin (Dane, Dodge, Grant, Green, Lafayette, and Rock Counties) and central Wisconsin (Brown, Chippewa, Manitowoc, Marquette, Waushara and Winnebago Counties) with only three samples coming from more northern counties (Barron and Marinette Counties). Alfalfa samples included plant samples and soil samples to be tested for the presence of races 1 and 2 of *Aphanomyces euteiches*, the cause of Aphanomyces root rot.

By far, the most common disease of alfalfa was Aphanomyces root rot. Starting early in the season clients submitted plants that were stunted and yellow, with rotted lateral roots. These are classic symptoms of Aphanomyces root rot. Microscopic inspection of the diseased roots yielded resting spores (oospores) of *A. euteiches*. Phytophthora root rot (caused by a related fungus, *Phytophthora medicaginis*) was also fairly common in alfalfa this past season. *P. medicaginis*, in contrast to *A. euteiches*, typically attacks tap roots, causing lesions and oftentimes plant death. Increased activity by *A. euteiches* and *P. medicaginis* in 2000 was likely due to heavy rains in the early summer. Other diseases that were present but infrequent in submitted samples included crown rots (caused by *Phoma medicaginis*, *Rhizoctonia solani* and *Fusarium* spp.), spring black stem (caused by *Phoma medicaginis*), and alfalfa mosaic (caused by the alfalfa mosaic virus). Among six soil samples tested for races of *Aphanomyces euteiches*, four tested positive for race 1, one tested positive for race 2 and one did not appear to have significant levels of either race.



For a complete listing of plant diagnoses performed at the PDDC, as well as further information on (and photos of) many of diseases discussed above, visit the PDDC website at

www.plantpath.wisc.edu/pddc. For regular updates on PDDC diagnoses of field, forage and vegetable crops during the growing season, see the [Wisconsin Crop Manager](http://ipcm.wisc.edu/wcm) at ipcm.wisc.edu/wcm.