



Cornell Hemp

<http://hemp.cals.cornell.edu>

Diseases Affecting Hemp in New York

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Infectious diseases are likely to reduce the yield and quality of hemp as this crop is grown more widely and more frequently in the same fields in New York. The cornerstone of disease management is **prevention**. This is accomplished by planting hemp following crops with no or few pathogens in common with hemp; purchasing viable, clean, certified seed; preparing a good seed bed on a well-drained site; sowing at recommended times, populations, and depths for optimal canopy development and weed suppression; and timely harvest and appropriate post-harvest drying, cleaning, storage and processing of grain, buds, and fibrous tissues. Currently, **the list of fungicides is limited** for control of hemp diseases. Visit www.dec.ny.gov/nyspad, search Products, then Advance Search for 'Industrial Hemp' under Pesticide Use for more information. Research is being conducted to determine the efficacy of synthetic and biological fungicides that could be labeled for future applications.

Pythium seedling blight



Seed rots and seedling blights are caused by seedborne and soilborne microbes, particularly by the oomycete *Pythium* and fungi in the genera *Fusarium*, and *Rhizoctonia*.

White mold



White mold is a significant threat to hemp. The fungus, *Sclerotinia sclerotiorum*, also attacks soybean, forage legumes, and many vegetable crops and broadleaf weeds, and it survives in soil for more than 2 years. Hemp should be grown in rotation with non-host crops such as cereals, and broadleaf weeds should be suppressed.

Pythium wilt



Fusarium wilt



Pythium and *Fusarium* species can become systemic and induce **root, crown, and wilt symptoms**, and reduce yield.

Botrytis gray mold is the most frequently encountered disease of hemp in NY in both fields and greenhouses. It is favored by high humidity and poor air flow.

Gray mold

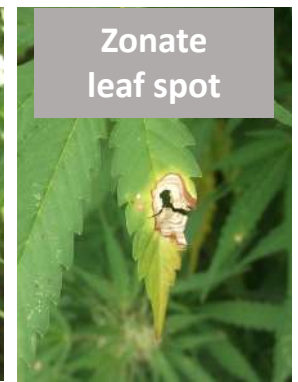




Septoria leaf spot

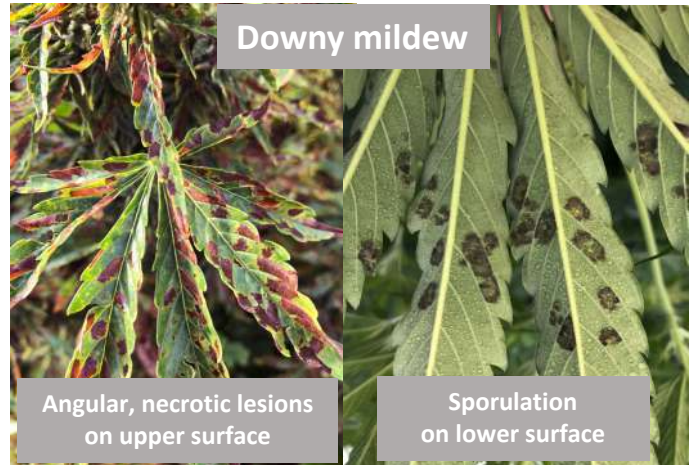


Bipolaris leaf spot



Zonate leaf spot

Diverse leaf spots have been diagnosed in New York in association with several fungal genera including: *Bipolaris*, *Boeremia (Phoma)*, *Cercospora*, *Colletotrichum*, *Cristulariella*, *Exserohilum*, *Leptosphaerulina*, *Phaeomycocentrospora*, *Septoria*, and *Stagonospora*. Septoria leaf spot is currently causing the most damage in New York, while Bipolaris leaf spot occurs most widely. Downy mildew, confirmed in 2020, also shows significant damage potential. We are in the process of demonstrating pathogenicity of the fungal isolates collected from hemp. Planting **resistant hemp varieties** is likely to be an important control measure as we learn more about varietal reactions to the most important fungal pathogens.



Downy mildew

Angular, necrotic lesions on upper surface

Sporulation on lower surface



Hemp rust

Lower leaf surface

Hemp rust was first observed in the fall of 2019 in NY, TN, and VA. The biology and significance of this rust are being investigated.



Powdery mildew

Courtesy of N. Gauthier
kyhempdisease.com

Powdery mildew occurs widely in greenhouses. Biocontrol products and varietal resistance are being evaluated as future control methods.



Fusarium bud blight

Infection of female flower buds and grains is a serious and underestimated disease as it may result in **contamination by *Fusarium* mycotoxins**. We have found contamination of hemp grain in excess of 7 ppm of deoxynivalenol (vomitoxin). We are continuing to survey for mycotoxins in hemp in New York.

Please help Cornell to assess diseases in hemp. If you observe symptoms you think may be disease, contact your local Cornell Cooperative Extension Crops Educator or the Cornell Field Crops Pathology Lab
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