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Abstracts

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Alphabetized by first author's last name

* *SPHAEROPSIS SAPINEA* AND HOST WATER STRESS IN A RED PINE PLANTATION IN CENTRAL WISCONSIN. J.T. Blodgett and G.R. Stanosz, Dept. of Plant Path., Univ. of Wisconsin-Madison, 53706.

Sphaeropsis sapinea causes a shoot blight and canker disease of various conifers. Severe losses of pines due to *S. sapinea* are reported throughout the world, on trees predisposed by stresses, including drought. A field experiment was conducted to determine if water stress affects disease development of *S. sapinea* in red pine plantations. Study plots were established in a nine-year-old red pine plantation in central WI. Removal of vegetation around the study trees and supplemental watering were used to influence the water potential of the pines. The experiment was repeated in two separate plots approximately 1/4 mile apart in two consecutive years (1992, 93). In 1994 the experiment was repeated at a third location, in the same plantation. Shoot tips were inoculated by placing a colonized water agar plug on a wound made by removing a needle fascicle. Results showed that "A" isolates were aggressive and "B" isolates were less aggressive. Non-watered trees with competing vegetation (untreated condition) had significantly lower xylem water potentials (more water stressed) than water or herbicide treatments. Water stress, caused in part by competing vegetation, resulted in increased disease development of trees by *S. sapinea* "A" isolates. The proper identification of the *S. sapinea* morphotype(s) may help estimate risk of damage from disease. Competing vegetation affects water status and disease development, even in relatively moist years, on trees previously considered well-established.

FORMATION OF PRESUMED ADHESIVE MATERIAL BY PRIMARY GERM TUBES AND APPRESSORIA OF BARLEY POWDERY MILDEW. H.H. Edwards. Dept. Biol. Sci., Western Illinois University, Macomb, IL 61455.

Both the primary germ tubes (PGT) and appressoria form a substance sticking to the host cuticle. This presumed adhesive material (PAM) is preserved in ethanol:chloroform (75:25,v/v) fixative containing 0.15% TCA but not in FAA or ethanol:acetic acid. The peak time for PAM in PGTs is 3 h and 10 h for appressoria but disappears 4 h later in both. In LM the PAM stains with trypan blue in hot lactophenol and has a flattened disk-shape. PAM is not preserved in routine SEM processing but is preserved in the ethanol:chloroform fixative, then critical point drying. SEM shows a PAM disk not flat but more doughnut-shaped with appressorium pushed into the middle. Besides adhesion, the PAM may provide a milieu for localizing fungus enzymes.

CONIDIATION OF *PYRENOPHORA TRITICI-REPENTIS* ON WHEAT LEAVES. L.J. Francl, J.G. Jordahl, and E.D. DeWolf. Dept. Plant Pathology, North Dakota State University, Fargo, ND 58105.

Pyrenophora tritici-repentis, the cause of wheat tan spot, conidiates in culture under alternating light and dark cycles with conidiophores formed in light and conidia in dark. The effects of dew and interrupted wet periods on sporulation in nature are not clear. Adult plants of the susceptible spring wheat line ND495 were inoculated with isolate Pti2 after measuring flag and flag-1 leaf areas of three tillers. After a 24-h wet period, plants were held in 21 C growth chambers and subirrigated for 10 days. One flag leaf then was removed to assess conidation and plants were returned to 21 C growth chambers for various light and wetness regimes lasting from 12 to 96 h. Percent disease severity was estimated at the end of each treatment and conidia per mm^2 diseased area were estimated from a sample of leaves blended in 15 ml water (Riaz *et al.* Phytopathology 81:1298-1302). Conidia failed to form prior to treatment or after 24 to 96 h in a continuous light, continuous wet environment. However, unlike the diurnal requirement for conidiation *in vitro*, conidia formed after 12 h in a wet environment in the dark. After 96 h of alternating 8 h dark, wet and 16 h light, dry cycles, 1.7 conidia mm^2 were produced. Conidiophores thus are initiated on wheat leaves in a nonsaturated atmosphere in the light and a wet period during darkness is sufficient for conidiogenesis *in planta*.

TIMING OF APOTHECIAL PRODUCTION BY SCLEROTINIA SCLEROTIORUM IN KENTUCKY. D.E. Hershman. Department of Plant Pathology, University of Kentucky Research and Education Center, Princeton, KY 42445.

Sclerotia harvested in early June (1990-92) from canola (*Brassica napus* var. *oleifera*) with Sclerotinia stem rot were overwintered and subsequently monitored in replicated microplots for the production of apothecia during spring, 1991-93. Each year, apothecial production commenced in late March, peaked during mid- to late April, and ceased in early, mid-, or late May, depending on the year. Apothecial production coincided with canola flowering each year. Data indicating the consistency of both the onset of apothecial production and it's relationship to canola flowering will be useful in the development of stem rot management programs using foliar fungicides. In addition, data on the timing of apothecial production may help to explain the absence of *Sclerotinia sclerotiorum* as a pathogen of soybean in Kentucky, as well as the prominence of *S. sclerotiorum* in tobacco and tomato seedlings produced in newly developed, hydroponic, production systems.

PATHOGENIC VARIATION AMONG ISOLATES OF TUBERCULARIA CAUSING CANKERS OF WOODY PLANTS. M. B. Jackson and R. W. Stack. Dept. of Plant Pathology, North Dakota State Univ. Fargo 58105

Tubercularia ulmea, anamorph of Nectria cinnabarina, causes branch and stem cankers on several kinds of trees and shrubs in the northern plains states. In this region the most common hosts have been Siberian elm, Russian olive, and, more recently, honeylocust. Tubercularia has been variously regarded as a primary pathogen, an opportunistic invader, or a saprophyte, depending on the host studied and the location where the work was done. We collected 11 isolates of T. ulmea from five hosts. They were individually inoculated into wounded stems of Siberian elm and Russian olive plants growing in the greenhouse in a replicated trial. After five weeks, the length of bark necrosis beyond the wound was measured as an index of pathogenicity for each isolate. Extent of cankering ranged from 7 mm to 90 mm and differed significantly between isolates. Pathogenicity of isolates was similar on both hosts although cankers were generally larger on Siberian elm. There was no apparent relationship between the source of the isolates and pathogenicity to either host.

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