

ERRATUM

Annual Proceedings of The American Phytopathological Society for 1974 (Volume 1)

The following abstracts were inadvertently omitted from Volume 1 of the Proceedings. They will be indexed in Phytopathology, Volume 65, and should be cited as pagged here.

DIVISION MEETING ABSTRACTS

NORTHEASTERN DIVISION

ENVIRONMENTAL FACTORS ASSOCIATED WITH AIRBORNE ASCOSPORES OF *GIBBERELLA ZEAE* IN CORN AND WHEAT FIELDS. J. E. Ayers, S. P. Pennypacker, P. E. Nelson, and B. W. Pennypacker. Fusarium Research Center, Department of Plant Pathology, The Pennsylvania State University, University Park 16802.

Mature perithecia of *Gibberella zeae* have been found readily in Pennsylvania on corn debris and on wheat stubble from April through October. Quantitative determinations of numbers of ascospores were obtained with Kramer-Collins atmospheric particle samplers placed in a small plot that had been in continuous no-till corn for several years, and in a harvested wheat field where only stubble remained. Air temperature and relative humidity were monitored at several locations in the corn plot with a Hewlett-Packard Data Acquisition System. No environmental data were collected in the wheat plot. During July, August, and September air temperature varied from 13 to 22 C and relative humidity from 95 to 100% between 2100 and 0600 hours when the maximum numbers of ascospores were collected in the corn plot. Ascospore counts ranged from 3 to 80 per ft³ per hour during this period. The largest number of ascospores (140 per ft³ per hour) were collected in October. Ascospores were collected in the wheat plot during the same time with counts ranging from 3 to 40 per ft³ per hour. Since abundant ascospore inoculum is available for an extended period of time from both corn and wheat, growth of these crops in close proximity may increase the incidence of corn stalk rot and wheat head scab.

COMPUTERIZED FORECASTING SYSTEM FOR STEWART'S BACTERIAL DISEASE ON CORN. L. L. Castor, J. E. Ayers, A. A. MacNab, and R. A. Krause, Department of Plant Pathology, The Pennsylvania State University, University Park 16802.

Forecasts of Stewart's bacterial disease (caused by *Erwinia stewartii*) have been made accurately for many years by relating a winter temperature index (derived by summing the mean monthly temperatures for December, January, and February) to the survival of the insect vector of the disease, the corn flea beetle (*Chaetocnema pulicaria*). A computer program was written for use in forecasting the overwintering of the corn flea beetle, and thus the occurrence and severity of Stewart's bacterial disease on sweet corn and field corn. The program (i) calculates the winter temperature index for any number of weather stations, (ii) forecasts disease occurrence and severity for sweet corn and field corn on a station, county, and regional basis in Pennsylvania, and (iii) prints the forecast in a form that can be photocopied and sent to county agents. Control recommendations for both sweet corn and field corn are sent with the disease forecast for the coming growing season.

SPORE GERMINATION AND INFECTION OF CORN BY *PHYLLUSTICTA MAYDIS*. L. L. Castor, J. E. Ayers, and R. R. Nelson, Department of Plant Pathology, The Pennsylvania State University, University Park 16802.

Spore germination and plant infection studies were conducted with *Phyllosticta maydis*, the causal organism of yellow leaf blight of corn. Measurements of conidial germination were made in 3 C increments from 12 to 27 C. Maximum germination occurred within 5 hours and ranged from 50% at 27 C to 90% at 15-18 C. More spores germinated at 21-24 C than at lower or higher temperatures when germination periods were 3 hours or

less. Measurements of infection (as indicated by the number of lesions produced) were made in controlled environment chambers in 2 C increments from 12 to 28 C, and at dew periods ranging from 3 to 12 hours. Little or no infection occurred at 28 C regardless of dew period, or at dew periods of less than 3 hours at any temperature. With dew periods of 5 hours or less, the number of lesions at 22-26 C was equal to or greater than the number at lower temperatures. However, with longer dew periods the maximum number of lesions occurred at 14-20 C. We concluded that dew periods in excess of 3 hours are necessary for infection of corn by *P. maydis* and that, under longer dew periods, more infections would occur at moderate temperatures.

BLITECAST: THREE-YEAR EVALUATION OF POTATO LATE BLIGHT PREDICTION AND CONTROL. R. A. Krause, S. Fairweather, and H. J. Smith, Department of Plant Pathology, The Pennsylvania State University, University Park 16802.

Blitecast, a computer program linking two previously described potato late blight (caused by *Phytophthora infestans*) forecasting systems, predicts the occurrence of blight and recommends subsequent scheduling of fungicide applications. Over a 3-year period Blitecast has been evaluated in Pennsylvania, Florida, Maine, New York, and New Jersey. During 1974, the system was evaluated on more than 100 farms in the northeastern U.S.A. Accuracy in predicting initial blight occurrence approached 90%. Although spray applications are recommended only after the occurrence of potential infection periods; success is attributed to rapid turn-around of information, and thus limitation of inoculum increase. Failure of Blitecast spray recommendations to control blight has been traced to lack of accurate data acquisition, failure to apply sprays on the recommended schedule, or failure to obtain adequate coverage.

A REDUCED APPLICATION TECHNIQUE (RAT) WITH BRAVO 6F FOR CONTROL OF POTATO LATE BLIGHT. R. X. Latin, and R. A. Krause, Department of Plant Pathology, The Pennsylvania State University, University Park 16802.

The rising cost of chemicals, labor, fuel, and the need to limit the number of fungicide applications, have made the use of RAT desirable for the control of potato late blight (caused by *Phytophthora infestans*). Previous attempts to use RAT for blight control have not been successful due to photochemical degradation of fungicides and inadequate redistribution to newly developed foliage. Therefore, experiments were designed to use a nonphotochemically degraded fungicide (Bravo 6F) and follow standard control practices prior to termination of vine growth. The recommended rate of 1.5 pt/A on a 7-day schedule was applied as a control to artificially inoculated plots. RAT treatments were: 3.0 pt/A every 14 days, 4.5 pt/A every 21 days, 6.0 pt/A every 28 days, and 7.5 pt/A every 35 days. The seven day schedule provided satisfactory disease control under severe blight pressure. All RAT treatments resulted in control equal to that of the 7-day schedule during the early period of epidemic development. Applications of 3.0 pt/A every 14 days was equal to the control and 4.5 pt/A every 21 days proved to be significantly better than the control as the epidemic entered the log phase. In late log phase, the RAT treatments did not differ from the control treatment.

SEED TRANSMISSION OF TOBACCO- AND TOMATO RING-SPOT VIRUSES IN GERANIUMS. B. A. Scarborough

and S. H. Smith, The Pennsylvania State University, University Park 16802.

Cross pollinations of geranium (*Pelargonium* × *hortorum* "Nittany Lion Red") were conducted to determine if tomato ringspot virus (TomRSV) or tobacco ringspot virus (TRSV) was seed- or pollen-transmitted. Cross pollinations were made between healthy pollen parents and TRSV- or TomRSV-infected seed parents, and between TRSV- or TomRSV-infected pollen parents and healthy seed parents. Self pollinations were conducted on the original pollen parents, namely the controls, TRSV and TomRSV infected geraniums. Seeds were harvested, individually scarified and sown in 5.7-cm pots containing a peat medium. Each seedling was indexed at the six-leaf stage by mechanical inoculation to cucumber using 4% polyethylene glycol 6000, .05 M PO_4^- , pH 7.1. The identity of viruses producing local lesions and systemic infection on cucumber was confirmed serologically. Tomato ringspot virus was transmitted to the seed of geranium by the pollen (1.0%) and the ovule (11.0%). Tobacco ringspot virus was transmitted by the maternal tissue (3.8%), but not the pollen. Seed transmission in self pollinated TomRSV and TRSV infected plants was 6.9% and 5.8%, respectively. No seed transmission occurred in the self-pollinated controls.

INCREASED SEVERITY OF PYTHIUM BLIGHT ON CREEPING BENTGRASS TREATED WITH BENOMYL. C. G. Warren, P. Sanders, and H. Cole, Jr., The Pennsylvania State University, University Park 16802.

There have been several reports of increased problems with *Pythium* blight on turfgrass areas where benomyl has been used to control other pathogens. To investigate these occurrences, isolates representative of a turfgrass-infecting *Pythium* sp., were obtained from diseased grass samples. In the laboratory, there was no evidence of growth stimulation, or synergistic interactions detectable following linear measurements of isolates on benomyl-amended agar. The isolates had similar growth characteristics, with no significant differences present between isolates. Greenhouse investigations consisted of inoculating

benomyl-treated Penncross creeping bentgrass, with *Pythium* isolates. Benomyl treatment dosages were 0.25, 0.5, 1, 2, 4, 6, and 8 oz. a.i. per 1,000 ft² equivalent. Increases in severity of turfgrass disease caused by *Pythium* sp. were found at all benomyl treatment rates, with the greatest increases occurring at the 0.5-, 1-, and 2-oz. treatment rates. We feel that the observed increased severity in *Pythium* blight on creeping bentgrass is caused by the suppression of antagonists and/or competitors of *Pythium* sp., rather than by a direct stimulation of the pathogen.

POTOMAC DIVISION

10, 12-OCTADECADIENOIC ACID IN THE MYCORRHIZAL FUNGUS *CORTICIUM BICOLOR*. J. Melhuish, R. Dutky, E. Hacskeylo, G. Bean, Department of Botany, Univ. of Maryland, College Park 20742; and U.S. Department of Agriculture, Beltsville, MD 20705.

The major fatty acid extracted from the mycelium of *Corticium bicolor* was not identifiable by the more common TLC and GLC techniques. It migrated with the unsaturated fatty acids on TLC plates coated with silica gel impregnated with silver nitrate, and when hydrogenated, was transformed to an 18-carbon saturated fatty acid. The original fatty acid was purified by GLC, and subjected to ultraviolet (UV), infrared (IR), and mass spectroscopy. There was strong UV absorption at 233 nm, indicating conjugation; IR showed an unconjugated carbonyl group, and mass spectroscopy showed an 18-carbon, di-unsaturated fatty acid methyl ester. Ozonolysis, with subsequent reduction by triphenyl-phosphine, yielded a 10-carbon aldehyde-methyl ester, and a 6-carbon aldehyde. NMR spectroscopy indicated the presence of four olefinic protons and six methylene protons adjacent to functional groups, and also the absence of any methylene-interrupted double bonds or chain branching. Direct extraction of mycelium without hydrolysis gave a total lipid fraction with strong UV absorption at 233 nm, indicating that the conjugated fatty acid was not an artifact of hydrolysis. We interpret these data as strong evidence that 10, 12-octadecadienoic acid occurs in *Corticium bicolor*.