Scientific News

Extracellular polysaccharides (EPS) from cultures of the plant-pathogenic bacteria *Pseudomonas glycinea, P. lachrymans, P. phaseolicola, P. pisi, Xanthomonas malvacearum,* and *X. translucens* f. sp. *cerealis*, when infiltrated into leaves, produced water-soaked spots in the plant species that were hosts to the respective EPS-producing bacteria but not in any of the other plant species tested. In contrast, EPS from a nonpathogen, *P. fluorescens*, failed to induce water-soaking in any of the plant species tested. F. E. El-Banoby and K. Rudolph suggest that EPS may explain virulence of different bacterial races; EPS from race 1 of *P. phaseolicola* induced water-soaking in leaves of Red Kidney but not of Red Mexican 34, whereas EPS from race 2 induced water-soaking in both cultivars. These observations agree with reactions of races 1 and 2 on the two cultivars. (Physiol. Plant Pathol. 15:341-349)

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The host range of *Agrobacterium tumefaciens* is determined by the tumor-inducing (Ti) plasmid of the pathogen, according to M. F. Thomashow, C. G. Panagopoulos, M. P. Gordon, and E. W. Nester. Four strains of the recently described biotype 3 from grapevine (two strains from Greece and two from Russia) were used as donors to transform strain A136, a biotype 1 organism cured of its virulence plasmid, pTiC58. The transformants performed like the donor strains, ie, pathogenic on grapevine and *Nicotiana glutinosa*, nonpathogenic on tomato cv. San Pietro and *Kalanchoë daigremontiana*, and attenuated virulence on *Datura* and sunflower. The only exceptions were two of the four donor strains that induced slowly developing galls on *N. tabacum* cv. Turkish, whereas their respective transformants did not. The investigators also found that all octopine Ti plasmids were not of a homogeneous group, as previously thought. (Nature 283:794-796)

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The production of agrocin 84 by strain 84 of *Agrobacterium radiobacter* var. *radiobacter* (the highly effective biological control agent of crown gall on stone fruit trees and other plants) has been shown by J. E. Ellis and A. Kerr of Australia and M. van Montague and J. Schell of Belgium to be coded for by a small plasmid. The plasmid was transferred through transconjugation to suitable recipient strains, with the result that new strains were produced with ability to give biological control. Agrocin 84 production is only one of at least two necessary properties of an effective biocontrol strain, however; the strain must also be able to grow and produce enough antibiotic on the host surface. The authors suggest that poor growth rate may be why strain 84 is the only effective biological control agent in use despite identification of other bacteriocin-producing strains. (Physiol. Plant Pathol. 15:311-319)

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Cotton may be seriously affected by a root-knot nematode–Fusarium wilt complex caused by *Meloidogyne incognita* and *Fusarium oxysporum* f. sp. *vasinfectum*. Use of cultivars resistant to the *Fusarium* component has long been recommended. In studies of natural infestations of the two pathogens in California, however, a cultivar (N6072) highly resistant to the nematode but not to *Fusarium* gave disease control as good as two cultivars (Auburn 56 and Delcot 277) tolerant to *Fusarium* but only moderately resistant (Auburn 56) or susceptible (Delcot 277) to the nematode. A. H. Hyer, E. C. Jorgenson, R. H. Garber, and S. Smith report that N6072 produced significantly more lint than the other cultivars and attribute this to the nematode resistance that helped prevent Fusarium wilt. (Crop Sci. 19:898-901)

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Sclerotia of *Stromatinia gladioli* germinated in nonsterile soil only in the presence of plants of the Iridaceae, report T. M. Jeves and R. R. Coley-Smith. Root exudates of the host plants contained the stimulus for germination. Sclerotia of *S. gladioli* are remarkably like those of *Sclerotium cepivorum*, which show a similar host-stimulated response. The host-specific stimulus of *S. gladioli* occurred only in nonsterile soil; under aseptic conditions, sclerotia germinated freely and showed no apparent need for host or nutritional stimulus. The investigators suggest that previous reports of *S. gladioli* parasitizing plants outside the Iridaceae may be in error. (Trans. Br. Mycol. Soc. 74:13-18)

□ □ □

The amount of N_2 fixation by bacteria on roots of wheat may be regulated in part by host plant genetics. Using chromosome substitution to modify the host, R. J. Rennie and R. I. Larson obtained increased plant dry matter and total nitrogen yield in the cultivar Rescue, genotypically altered by substitution of the 5B or 5D chromosome from Cadet and inoculated with a nitrogen-fixing strain of bacillus or *Azospirillum brasilense*. Unaltered Rescue showed no response to inoculation. Different substitution lines reacted differentially to the inoculations, with some lines promoting more nitrogen fixation by *A. brasilense*, others by the bacillus, and still others by both strains. Chromosome 5B, one of several influencing N_2 fixation, also controls reaction in wheat to common root rot, but apparently the two phenomena are unrelated. (Can. J. Bot. 57:2771-2775)

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A square bacterium has been found in brine. Cells are thin, square sheets up to 20 μm^2 and only 0.2–0.5 μ thick. The sheets may divide like postage stamps into eight or even 16 squares. A. E. Walsby suggests that the lack of turgor pressure in the organism may be the reason for the square shape. (Nature 283:69-71)

□ □ □

Soybean plants carrying the nodulation-restrictive gene rj_1 became nodulated with a normally incompatible (non-nodulating) strain of *Rhizobium japonicum* when given a mixed inoculation of the incompatible strain and a compatible one. Drug-resistance markers were used to identify the strains in the nodules; 36% had the usually non-nodulating strain, 32% had the usually nodulating strain, and 32% had both strains. T. E. Devine, L. D. Kuykendall, and B. H. Briethaupt suggest that either a diffusible product from the infective strain endowed the usually nonnodulating strain with infectivity or the nodulating strain rendered the plant receptive to infection by the otherwise incompatible strain. The results apply only to situations of high inoculum density and show that a nonnodulating strain, once established, can form normal nodules in soybean with the rj_1 gene. (Can. J. Microbiol. 26:179-182)

Recent reports from fields related to plant pathology for inclusion in *Scientific News* may be sent to R. James Cook, 367 Johnson Hall, Washington State University, Pullman, WA 99164.

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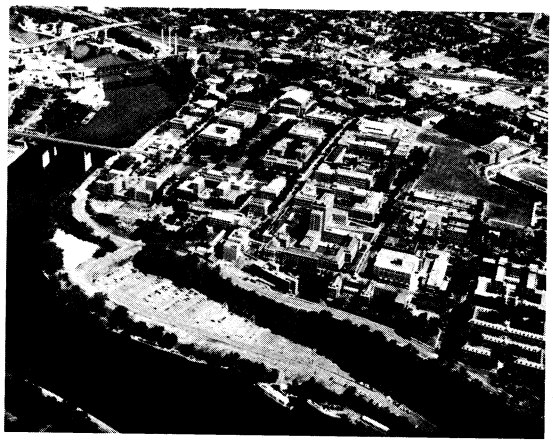
APS-CPS



Come to Minnesota

this year as members from our science get together to learn and exchange. Take advantage of four informative days of plant protection-related symposia and discussion sessions, of the opportunity to visit with friends and colleagues and of the countless vacation possibilities in beautiful Minnesota.

The meeting will be held at the University of Minnesota—in the heart of the Twin Cities of Minneapolis and St. Paul—cities rich in cultural attractions and abounding with recreational facilities.

This year's varied technical program will be of interest to all plant health professionals, presenting our science's most current research and product information. The Local Arrangements Committee has planned a variety of exciting activities for spouses, too. So bring your family. Make a vacation of it. Enjoy Minnesota's lakes, theaters, restaurants, shopping, and the Minnesota State Fair.

Plant to be with us in August for the APS-CPS 1980 Annual Meeting.

Program Highlights

SYMPOSIA

Rust Diseases
Specificity in Host-Parasite and Other Cellular Interactions

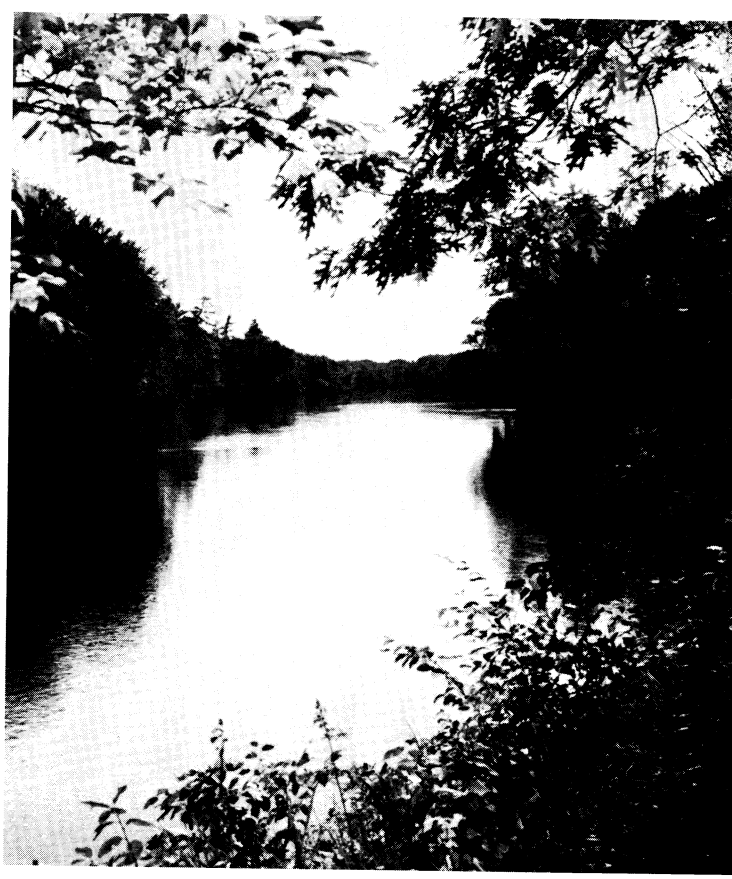
DISCUSSION SESSIONS

New Fungicides for Apple and Pear Diseases
Vascular Wilt Diseases of Trees
Workshop on Diseases of Turfgrasses
Mycotoxins
Techniques for Studying Soilborne Fungal Diseases
Postharvest Losses of Vegetable and Fruit Crops
Etiology and Control of Soilborne Diseases of Container Grown Ornamentals
Fitness in Rust and Other Biotrophs in Relation to their Pathogenicity
Virus and Virus-like Disorders of Woody Plants
Sampling in Epidemiology
Recent Developments in Tropical Plant Pathology
Sunflower Disease Discussion

SOCIETY EXHIBITS

Poster Sessions—Meeting participants will learn the latest research findings as authors and researchers display their results in a concise, self-explanatory way.

Publications Display—Publications from both societies will be available for meeting attendees to examine.



FOR THE 1980 Annual Meeting

COMMERCIAL EXHIBITS

Booth Exhibits—Representatives from industry suppliers will be present to display new products and to answer questions.

Combined Book Exhibit—Leading publishers from throughout the world will display new titles and the most current references available to plant scientists and researchers.

SPECIAL EVENTS

A variety of optional field trips will be offered including a bus trip to examine local forest disease problems, a tour of the University of Minnesota field plots and laboratories, a tour of the Rosemount Agricultural Research Station, a vegetable and sod production tour and an APS Headquarters tour.

PLACEMENT SERVICE

An APS placement service for job candidates and employers will be available throughout the meeting for registered attendees.

SPOUSES' PROGRAM

Each day of the meeting exciting tours are planned to entertain spouses of meeting attendees. Such tours include a Twin Cities highlights bus tour, a tour of the Betty Crocker Kitchens, a Walker Art Center and Guthrie Theater tour and a visit to the University of Minnesota's beautiful arboretum. In addition to the special tours, a hospitality area will be open to spouses throughout the meeting.

SOCIAL EVENTS

Evening socials are planned to give meeting attendees the opportunity to visit on an informal basis. Planned socials include a Special Awards Reception following the Awards Ceremony, a graduate student social, an industry-extension social, a Canadian Dinner open to all members of CPS and a closing night APS-CPS Banquet and Omnitheater Party open to all APS and CPS members and friends to be held at the new Minnesota Science Museum. The party will include a deluxe dinner, dancing and a feature presentation of "Genesis" in the famed Omnitheater—the world's most advanced space theater in which images are projected on the surface of a giant dome giving the audience the illusion of being suspended in space.

HOUSING

Housing will be available to meeting participants and their families in University dormitories right on campus. For those who prefer hotel accommodations a block of rooms has been reserved in the nearby Curtis Hotel in downtown Minneapolis. A list of other motels within easy driving distance to campus will be made available in the advance registration materials.

REGISTRATION

Anyone planning to attend the 1980 APS-CPS Annual Meeting is encouraged to register in advance by July 15 to assure availability of desired housing and tickets for special limited number activities. Advance registration brochures will be mailed soon. If you are not an APS or CPS member and are interested in attending the meeting, return the form on this page to us and we'll send you complete registration materials.

Advance Registration Deadline: July 15

August 24–28

University of Minnesota Minneapolis

Please send me more information about the APS-CPS 1980 Annual Meeting in Minneapolis

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