

Industry News

Identification of Plant Pathogens. Gary H. Larson, Biolog, Inc., 3447 Investment Boulevard, Suite 3, Hayward, CA 94545

Plant pathologists and other agricultural microbiologists have another tool available for identifying many bacterial species that until now required considerable laboratory effort. For example, the following bacteria are easily identified: 43 Pseudomonas species and subspecies, including P. andropogonis, cichorii, corrugata, fuscovaginae, gladioli, solanacearum, and viridilivida, and 10 pathovars of P. syringae; 24 pathovars of Xanthomonas campestris; 9 species and subspecies of Erwinia; and several species of Agrobacterium, Clavibacter, and Curtobacterium.

The new approach relies on a single redox dye, tetrazolium violet, to detect the increased respiration that occurs in a cell oxidizing a given carbon source. Regardless of the structure of the carbon source, its oxidation provides electrons to form NADH within the cell. NADH then donates electrons into the electron transport chain of the organism. The redox dye captures some of these electrons, resulting in purple color in the well.

The tests are set up on a standard 96-well microplate in a format that permits simultaneous testing of 95 different carbon sources along with a negative control. Carbon sources include polymers, carbohydrates and derivatives, methyl esters, carboxylic acids, amides, amino acids and derivatives, amines, alcohols, and aromatic chemicals. The method thus allows for a more thorough survey of the metabolic properties of microorganisms than would be obtained with conventional pH-based fermentation tests.

The microplate is inoculated with a saline suspension of a pure bacterial culture and incubated at 30 C for 4 or 24 hours. Wells that produce a positive reaction for the carbon source are easily identified by the irreversibly produced purple formazan. The reaction pattern is entered into the laboratory computer manually or with a microplate reader. The database is automatically searched for a best match, and the results are displayed on the computer monitor. Results can also be printed or saved to computer files for additional analysis.

The reaction patterns of 434 species and subspecies of aerobes, primarily gram-negative rods, are currently stored in the database. The list includes virtually all clinically significant species and a wide variety found in the environment, in addition to approximately 100 plant-associated bacteria. Over 200 of these are nonfermenting species. A complete list of bacteria in the database and other information are available from Biolog, Inc. ([800] 284-4949).

Salute to APS Sustaining Associates

This section is designed to help APS members understand more about APS Sustaining Associates. Information was supplied by company representatives. Each month different companies will be featured. A complete listing appears in each issue of *Phytopathology*.

E. I. Du Pont de Nemours & Co., Contact: M. M. Joshi, Stine-Haskell Site, Newark, DE 19711; 302/366-5392. Research and development have been the mainstays of growth for Du Pont since the company was founded in 1802. Du Pont herbicides, insecticides, fungicides, and nematocides are used by farmers in more than 100 countries to protect all major crops, including wheat, rice, and cotton, as well as most fruits and vegetables. Fungicide products are Manzate 200, a broad spectrum protectant fungicide; Benlate, the first fungicide with local systemic and curative action; and Curzate, a curative fungicide used in mixtures outside the United States. Currently under development is Nustar (DPX-H6573), a highly active, broad spectrum fungicide with systemic and curative activity.

Fermenta Plant Protection Co., Contact: Dr. Gary L. Eilrich, Vice-President, Technology, 5966 Heisley Rd., Mentor, OH 44061-8000; 216/357-4145. Fermenta Plant Protection Co. (FPPC), headquartered in Mentor, OH, serves four world business areas: North America, Latin America, Europe/Middle East/Africa, and Asia/Pacific. The Asia/Pacific area includes Australia, New Zealand, and the People's Republic of China. FPPC brings to the world of agricultural chemicals advanced product development, state-of-the-art manufacturing facilities, and sophisticated marketing techniques to serve a growing global market. These basic capabilities have resulted in a line of superior weed and disease control products like Bravo and Daconil 2787 fungicides that significantly improve the health of turfgrass and ornamental plantings and increase the quality and yields of such crops as peanuts, bananas, wheat, stone fruit, and vegetables. FPPC is uniquely positioned to respond to promising new opportunities.

Ferry-Morse Seed Company, Contact: Larry Gautney, P.O. Box 1010, San Juan Bautista, CA 95045. Ferry-Morse Seed Company is a leader in the seed industry because the men and women at Ferry-Morse have a strong commitment to develop, produce, and market new and improved proprietary varieties of vegetables and flowers. By combining new technology with proven techniques that have been earned by Ferry-Morse in their 130-year history, they are able to supply seed to customers in the United States and in over 100 countries internationally. In order to ensure adaptability of their new seed varieties, Ferry-Morse research teams conduct primary research at several of their research stations and supervise seed trials throughout the United States and in many foreign countries. Ferry-Morse is dedicated to continuing to develop and produce the best vegetable and flower seed in the world.

Funk Seeds International Inc., Contact: Loral L. Castor, Research Department, P.O. Box 2911, Bloomington, IL 61701; 309/829-9461. Funk Seeds International, a wholly-owned subsidiary of CIBA-GEIGY Corp., is one of the nation's leading marketers of agricultural seeds, including hybrid corn and grain sorghum, and soybean and forage varieties, since 1901. Funk seeds is marketed directly or through associate companies in the United States and internationally as part of the worldwide CIBA-GEIGY seeds network. Funk Seeds International operates 24 research stations in 16 states. Plant pathologists support the activities of plant breeders and numerous personnel in the production and marketing areas of the company. Pathology research emphasis is on the identification and evaluation of genetic resistance. Disease resistance is an increasingly important component of the high-yielding hybrids and varieties that Funk Seeds offers to U.S. farmers.

Great Lakes Chemical Corporation, Contact: David A. Rickard, Ph.D., Manager, Agricultural Chemicals Development - Phytopathology, P.O. Box 2200, W. Lafayette, IN 47906; 317/497-6354. An international diversified specialty chemical company with key products in many fields, Great Lakes' expertise ranges from biotechnology to lubrication, flame retardants to drilling fluids, water sanitizers to toxicology testing services, and chemical intermediates for agri-chemicals to electronic circuitry. Already the world leader in production of bromine chemicals, including the versatile agricultural fumigant, methyl bromide, Great Lakes has become the leading maker of furfural and furfural-based specialty chemicals derived from agricultural waste materials and used in a wide range of products from plastics to agricultural spray adjuvants. Each year an extensive effort is made to expand the uses for its standard—setting agricultural chemicals through grant-supported research and to discover better products to both produce and protect our food and fiber.

Griffin Corporation, Contact: Donnell W. Guy, Jr., 5588 N. Palm Ave., Fresno, CA 93704; 209/432-8364. Griffin Corp. has been serving agriculture since 1935, beginning as a seed retail store and progressing into one of the foremost agricultural chemical manufacturers in the United States today. Headquartered in Valdosta, GA, Griffin has three operating companies with research, manufacturing, sales, and marketing functions in Valdosta, Houston, TX, and Casa Grande, AZ. Griffin manufactures and markets their own brands of high quality fungicides, insecticides, and herbicides, which are used for a wide variety of crops in virtually every major U.S. agricultural market and more than 50 foreign countries. All Griffin products are marketed by Griffin Ag Products Co., Inc., in the United States and by Griffin International Corporation outside the United States.

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