

industry news and newsmakers

Scientist Studies Pollutant's Effect on Woody Plants

Plant physiologist Bruce R. Roberts of USDA's Agricultural Research Service (ARS) is finding significant differences in the abilities of woody plants to take up sulfur dioxide (SO_2), a major air pollutant, from the space immediately around their leaves. Red maple, white birch and sweetgum seedlings have been shown to take up more SO_2 than rhododendron, white ash and azalea seedlings.

Using controlled temperature, light and humidity in a growth chamber at the ARS Shade Tree and Ornamental Plants Laboratory, Delaware, O., Roberts is gaining basic knowledge about relationships between woody plants and air pollution. He hopes this knowledge will enable him to recommend to city planners which trees, shrubs or combinations of plants would be most suitable as "pollution

fighters." New understanding also may help scientists find ways to protect plants from pollution damage.

Of the major air pollutants — ozone, SO_2 , nitrogen oxides, ethylene, and fluorides — Roberts chose to work principally with SO_2 . This pollutant can be used as a radioactive tracer to find out what happens to the gas after it enters the woody plant. Roberts has observed that SO_2 molecules are chemically altered soon after they enter the leaf — first they are oxidized to sulfites and then to sulfates. Some sulfuric acid may be formed, which might account for some of the pollution damage to plants, Roberts said.

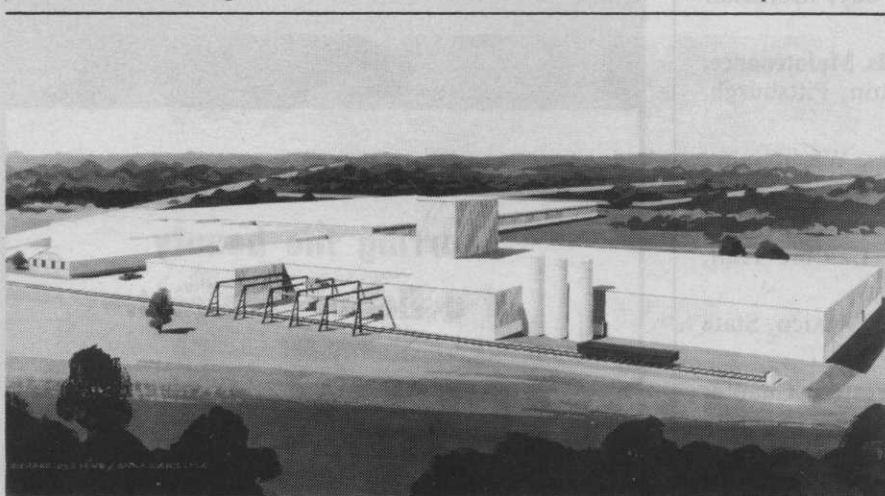
Photosynthesis can be affected by SO_2 pollution. The pollutant damages chloroplasts in the plant cells where photosynthesis takes place. Roberts hopes to be able to diagnose the type and extent of pollution damage by examining affected cells.

Studies have indicated depression of photosynthesis. Red maple seedlings fumigated with 1 ppm of SO_2 for four to six hours took up slightly more carbon dioxide than unfumigated seedlings. In contrast, leaves of seedlings exposed to an SO_2 concentration of 6 ppm were severely damaged, permanently depressing photosynthesis. Seedlings exposed to 4.5 ppm were damaged, but their ability to photosynthesize rebounded rapidly.

Roberts' SO_2 experiments indicate that, unless plants are injured by the pollutant, uptake remains constant — at least over a six-hour period. In some species of woody plants, he observed that the amount of uptake varied little, whether they were exposed to SO_2 concentrations of 1 ppm or 0.2 ppm.

"We're not sure exactly what happens here," Roberts said. "I think it involves the pollutant's effect on stomatal opening."

Roberts theorizes that stomates in the leaves of shade-tolerant trees may open and close faster, making these trees also more tolerant to pollution. If this theory is borne out in further studies, plant breeders will be better equipped to select trees for pollution tolerance.



Construction has started on this all-electric foundry for The F. E. Myers & Bro. Co., Ashland, Ohio. The \$5 million, 110,000 square-foot facility is scheduled for completion in late summer, 1975.

Two More Seasons of Tight Fertilizer

The nation can expect continued tight fertilizer supplies through 1975 and 1976, said Robert C. Gunness, vice chairman of Standard Oil Company (Indiana).

Gunness said that nitrogen fertilizer shortages have developed during the 1973-74 season both in the U.S. and throughout the world, and the outlook is for continued domestic shortages during the 1974-75 and 1975-76 seasons. Domestic demand has risen sharply in the past two years. While Gunness views the probable shortfall at closer to five percent, he said estimates of the current U.S. shortage vary from five to 15 percent.

U.S. ammonia capacity, the source of nearly all nitrogen, has been flat since overexpansion in the 1960's brought on drastic declines in ammonia prices. One new plant is scheduled for the early part of 1975,

but no further additions to domestic capacity are expected until 1978. The result is the U.S. will have to look to increased imports to meet the higher demand for nitrogen fertilizer over the next several years. With foreign supplies of nitrogen also tight, it appears unlikely that enough will be available on world markets to fully meet U.S. needs, Gunness said.

As for phosphate, Gunness said considerable additional capacity is scheduled to come on stream in 1974 and 1975, and the current shortages of about eight percent are expected to be eliminated by the 1975-76 season. Ample supplies of potash, both now and in future years, are expected because North American production capabilities, especially in Canada, are considerably greater than expected demand levels.

NASA's Quarantine Vans To House Plant Pathogens

Quarantine vans built for the astronauts have been "recycled" for use by the U.S. Department of Agriculture (USDA).

In 1971, returning Apollo astronauts were picked up from the space capsule by helicopter and were transferred immediately to \$140,000, six-ton, 30-foot mobile isolation vans. En route to more spacious quarters at the Lunar Receiving Laboratory in Houston, Tex., the astronauts spent four days in the vans, transported by ship and flatbed trailer-trucks. Today two of these four vans are being readied for a new kind of tenant — foreign plant pathogens for research on biological control of agriculturally destructive weeds.

A gift from the National Aeronautics and Space Administration (NASA) to USDA's Agricultural Research Service (ARS), the moon mission vans have rolled again, this time to the Southern Weed Science Laboratory in Stoneville, Miss. A third van is in the Smithsonian Institution and the fourth remains in Houston.

In Stoneville scientists will test plant pathogens such as the rust fungi, *Uromyces rumicis*, on curly dock (*Rumex crispus*), and *Puccinia chondrillina* on skeletonweed (*Chondrilla juncea*). Curly dock is found nationwide and is a problem in the humid South. Skeletonweed is a problem in Washington, Idaho and in several counties in California. The weeds compete for space, nutrients and water causing increased expense for chemical controls.

Because curly dock and skeletonweed have both been introduced from foreign sources without their normal complement of natural enemies, and because native pathogens have not been able to control the weeds over large areas, foreign pathogens will be imported from those countries where the weeds are native. They will then be isolated in the NASA quarantine vans, and tested for their ability to attack and damage only the host weed and their inability to damage other plants. After the pathogens have been thoroughly evaluated under quarantine conditions they may be released to help control the weed species.

The project will include studies

on other weeds such as prickly sida, velvetleaf, spurred anoda, morning glory and nutsedge to determine if there are native pathogens with potential for biological control.

Plant Pathologist Howard D. Ohr is the ARS project leader in the study at the Stoneville laboratory.

Ciba-Geigy/Funk Merge

Ciba-Geigy Corporation announced that Funk Seeds International, Inc. has become its wholly owned subsidiary as the result of a merger of Funk and the agricultural division of Ciba-Geigy. Under the terms of the merger, stockholders of Funk prior to the merger are entitled to receive \$17 in cash for each share held.

Army Weed Controllers Transferred to USDA

Five senior scientists from the Army's Vegetation Control Division, their support staff and an installation are being transferred to the U.S. Department of Agriculture (USDA) to begin new research on weed control.

The scientific team is headed by Dr. Robert A. Darrow. Office, laboratory and greenhouse facilities, and a 140-acre research site

near Frederick, Md., needed to accommodate the group are also being transferred to USDA without additional capital investment.

The unit has a data storage and retrieval system that has information on the herbicidal activity of about 31,000 compounds. With this system, USDA will be able to increase the scope of its weed research already being done by the Agricultural Research Service (ARS). The laboratory will operate as an installation of the Chesapeake-Potomac area of the ARS northeast region, as an addition to ARS's existing plant disease research laboratory at Frederick.

A major research objective for this small contingent of scientists will be to develop technology for either inhibiting weed-seed germination or to stimulate germination at times of the year unfavorable to weed survival.

The lack of preventive weed control technology hinders efforts to reduce the cost of controlling weeds and also reduces the effectiveness of weed management programs. Herbicides are now applied to more than 160 million acres. The need for such wide applications could be reduced if scientists assigned to this research mission succeed in finding ways to reduce the vast amount of weed seeds in the soil and to prevent their recycling without adverse environmental effects.



Leo Donahue (left), administrator and legislative liaison for the American Association of Nurserymen (AAN), reviews the AAN's testimony for increased research funds with Congressman William J. Scherle, Republican from the Fifth Congressional District of Iowa. Scherle is a member of the House Appropriations Subcommittee on Agricultural, Environmental and Consumer Protection, and a long-time friend and supporter of the nursery industry.

25th Anniversary Planned

The Sprinkler Irrigation Association will celebrate its 25th anniversary during the annual convention to be held at the Contemporary Resort of Disney World in Lake Buena Vista, Fla., Oct. 27 to 30.

Convention activities are planned to portray the role that the Association has played in the growth of the sprinkler irrigation industry and to recognize those leaders in education, industry and government who have contributed to sprinkler irrigation progress and

to the development of the Association.

Programs, registration information and room reservation forms for the convention can be obtained from the Sprinkler Irrigation Association, 13975 Connecticut Ave., Suite 310, Silver Spring, Md. 20906.

Biological Weed Control Proposed by Scientists

A new biological control for weeds, which would avoid the use of selective herbicides has been pro-

posed by a Michigan State horticulturist and a Cornell University agronomist.

In the current issue of "Science," Alan R. Putnam and William B. Duke note the well-known phenomenon of allelopathy — that is, the ability of certain plants to inhibit the growth of other plants, such as weeds, by releasing chemicals toxic to other plants into the soil.

"If this allelopathy is an inherited trait, which is likely, attempts could be made to incorporate weed resistance into commercial crops in the same manner that insect and disease resistance were bred into plants," Putnam and Duke suggest.

Successful biological control of weeds has been limited to a few cases where insect predators have been introduced to reduce certain weeds. Plant scientists usually fight weeds by selecting strains for their ability to outgrow weeds, an advantage attributed to rapid growth.

American Garden Products Names New Vice President

American Garden Products, Inc., producer and distributor of horticulture products and related items, announced that Peter J. West has been appointed executive vice president and chief operating officer. West, formerly on American Garden's board of directors, succeeds C. A. Hellar.

The operations of American Garden Products, Inc. include Gurney Seed and Nursery, Cole Nursery, Horton Nurseries, Western Seed, Cal-Turf and Perry's Plants, Inc.

New Agrico Division Names Sinclair President

Kenneth R. Sinclair has been elected president of Agrico International, a new division of Agrico Chemical Company, a subsidiary of the Williams Companies.

Agrico International is responsible for Agrico's overseas investments, marketing and a number of new overseas production facilities now in various stages of development.

Agrico International has overseas offices in Panama City, Paris, Milan, San Paulo and Tokyo.

Mitts & Merrill Brush Chippers For...

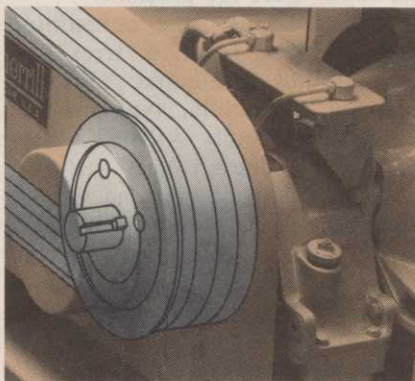
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