INTERNATIONAL TURF SOCIETY

Organic amendments showing promise

SYDNEY, Australia — Citing the growing interest in using organic amendments, such as the residues of *Brassica spp.*, to control agricultural and horticultural pests and diseases, P.T.W. Wong told the International Turfgrass Society the outlook is bright for their expanded use in the turfgrass industry.

"The *Brassica* residues decompose in soil to release volatile isothiocyanates [ITCs], which are selectively biocidal," said Wong of the Agricultural Research Institute in Wagga Wagga, New South Wales. "They also exert an indirect effect on pathogens and pests by encouraging antagonistic microorganisms such as Trichoderma spp. and actinomycetes, which further reduce their inoculum potential."

Wong said more research is needed to investigate the types of *Brassica* residues to use, which ones release the most toxic ITCs, and the methods and rates of application for optimal efficacy without causing phytotoxic effects on established turfgrasses.

Brassica contain significant quantities of compounds known as glucosinolates (GSLs) in their tissues. GSLs are hydrolyzed by enzymes to release the volatile ITCs and other byproducts. While GSLs are relatively inactive against microorganisms, their byproducts, particularly ITCs, are highly biocidal to a wide range of organisms, including nematodes, bacteria, fungi, insects and germinating seeds.

Scientists are calling the suppression of soil-borne pests and pathogens by *Brassica* crops "biofumigation," and Wong reported "considerable interest in biofumigation as an alternative to synthetic soil fumigants in horticulture and for the control of intractable soil-borne pathogens in broad-acre agriculture."

He said the horticultural industry is using metham sodium (methyl ITC) as a soil fumigant, and *Brassica* root and shoot tissues "contain more toxic ITCs than methyl ITC... *Brassica* residues may, therefore, be used to biofumigate greens or turf areas requiring re-seeding."

Similarly, he said, relatively cheap mustard meal apparently significantly reduces populations of root-rotting pathogens in the soil and would suppress deleterious soil insects, nematodes and weed seeds. Whether the mustard meal is as effective as methyl bromide or metham sodium is not known.

Because it is standard practice to aerate and top dress golf greens several times a year, Wong said: "These would be convenient times to apply smaller amounts of organic amendments. The amendments may be brushed into the core holes and be present in the thatch and root zones, where they could be expected to exert the greatest effects against root-rotting or thatch-inhabiting fungi.

"The amendments," he added, "could also be covered over by a layer of suppressive compost instead of ordinary topsoil to further enhance biocontrol."

Wong warned that to successfully adopt practices which call for regular inputs of organic matter, "there needs to be some rethinking on the ideal composition of turf soil profiles."

"Turf managers may have to

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North American turfgrass studies reported at higher levels of education

SYDNEY, Australia — A significant difference between turfgrass management education available in North America and that in other countries around the world was pinpointed by a study released at the International Turfgrass Society (ITS) conference here.

"When comparing the turfgrass training provision on a per-capita basis, Australia, New Zealand and the United Kingdom come out poorly when compared to North America in developing specific education and training programs in turfgrass

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Pritchard returns to La Quinta

LA QUINTA, Calif. — **Jeff Pritchard**, former superintendent for PGA West, La Quinta Hotel Golf & Tennis Resort and Scottsdale's Desert Mountain, has been named course superintendent for Rancho La Quinta Country Club, according to Vice President/Project Manager Tom Cullinan.

Jeff Pritchard

Pritchard, a certified golf course superintendent, has more than 25 years of experience, most recently as superintendent for Paragon Golf Construction, a division of Golden Bear, Inc., based in North Palm Beach, Fla. Prior to that, he was director of agronomy and maintenance for Desert Mountain Properties in Scottsdale. He earned a bachelor's degree in agronomic crop science from Oregon State University.

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ALPHARETTA, Ga. — Alpharetta Country Club has hired **Pat Stewart** as its superintendent. Stewart left his post at Lanier Golf Club in Cumming.

Also in Georgia:

• **Bob Flanagan** has moved from Jacksonville (Fla.) Golf & Country Club to the head superintendent's position at Stone Bridge G&CC in Albany.

• Perry CC has promoted **Paul Carroll** from assistant to head superintendent, while Harbor Club in Greensboro promoted **Tom Amason**.

• **Brian Schutte**, former assistant superintendent at the Golf Club of Miami, has been hired as superintendent at Pine Oaks Golf Club in Warner Robins.

• **Steve Walsh** is the new superintendent at the Golf Club of Macon, having left an assistantship at Innsbruck Golf Club.

Global education

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science and management," said D.E. Aldous of the University of Melbourne in Victoria.

Aldous told ITS members that degree and diploma courses in turf management have long been offered at universities, polytechnics and colleges in the U.S., Britain, Australia and New Zealand, while there is a tradition of turf management training in South Africa, Switzerland, Germany, France, Japan and Sweden.

Turf programs are now being developed in Singapore, China and Malaysia, he said.

Viewed on a per-capita basis, Aldous said countries such as New Zealand were found to be training five times as many horticulturists at the degree and diploma level as Australia, where horticulture represents a smaller proportion of the country's rural gross national product. Figures suggest that in the United States, the proportion may be as high as eight times the Australian level, he added.

The survey also reflected that the American programs emphasize turf in higher education, whereas Australia, New Zealand and the United Kingdom place greater emphasis on diploma and vocational training.

Organics

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learn to manage greens with a lower percentage of inert sands and a larger component of organic matter — hopefully, seething with microbial antagonists," he said.

Wong pointed to the need for further research to evaluate *Brassica* and other plant residues for pest and disease control. He said, for instance, that fungicidal concentrations of ITCs vary for different fungi and little is known about the effects of water-soluble non-ITC compounds which have been shown to suppress nematodes.

"In the longer term," Wong said, "it may be possible to breed *Brassica* cultivars with high concentrations of various GSLs to target specific pathogens."

At the present state of knowledge, however, he suggested a "shotgun approach" in using *Brassica* cultivars to suppress as many pests and pathogens as possible.