

Pesticidal bacteria can be programmed to self-destruct

GX BIOSYSTEMS APS HAS FOUND A WAY to limit the life span of genetically engineered bacteria, which are used as bio-pesticides. A "suicide gene" is inserted into the bacteria's DNA structures, which triggers the production of fatal toxic chemicals when the "pesticide" job is complete. This technological breakthrough may help to reduce the fears of scientists and regulators, some of whom have resisted the release of genetically engineered bacteria.

... others feed on pesticide residues

PESTICIDE MANUFACTURERS, MIXERS and applicators may have another new friend in their efforts to eliminate possible pollution from pesticide containers, sprayer rinses and unused mixtures. University of Idaho researchers have found that dried forms of two bacteria are effective at breaking down parathion and 2,4-D into harmless compounds of carbon dioxide and water—at field sites where they have been used.

This technology could help to eliminate the need to store equipment rinses and unused pesticide mixtures. If the range of pesticides that can be broken down can be expanded, then the necessity of burying pesticide residues in landfills could be greatly reduced.

Israeli's works on genetic approach to nitrogen uptake

SCIENTISTS IN ISRAEL have been able to improve the efficiency of cultivated varieties of wheat to uptake nitrogen. By transferring genes from wild wheat into domestic varieties, they have improved nitrogen uptake by as much as 30%. This improved uptake significantly reduces the amount of nitrogen in the soil that could leach into the ground water. In a related project, Israeli scientists are studying bacteria that are able to produce ammonia, a nitrogen source in fertilizers, from the air.

Pesticide theft increases in California—and elsewhere?

IT HAS BEEN SAID that California leads the country. If so, turf managers need to consider increasing security on their storage of pesticides. Recently, it was reported that \$63,000 worth of pesticides were stolen from a Sonoma County agricultural service. Officials reported that thefts of pesticides averaging \$30,000–60,000 have been on the rise over the past three years.



Study links soil moisture, fertility, and leaf production

WORK DONE in the northern Great Plains has demonstrated a relationship between soil fertility, available soil moisture, and plant production. When soil fertility was maintained at high levels, each inch of available soil moisture resulted in an increase in plant growth of up to 5% over soils where soil fertility was allowed to decrease. Although these studies were done on agricultural crops, they have direct benefits for turf managers.

Turf has been shown to be the second most efficient means of capturing soil moisture, primarily because of the dense, filter-like effects of the leaf cover. Allowing soil fertility levels to decline has a snowball effect on leaf cover. As fertility declines less leaf structure is produced—thereby reducing the turf's ability to efficiently capture moisture. As the ability to capture soil moisture declines, efforts to increase soil fertility become more difficult.

Canadian study shows benefit of using balanced fertilizers

LONG-TERM STUDIES IN CANADA have shown that using unbalanced fertilizers reduces plant growth and reduces Nitrogen efficiency. The tests showed that applying nitrogen and potassium at the same time increased plant growth by 20% over just applying nitrogen by itself. Also, application of potassium increased nitrogen efficiencies by 12%. ■

COMING ATTRACTIONS

The next issue of *Turf Grass Trends* will feature in-depth articles on:

- **Soil Testing**—a tool to enhance turfgrass performance
- **What is soil anyway?**

- **PLUS** our regular updates on the latest research findings, regulatory actions, and timely tips on improving your turf management practices.

Subsequent issues will include articles on:

- A COMPREHENSIVE SURVEY OF ENVIRONMENTAL REGULATORY ISSUES
- SITE SURVEYS—A MANAGEMENT TOOL