CUTT

Scanning the Journals

Environmental Cancer Distraction

There are few issues more actively debated among green industry professionals, legislators and advocacy organizations than the environment. A constant stream of criticism from environmentalists or persons concerned about the impact of pesticide use on human health, often places industry leaders and legislators into a defensive posture. In many cases, the easiest solution—especially for legislators—is to promulgate new regulations. The question remains, is this the *best* solution?

Professor Bruce Ames, an internationally recognized toxicologist from the University of California at Berkeley, is a regular contributor to this discussion. His most recent work, published in the *Journal of Mutation Research,* challenges the notion that chemicals in the environment cause cancer. In summarizing a decade of research, Ames and his colleague Professor Lois Gold attempt to make four points.

First, high doses of *all* chemicals—natural or synthetic—will cause cancer in laboratory rodents. Therefore, these doses are not likely relevant to the low doses of human exposure. Second, human exposure to naturally occurring pesticides in plants, half of which will cause cancer in rodents, is 10,000 times their exposure to synthetic pesticides. Third, the major causes of cancer—other than smoking—involve diet, hormonal factors, infection, inflammation, and genetic factors, not synthetic chemicals. Finally, Ames and Gold express concern that putting huge amounts of money into minuscule hypothetical risks damages public health by diverting resources and distracting the public from major risks.

Ames makes a compelling argument when he cites more than 200 studies that report an association between low consumption of fruits and vegetables and high incidence of cancer. It is important to note that recent studies have suggested that synthetic pesticides mimic certain hormones and trigger cancer, however, the scientific community remains undecided.

In the end it becomes a debate in which environmental and human health advocacy groups accuse the industry of bias from having a vested interest. This article is important reading for people looking for some moderation to the debate. One cannot discount the importance of a robust discussion and it is always best to err on the side of caution, but not at the expense of science and public health.

From: Ames, B.N. and L.S. Gold. 2000. Paracelsus to parascience: the environmental cancer distraction. Mutation Research 447:3-13.

Understanding Annual Bluegrass Winterkill

Each year throughout the Northern U.S. a significant amount of golf course turf dies from a complex of factors, loosely termed winterkill. There are a myriad of causes of this complex including diseases, ice encasement and freezing stress. Of these causes, the most elusive to understand has been freezing stress.

With few exceptions, annual bluegrass is a major species on golf courses more than 20 years old in northern climates. A prolific reproductive ability enables annual bluegrass to continually colonize areas that have low turf density. Still, a limitation of annual bluegrass has been the inability to survive winter conditions, especially where persistent ice cover is common.

Canadian researchers, led by Julie Dionne, now on the faculty at the University of Guelph, have been exploring the physiology of annual bluegrass freezing stress resistance.

Populations of annual bluegrass from Professor Dave Huff's collection at Penn State University faced a battery of freezing regimes in a growth chamber in an effort to determine carbohydrate status. The populations differed substantially in response to freezing, as some were killed at 18˚F and some were hardy to -6˚F. It was hoped that this variability would be correlated to the amount of stored carbohydrates; unfortunately, this was not case.

This research did suggest that the ability to hydrolyze stored energy (fructans) to available energy (sucrose) may partially explain the difference in freezing stress. From a practical standpoint any measure a manager can implement to enhance energy reserves, including late season fertilization and increased mowing height, could maximize the chances of survival. With annual bluegrass, nothing is ever absolute as each community of plants represents populations in various stages of evolution.

From: Dionne, J., et al. 2001. Freezing tolerance and carbohydrate changes during cold acclimation of green-type annual bluegrass ecotypes. Crop Sci. 41:443-451.

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