

A Natural Approach to Dandelion Control

FUNGI CAN REDUCE AMOUNT OF HERBICIDE NEEDED FOR PESKY WEED

A national effort to find an environmentally friendly dandelion control has set its sights on naturally occurring fungi that weaken the weed's growth and decrease pesticide use.

Preliminary findings of a five-year search by a university-industry research team co-ordinated by Professor Greg Boland, Environmental Biology, show that using selected fungi can appreciably reduce the herbicide rate needed to effectively control dandelions.



The ban of 2,4-D in many public areas in Ontario because of concerns about high-volume pesticide use has increased the need for an effective non-chemical method of managing dandelions.

"Ideally, a biological control agent (BCA) would control dandelions on its own, but this may not be enough," says Parry Schnick, a former graduate student of Boland's. "A combination of BCA and low rates of a herbicide, however, may effectively manage weeds while decreasing the amount of chemical herbicide required."

Integrating fungi with reduced herbicide doses could decrease the cost of commercial weed management and can have the advantage of being host-specific, says Schnick. So the team is testing fungi for

the properties required to become a successful BCA (also known as a bioherbicide). These fungi – or plant pathogens – are found naturally on dandelions or in soil or plant debris.

The fungi attack dandelions by forming lesions on their leaves. This either kills the plant or decreases the energy available to it, making it less competitive. Wounds caused by the BCA that don't kill the dandelion may allow other natural pests to take hold and kill or weaken the weed.

Controlling dandelions is tough. They survive a wide range of environmental conditions, produce many airborne seeds and are perennial, which means they survive winters to grow during two or more summers. Evaluating and developing a commercially acceptable bioherbicide has been a narrowing-down process. Researchers from across the country – U of G, the Nova Scotia Agricultural College and MacDonald College at McGill University – collected diseased dandelion plants and isolated fungi that caused damage. The pathogens were then screened for specific traits such as efficacy, host range and ease of production.

Schnick tested three of the identified pathogens in combination with reduced doses of three chemical herbicides (2,4-D, diquat and glyphosate). Their effective-

ness was tested under laboratory and field conditions at the Guelph Turfgrass Institute. Each pathogen and herbicide was also tested alone, to compare single and combination treatments.

Results showed that some BCA-herbicide combinations were more effective than herbicides or BCAs alone, in both lab and field. But combination treatments were less effective under field conditions, suggesting that environmental factors may play a role in overall effectiveness.

The next step in developing a commercial product is to investigate storage and shelf-life qualities of the BCAs, as well as production costs. If more research and assessments are carried out and found promising, researchers predict a BCA product could be available in the near future.

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For more information about lawn care and dandelion control, call the Guelph Turfgrass Institute at [519] 767-5009 or visit the website www.uoguelph.ca/GTI.

— "At Guelph," May 24, 2000,
Juhie Bhatia, Office of Research

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