



SARRITOR GRANULAR BIOHERBICIDE

OTS HIGHLIGHT ARTICLE • DR. ALAN WATSON • MCGILL UNIVERSITY • ALANWATSON@MCGILL.CA

In the recent past, control of common dandelion and other broadleaf weeds in turfgrass has been readily achieved with phenoxy herbicides. The herbicide option has been revoked through municipal and provincial legislation across much of Canada, necessitating alternative approaches. Finally, there is an effective biological option. SARRITOR is the first bioherbicide developed for control of dandelion and other broadleaf weeds in turfgrass. SARRITOR granular bioherbicide has received temporary registration by Health Canada's Pest Management Regulatory Agency (PMRA) and is proceeding towards full registration. A limited amount of Sarritor was available for the 2008 season. Full production will not be achieved until 2009/10.

The active ingredient of SARRITOR is a naturally occurring fungal plant pathogen, *Sclerotinia minor* (IMI 344141). *Sclerotinia minor* is widespread in the environment, yet there are no published reports of disease associated with *Sclerotinia minor* in birds, wild mammals, earthworms, honeybees and other arthropods, aquatic invertebrates or fish. Many soil organisms, including nematodes, earthworms, mites, bacteria and fungi feed

on or parasitize fungal sclerotia. Human and environmental toxicological studies have established that *S. minor* IMI 344141 is neither toxic nor pathogenic to non-target organisms. SARRITOR's active ingredient is not toxic or pathogenic to birds, honeybees and earthworms and SARRITOR granules have low dermal toxicity and are non- to minimally irritating to the skin and eyes.

The bioherbicide product is produced by growing the fungus on ground cereal grains followed by drying and vacuum packaging. The small (1.5-2.0 cm diam-

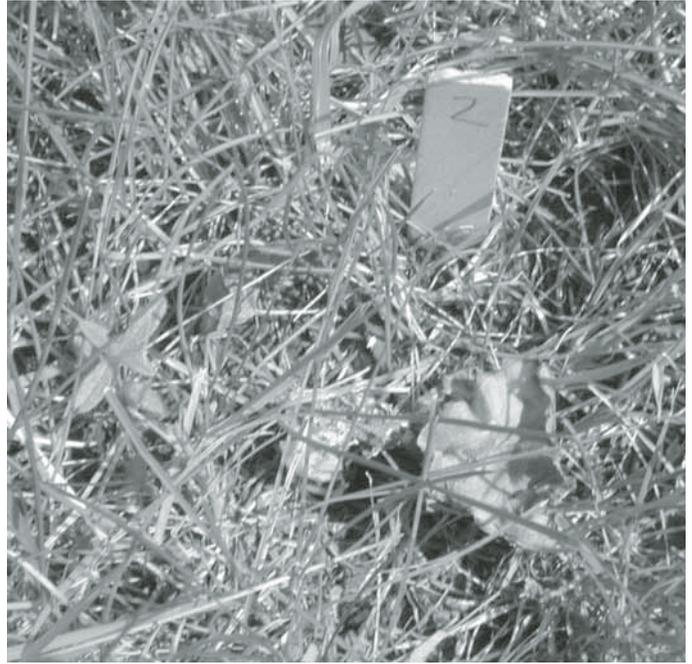
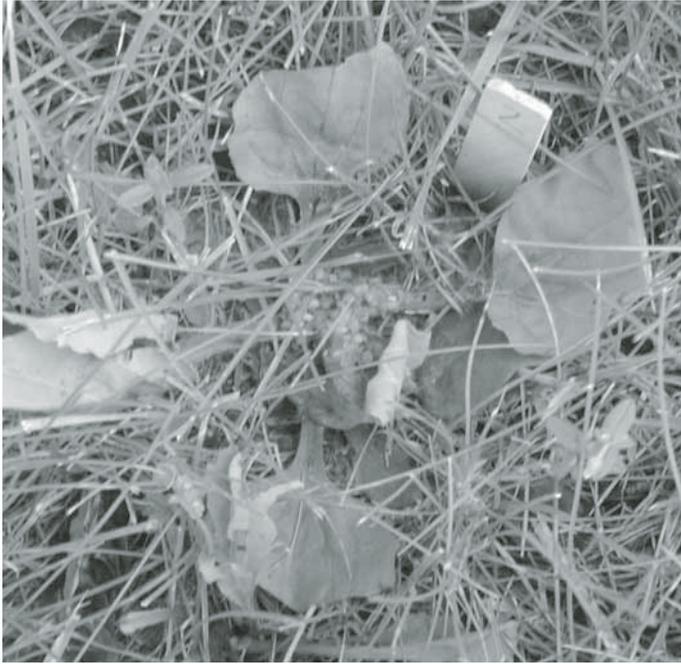
high temperatures of 15-24°C and rainfall or irrigation within 12 hours. The product should not be applied when temperatures are above 25°C or during periods of dry weather. Disease develops quickly and complete kill of dandelion and other broadleaf weeds can be achieved within seven days, about twice as fast as the standard three-way chemical herbicide. The product is compatible with normal lawn maintenance operations such as mowing, fertilization and irrigation.

Foliar damage and dandelion mortality caused by SARRITOR are affected by

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eter) bioherbicide granules are broadcast or spot applied to weed infested turf in the spring and/or the autumn. To work, the fungus must grow out of the granules and invade and colonize dandelion and other broadleaf weeds. Favourable conditions for germination and infection are daytime

plant age and the presence of grass competition. Dandelions of all ages are more severely affected by *S. minor* in the presence of grass competition. A healthy grass sward provides a microenvironment favouring the success of SARRITOR as a biological control agent of dandelion.



Thus proper management of the turfgrass environment is complementary to the efficacy of *S. minor* as a biocontrol for dandelion and other broadleaf weeds.

Most broadleaf plants are susceptible to infection with *Sclerotinia minor* strain IMI 344141 following broadcast or spot treatment with SARRITOR granules. SARRITOR destroys all above-ground plant foliage and reduces root biomass, but dandelions with large tap roots may resprout and need re-treating. Variation in damage amongst weed species is a reflection of different growth habit (upright vs. prostrate vs. creeping); leaf size, leaf orientation – all features that affect the degree of direct product contact onto plant stem and leaf surfaces. Plants with the rosette form of growth intercept more

bioherbicide particles than do plants with upright growth habit. Less bioherbicide product achieves direct contact with upright plants. SARRITOR granules and *Sclerotinia minor* strain IMI 344141 do not persist in the environment and are not readily dispersed from the site of application. Mycelia of the fungus do not survive beyond 11 days in the turfgrass environment. Thus SARRITOR does not persist and has no residual activity, although SARRITOR will kill dandelion seeds that the fungus contacts on the soil surface. Turf grasses are not harmed by SARRITOR. Kentucky bluegrass, creeping red fescue, perennial ryegrass, annual ryegrass, creeping bentgrass, colonial bentgrass, chewing's fescue, tall fescue and hard fescue are resistant to infection

following both pre- and post-emergent applications of SARRITOR. The risk to non-target plants is limited to those growing in or adjacent to treated turf. Users are advised to avoid direct application to desirable broadleaf species. ♦

Adjacent Page Left: Spring after 40g/m² SARRITOR in previous fall.

Adjacent Page Right: Spot application of 0.4g on bull thistle.

Above Left: Three days after spot application of 0.4g of SARRITOR on broadleaf plantain.

Above Right: Seven days after spot application of 0.4g of SARRITOR on broadleaf plantain.

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