New Insecticides Expected...

Continued from page 1

small to mid-sized grubs. Further testing is needed to determine its performance as a fast-acting curative for large grubs. Registration of Meridian™ is anticipated for late summer of 2000.

Fipronil Granular®. Golf superintendents who contend with mound-building nuisance ants on putting greens and tees can look forward to relief from a new granular formulation of fipronil. Familiar to southern turf managers as the active ingredient in Chipco Choice®, fipronil has been used for several years for mole cricket control on golf courses and commercial grounds. Unlike the label for Chipco Choice, which requires that the product be applied by slit-placement application equipment, **the new fipronil granular ant formulation will allow standard broadcast applications.** Fipronil is a member of a new insecticide class called phenyl pyrazoles. It has a favorable environmental profile, with a unique mode-of-action that poses relatively low hazard to humans, pets, wildlife, and earthworms.

Used as a broadcast treatment, granular fipronil is very effective for ant control. It works both through contact and ingestion. Worker ants foraging in treated soil pick up the residues on their bodies; then, through grooming and food transfer, other members of the subterranean colony are exposed to the insecticide. Despite its very low use rates, **fipronil is quite persistent in soil.** University tests indicate that one application in the spring will suppress ants on putting greens throughout the growing season, and possibly for 12 months or more. Aventis CropScience, which recently formed from a merger of Rhône-Poulenc and AgrEvo, has applied for accelerated registration of fipronil for general purpose ant control. Use sites will include lawns and golf courses. Approval and registration of granular fipronil are expected by late summer of 2000.

Summarizing Turf Rolling

James B Beard

From the 1700s up to the 1920s turf rolling was one of the two major cultural practices used on turfgrasses, the other being mowing. However, the development of an understanding as to the significance of turf rolling in increasing soil compaction and the resultant root system loss and declining turfgrass health subsequently resulted in turf rolling falling into disfavor among turf managers. Recently, the widespread use of high-sand root zones of the proper particle size distribution that have a minimum compaction tendency has allowed increased use of turf rolling on putting greens, bowling greens, tennis courts, and sports fields.

Spring Turf Rolling Practices. Turf rolling is an important spring cultural practice on most kinds of turf regardless of the soil texture. It is usually practiced in early spring, prior to the first mowing, and especially in colder climatic regions where frost heaving occurs. **Turf rolling functions in pushing the turf, including the critical grass crowns, back into proper contact with the soil, which minimizes the chance of desiccation.** Frost heaving can be so severe with turf grown on muck soils of golf courses that it can be lifted in frost domes as high as 3 feet (0.9 m). Obviously, such turfs are very prone to desiccation unless rolled back into the proper position to maximize the positive soil moisture relationships. In addition, **turf rolling smooths the turf-soil surface, thereby minimizing the potential for scalping during the first few mowings in the spring.**

Rolling of Closely Mowed Turfs. Turf rolling can be used as a positive advantage on putting greens under certain circumstances. Irregularities can arise on greens as a result of ball marks, foot depressions during wet soil conditions, improper hole changing techniques, insect and small animal activity, vandalism, and certain cultural activities, such as turf cultivation. Thus, **turf rolling can be used as a finishing technique to ensure maximum surface smoothness and trueness of ball roll,** as well as to increase the speed of ball roll. Both effects are especially important during a major tournament or championship. Use of a water ballast roller allows filling with a quantity of water to no more weight than is needed in order to minimize the potential for compaction. **On properly constructed high-sand root zones, rolling may be accomplished with minimum concern for soil compaction problems.**

Typically, **turf rolling can cause an increase in ball roll distance of 10%, even on greens with an inherent ball roll distance of 9 to 10 feet (2.7–3 m).** Furthermore, the use of a mechanically powered turf roller unit with four individual rollers can increase the ball roll distance up to 20%. **The effect of turf rolling on ball roll distance may persist for 2 to 3 days. Generally, turf roll-**

Continued on page 8

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Summarizing Turf Rolling

Continued from page 6

ing should not be practiced at a frequency of more than two times per week, in order to minimize the negative effects of turfgrass wear injury. However, turf rolling on a daily basis may be practiced during major tournaments, provided negative turf effects do not appear. Most of the positive and negative turf responses from rolling have involved assessments on creeping bentgrass (*Agrostis stolonifera*). Unfortunately, there have not been comparable studies conducted on bermudagrass (*Cynodon* spp.) to ascertain whether similar turf responses occur.

Other Turf Rolling Functions. The use of the turf roller has other important functions, such as **firming a root zone during site-soil preparation for planting turfgrasses.** The rolling operation itself also allows one to better detect very shallow depressions in the surface, which can then be corrected through additional smoothing operations. Turf rolling also is frequently employed during the turf establishment phase as a **smoothing operation for the turfgrass seedlings or vegetative propagules during the grow-in period.** Finally, it also is valuable **following sod transplanting to provide good contact between the sod interface and the underlying soil.** This ensures a positive soil moisture relationship rather than producing air pockets, where drying of the roots can cause a delay in transplant rooting.

ASK DR. BEARD

Q *Is spring a good time for seeding turfgrasses in the northern contiguous United States?*

A A key factor in timing the seeding of cool-season turfgrasses is the soil temperature. **Optimum temperatures for seed germination of most cool-season turfgrasses are at soil temperatures in the order of 86°F (30°C) during the daytime and 68°F (20°C) at night.** Optimum grass shoot growth occurs at soil temperatures in the range of 60 to 70°F (16–21°C). **Thus, depending on the location, late summer to early autumn is the preferred time for seeding cool-season turfgrasses.** This timing is when temperatures are in the higher range for optimum seed germination and progressing to cooler temperatures, which favor shoot growth, tillering, and lateral stem development for sod formation. In contrast, spring is a period of progressively higher temperatures, which is just the opposite of what is desired. In addition, the late spring–early summer period typically is when numerous annual weedy grasses—such as barnyardgrass, crabgrass, foxtail, and goosegrass—are germinating and can create a highly competitive weed situation. Except for the northern areas of Canada and Alaska in North America, **the preferred time for seeding cool-season turfgrasses is late summer–early autumn, with spring being a distant second choice but better than the midsummer heat and drought stress season.**

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