Topdressing to Manage Thatch

The perennial nature of a turfgrass system includes the regular creation and degradation of organic matter, i.e., leaves, stems and roots. Organic matter accumulation is a common occurrence in the turfgrass system and except for grass clippings, which by their chemical nature rarely accumulate in the soil, dead stems (stolons and rhizomes) and roots result in the formation of thatch. Strictly defined, thatch is the accumulation of decomposed or partially decomposed organic matter between the grass canopy (verdure) and the soil surface. Thatch provides unique benefits such as insulating the soil, absorption of pollutants, and surface resiliency. However, excessive accumulation results in significant reduction in infiltration due to layering, as well as the potential to harbor turf pathogens.

A report from the International Turfgrass Research Journal, published in 1998 investigated the influence of topdressing material, frequency and rate on thatch. Straight sand was compared to peat and sand, and peat and soil mixes at 2 rates and either every three weeks or two times per year. Applications were made to a 10 year old Penncross creeping bentgrass area maintained as a putting green. Topdressing materials included a medium-fine sand, reed sedge peat, and a sandy loam topsoil where treatments required. Thatch samples were measured by weight loss on ignition at 600˚C and reported on a weight per unit volume basis.

There was no significant influence of topdressing rate and frequency on thatch accumulation. However, visual observations noted significant layering when infrequent topdressing was performed. Experimental sampling differences were used to explain the lack of difference associated with rate and frequency.

There was no significant reduction in organic matter (OM) from the 100% sand topdressing, when compared to peat and soil treatments, however, there was a significant reduction when compared to the control plot. Interestingly, the OM content of the peat and soil treatments was calculated and measured to be significantly lower in the thatch than what was applied, indicating enhanced biodegradation of OM associated with the addition of OM. This study concluded that topdressing is an important means for managing thatch, and that the dilution of OM and the biodegradation of thatch are both important to reducing overall OM levels.

From: Couillard, A., A.J. Turgreon, and P.E. Rieke. 1997. New insights into thatch biodegradation. ITRJ, 8:427-435.

Biological Control of Dandelion

Turfgrass areas throughout cool humid regions are regularly infested with dandelion. While there is limited data on the agronomic and functional performance issues associated with weed invasion, the reduction in visual quality is well known. Concern over herbicide use has forced many turfgrass managers to restrict weed control programs, resulting in significant reduction in visual quality. In addition, traditional turf management programs reliant on herbicides for weed control are being asked to explore alternatives. However, there has been limited success with the use of alternative measures to control weeds.

Researchers at the University of Guelph have identified a common soil borne fungal pathogen that infects dandelion as a potential Biological Weed Control Agent (BWCA). However, there is little information on how to most effectively utilize and enhance the effectiveness of this BWCA. As a result, the researchers investigated the use of various spray adjuvants that are carbon based products to serve as a nutritional source for the organism. Results concluded that durum semolina, guar gum and gluten flour enhanced the effectiveness of the BWCA.

It was speculated that applying BWCA with plant derived substances such as the gum, gluten and semolina in this trial, stimulates fungal compounds required for degrading cell walls, improving infection, and thereby enhancing control. Still, there are many environmental conditions that must be explored before this technology will be considered effective. Until then, we must be mindful of the subtleties of this technology that will require us to understand more about the biological system we are managing.

From: Neumann, S. and G.J. Boland. 1999. Influence of selected adjuvants on disease severity by Phoma herbarium on dandelion. Weed Tech. 13: 675-679.

Scanning the Journals

A review of current journal articles

The OM content of peat and soil treatments was found to be significantly lower in the thatch than what was applied, indicating enhanced biodegradation of OM associated with the addition of OM.

Applying BWCA with the plant derived substances tested in this trial, stimulates fungal compounds required for degrading cell walls, improving infection, and thereby enhancing control.