

Earthworms: we need attitude adjustment

Turf managers want to get rid of them, but earthworms are a vital part of the turf ecosystem.

by Pam Elam

■ Every season, I receive calls from concerned golf course managers, landscapers and homeowners about the little piles of soil that are brought up each day by industrious earthworms.

While their concern is noted, it is important to understand the valuable role earthworms play in the overall turfgrass ecosystem:

- Earthworms help to mix surface organic layers, or thatch, with the underlying soil profile.

- In their burrowing activity, earthworms increase aeration and water movement into the soil and increase root health of the turf.

- Earthworm castings help soils develop good structure and lower soil bulk density.

All of these activities are important to maintain a healthy and long-lived turf.

The types of conditions that support or deter the development of earthworms are associated with the same management practices that correlate to thatch accumulation.

For example, acid or soil pH of 5.0 and below favors thatch development. And research shows that few earthworms reside

under turf in acid soils.

Also associated with acid soil conditions are poorer soil aggregation, higher soil bulk density and greater resistance to penetration. In 1985, Dr. Daniel Potter reported that an increase in soil acidity due to acid-type nitrogen fertilizers (like ammonium sulfate) brought with it a concurrent increase in thatch and a decrease in earthworms.

Earthworms prefer moist, medium to fine textured soils with high amounts of organic matter, adequate amounts of calcium and a moderate soil pH.

Another factor that might be associated with earthworm activity is pesticide use. Clearly, chlorinated hydrocarbon-type insecticides are toxic to earthworms. Some herbicides, specifically DCPA (Dacthal) have been associated with decreased earthworm activity. However, Cole & Turgeon (1978) suggest that thatch accumulation was not related to reductions in earthworm activity after DCPA application but rather primarily attributed to reduced microbial activity.

With other herbicides such as bensulide (Betasan), the data show no significant extra thatch development. Dr. Turgeon, in fact, found less thatch with some pre-emergence herbicidal treatments, possibly due to a reduction in grass growth and herbicide toxicity to earthworms and other soil organisms.

So it is unclear how much pesticides affect earthworms. What is also unclear is how much and how direct the link is to pesticide use, thatch development and earthworm activity.

While it is known that earthworms are important in thatch reduction, we don't know how much and to what percent might be more attributable to other micro-organisms. We also don't know enough about the effect of pesticides on earthworms, micro-organisms and to other critters in the soil.

Considering the importance of soil organisms in the breakdown of nitrogen to available forms for plant use, organic matter decomposition and other soil process, research in these areas could have a significant impact on our management practices. However, what is clear are the other benefits of earthworms to the development of good soil structure and what they tell you about the quality of your turf and soil ecosystem.

So what is needed is an attitude adjustment about earthworms bringing up little piles of soil. Look at alternatives to managing earthworms rather than trying to totally prevent them.

Some suggestions:

- 1) Sweep golf greens regularly with a broom to remove the castings and dirt piles.

- 2) On residential turf, consider mowing higher where the symptoms are not so obvious.

- 3) Drop soil pH by using acid-type fertilizers.

- 4) Increase soil aeration by core aeration and/or vertical mowing which may reduce the degree of burrowing.

However, remember the consequences of such actions: decreased soil aggregation, more thatch, greater bulk density and a possible increase in moss and algae.

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County Extension Service. This is an excerpt from a piece in "Pro-Hort News," Spring, 1993.

Here's how to save water

■ Here are some tips on saving irrigation water from the University of California Cooperative Extension Service:

Turf:

- Early AM watering cuts evaporation.
- Water lawns separately from trees, shrubs and groundcovers, if possible.
- Remove thatch in spring if it's more than one-half inch thick. Thatch should not be removed in the heat of the summer.
- Weeds steal nutrients; control them.
- Fertilize moderately, apply at the low end of recommended rates.

- Keep lawns mowed at the right height: 1.5-3" for tall fescue, 1.5-2.5" for perennial ryegrass and Kentucky bluegrass; 0.5-1" for bermudagrass and zoysiagrass; 0.5-1.5" for St. Augustinegrass.

- Aerate to prevent soil compaction. Proper aeration requires removing plugs. Clay soils need regular aeration.

Trees:

- Water trees separately from surrounding plants. Trees prefer fewer, deeper waterings than grass.

- Water to a depth of two to three feet to help promote deep rooting.

- Keep turfgrass and other plants at least one foot from tree trunks.

- Apply mulch around trees, keeping it a few inches away from tree trunks.

- Control weeds around trees.

- Avoid soil compaction around trees.

- Do not routinely fertilize landscape trees.

- Prune only when necessary: remove dead and diseased wood, dangerous branches, and suckers growing from the base of the tree.