Clemson University
Department of Pesticide Regulation

Pre-Treating Water-Saturated Soil: How Wet is Too Wet?

A Guide for Builders, Homeowners, and Pesticide Applicators

Department of

Pesticide Regulation

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The Problem

Like other southeastern states, South Carolina has a warm, humid climate that contributes to high termite pressure on homes and buildings. A great deal of research has gone into the development of treatment methods to protect structures from termite infestation; however, as suburban development increases along the State's coastal areas and waterways, construction has moved into low lying areas and brought about a new problem for Pest Control Operators (PCOs) performing termite treatments. These construction areas often have shallow groundwater and standing water from rain long after the precipitation has stopped. Soils in these areas may be saturated with water during part (or all) of the year. Liquid termiticides have been designed and developed to maintain their efficacy for a long period of time by bonding with dry soil particles. It is not possible to perform an effective treatment in these wet areas because the termiticide will not properly bind to the soil. And, since the termiticide will not bond properly to the soil, there is a tremendous potential for pesticide runoff and environmental damage. All termiticide labels forbid the application of termiticides to standing water or water-saturated soil.

What is Saturated Soil and Groundwater?

Soils in which the open spaces between the soil grains are filled with water are defined as saturated. For the purposes of termite treatments, we can separate saturated soil into two types: 1) temporarily saturated soil from precipitation, and 2) permanently saturated soil below the water table (*i.e.,* groundwater). The major difference between the two types is that soil below the water table is totally saturated down to the bedrock. With the precipitation-saturated soil, only the top few inches of soil may be saturated. Precipitation-saturated soil will dry over time; however, with groundwater, the soil will not dry out without special drainage systems being installed. In either case, these soils cannot readily hold additional water. Any additional liquid added to them will tend to pool at the surface or run off into low-lying areas.

Dangers of Treating Saturated Soil

Two serious problems can occur if PCOs treat saturated soil. Because the soil is already saturated, it will not absorb the termiticide mixture. If the chemical is not absorbed into the soil, the treatment will not be effective, and termites will still be able to damage the structure. Unabsorbed termiticide will tend to gather in pools in low areas at the soil surface, resulting in an uneven or incomplete barrier. Even worse, it may run off and contaminate non-target sites or surface and groundwater sources. The risk of runoff and surface-water contamination may persist for several hours or days after the treatment, if the still-liquid termiticide is exposed to precipitation. The presence of liquid termiticide

also poses a risk to anyone entering the treatment site. Contamination of surface waters poses a significant risk to wildlife and humans, and it is a violation of several pesticide and pollution-control regulations, some of which provide for substantial penalties.

In areas where the water table is high, it is possible that groundwater could become contaminated with termiticide. Termiticide applied to the top of water-saturated soil will diffuse (mix) into the groundwater at low to moderate concentrations. If the structure's footer trenches extend down into groundwater, however, termiticide could be injected directly into the water table. Because groundwater is a dynamic, moving fluid, it can carry contaminants a considerable distance away from the site beneath the surface. This off-site movement will not be visible until the contamination is detected at some other point such as a well, a spring, or other water source. It is not unusual for it to take millions of dollars to make contaminated water sources fit for human consumption.

How Can I Tell if the Site Is Too Wet?

This soil is too wet to treat.

Any standing water within the treatment zone is an indication that the entire site is too wet to treat. Saturated soil can easily be identified by performing simple field tests. The first method is to scout the application site to see if there is any standing water. If you have standing water on the site, it is too wet to be treated. If no standing water is apparent on the site, but the soil looks wet, either dig a hole in the soil to the depth that you will be treating or check the bottoms of footer trenches for water. If water flows into the excavations from the soil, then you have intersected the water table, and the site is too wet to treat. Sites where the groundwater will be in contact with the termiticide cannot be treated with standard liquid termite treatments. If you still cannot tell if the site is saturated, scoop up a hand full of soil from the treatment area and squeeze it in your hand. If the soil remains in a "ball" and water is visible on your hand, then the site is too wet to treat.

What Can I Do?

The Department of Pesticide Regulation at Clemson University recommends the following options if you find that you cannot treat a water-saturated site: (1) Wait until the site dries out; (2) Use alternative technologies such as termite baiting programs or borate treatments; or (3) Conduct the treatment as a post-construction treatment. This should be completed after the grade has been altered by the addition of soil during the landscaping process.

If you find a site that is only damp — not saturated, try the following:

If the label allows it (and most do), double the concentration of termiticide and cut the volume in half. The same amount of active ingredient will be applied, but with much less chance of runoff. Keep in mind that this practice may not be suitable for all sites or all products.

Chemical pooled in a footer of a water-saturated site.

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