Localized Dry Spot Program

EARTHWORKS NATURAL ORGANIC PRODUCTS, INC.

Localized Dry Spots (LDS) are a costly and frustrating problem for any turf manager. Thousands of dollars can be spent on wetting agents to address the problem, but wetting agents only provide short-term solutions and do not solve the problem. The first step to create long term solutions is to identify the culprits that are causing the problem. One of the most notorious agents in causing localized dry spots is bicarbonate build up on the soil surface. Bicarbonates often combine with sodium, and are regularly introduced to the turf environment through irrigation water. Bicarbonates seal the soil surface by making calcium insoluble, reducing the rates of water and air movement into the soil. In circumstances where the bicarbonate level is very high, one can actually feel or even hear the sealing of the soil surface ~ it will feel and sound as if you are walking on crepe paper. The real problem here is that this blocking of air and water negatively impacts the life activity of micro-organisms underneath these sealed off areas. Soil microbes generate a substance that behaves like a wetting agent to coat the soil colloids, allowing water to move past. When the microbial populations are eliminated in these isolated spots, the soil becomes hydrophobic, and becomes very difficult to re-wet, even with wetting agents.

The best attack for solving the problem of localized dry spots is to first identify where the bicarbonates are coming from. More often than not, it is the irrigation water but it is not usually cost effective to treat the water. In these situations, soil treatments are the only answer and it starts by knocking the sodium off the soil colloid and offsetting the bicarbonates in solution. Calcium products are the best way to perform this, and a program of soluble and sustainable forms of calcium is the most effective. Physical scarification (spiking and needle tining) is very effective at physically tearing through the sealed surface, allowing for improved short-term air and water movement. Perhaps the most important step in this program however, is to reintroduce microbial bio-stimulants and food stuffs to allow beneficial bacteria to repopulate that area of soil affected by the bicarbonates.

See reverse for a suggested program.

SYMPTOMS:

Dry Soil

Dead Grass

High Bicarbonates

SOLUTIONS:

Remove Bicarbonates

Stimulate Biology

Oxidize Soil

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Bicarbonate & Sodium Removal:

1) **Cal Vantage** –2-6 ounces/1000 per week depending on the severity of the bicarbonate load. This will provide an immediately available form of calcium to help remove bicarbonates from the root zone and help to knock sodium off the soil surface; improving water movement through the soil. This product will also help to strengthen the cell walls and reduce plant stress.
2) **Kick** – 4 ounces/1000 per week. The humic acid fraction of this product will work as a sequestering agent by locking up the bicarbonates and sodium and not allowing them to seal the soil surface. It will also help to stimulate microbial populations needed in these biologically dead areas of soil.
3) **Gypsum** – 5 lbs/1000 per month. This is a soluble calcium amendment, and one of the best ways to knock bicarbonates and sodium off the soil colloid.
4) **Limestone** – Use only if called for on the soil test (follow rates suggested by soil test). This is a very sustainable form of calcium and will provide soil reduction of bicarbonates over a long period of time.

Biological Stimulation:

1) **Potent Sea Plus** – 2-6 ounces/1000 per month depending on severity of the problem and time of year. This product is a rich food source for beneficial bacteria and a powerful heat stress reducer. Dry spots restrict air and water movement, and the activity of beneficial microbes in the soil; this product will enhance their activity and help to sequester the sodium. Increasing rates in the hottest months is suggested to enhance biological activity when high soil temperatures are most damaging.
2) **Replenish 5-4-5** – 40 lbs of product applied over 3 to 4 applications per year. This will provide the most sustainable food source for microbes available, as well as help to re-mineralize the soil. Helping to reintroduce micro-organisms that were damaged by the dry spots, using this product will provide a better environment for air and water movement though the soil.
3) **Renovate Plus** – 25-50 lbs/1000 in aeration holes at least twice per season. This product adds Ecolite to the soil, which will help to hold water in sands, while improving porosity and air movement in native soils. It is also a rich organic supplement that will help to repopulate the dead spots with beneficial soil micro-organisms.

Cultural Practices:

1) **Frequent spiking & aerification** – One of the best tools for this practice are spikers that simply scratch the soil surface and break the bicarbonate seal. This will help to increase oxygen levels in the root zone and provide a better environment for beneficial bacteria ~ remember, oxygen is the most important nutrient to the soil plant matrix, and frequent spiking practices will assure that air is moving through the soil profile on a regular basis.
2) **Deep and infrequent watering** – Often bicarbonates and sodium problems are associated with irrigation water deposition, and shallow watering practices will allow bicarbonates to accumulate on the soil surface where they can do the most damage. Deep flushing watering practices are very important to facilitate the removal of sodium, and should be performed along with gypsum use to further improve the ability of the soil to flush the sodium out of the root zone.

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