

Knock Out the Sodium

One of the toughest challenges a turf manager can have to deal with is high sodium (salt) levels in water and soil. High levels in either are detrimental to plant health and vigor.

Excess sodium in a plant's root zone reduces the amount of water available to plants by causing water to move out of, instead of into, a plant's root cells. This causes cell shrinkage, burning, stunted growth, and ultimately plant death.

Excess salts also degrade the soil structure leading to compaction, which in turn leads to reduced water and oxygen penetration.

Regularly scheduled soil and water pH tests can help a turf manager in heading off or controlling sodium problems. In addition to those tests, the sodium adsorption ratio (SAR) provides a very precise way to gauge both the sodicity of soil and the suitability of water for irrigation. A reputable laboratory can extract the moisture out of a soil sample and provide you with an accurate SAR.

$$S.A.R = \frac{Na^+}{\sqrt{1/2(Ca^{2+} + Mg^{2+})}}$$

As a rule of thumb, the higher the SAR, the poorer the water quality. When the number rises above 12 you know you've got a problem, since repeated use of high sodium irrigation water will damage turf, trees and shrubs.

The problem can be dealt with in several ways.

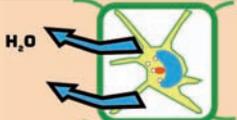
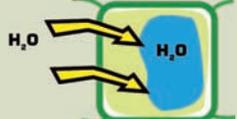
One way is to plant only salt-tolerant species in the landscape, but this is often not a practical remedy. Another way is to flush the salts out of the root zone by using excessive amounts of water, but this is not always practical and has its own downsides.

The method we recommend is to apply calcium to the soil. The reaction between the calcium and the sodium results in neutralizing the sodium, and the salt is prevented from causing further plant damage. You can apply calcium in the form of gypsum (a granular product), but Growth Products' new **Sodium KnockOut 5-0-0** is easier to apply and works much more quickly.

Sodium KnockOut is a liquid product that contains 6 percent readily available calcium. It also contains a natural wetting agent (*Yucca schidigera*), allowing it to quickly penetrate even night-marish soils. Once in the soil, the calcium immediately reacts with the sodium and quickly reduces salinity levels.

By restoring the correct sodium-calcium balance in a soil, **Sodium KnockOut** improves both soil structure and plant health. Problematic dry spots disappear, and stressed turf becomes healthy again, showing the beautiful green color that turf managers like to brag about.

Once soils are restored by initial applications of **Sodium KnockOut**, reduced levels of are recommended for regular maintenance. **Sodium**

<p>High Salt Index (Hypertonic solution)</p>		<p>Water exits across the cell membrane when a solution placed on it has a higher salt concentration than that within the cell. The resulting shrinkage may damage the cell.</p>
<p>Balanced Solution Content (Isotonic)</p>		<p>When in equilibrium, water will move in both directions across the cell membrane.</p>
<p>Low Salt Index (Hypo-tonic solution)</p>		<p>Water enters across the cell membrane when a solution placed on it has a lower salt concentration than that within the cell. The resulting swelling may damage the cell.</p>

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KnockOut can also be used directly in irrigation water to reduce harmful bicarbonate accumulations.

To protect their soils from future build-ups of soil salts, turf managers should use fertilizers with a low salt index. Growth Products' fertilizers are renowned for their exceptionally low salt indexes, and a Growth Products plant nutritionist would be glad to help you select the fertilizer that best fits your particular needs.

For more information on potential sodium problems in your turf and how to solve them, us at (800) 648-7626 and ask to talk to a plant nutrition specialist in your area.



SODIUM KNOCKOUT 5-0-0

- Reduces Soil And Water Salinity
- Reduces Dry Spots And Improves Water Filtration
- Improves Soil Structure
- Improves Root Growth & Nutrient Uptake

