

RestorNhance™

For Environmentally Sustainable Restoration of Former Brine or Hydrocarbon Remediation Sites

RestorN

hance

 is a mixture of two types of stable organic matter and hydrogels designed to hold critical moisture in a seedbed during germination, emergence and root development. RestorN

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 consists of components recommended for this purpose by the USDA and is ideally suited for revegetation in arid and semi-arid areas




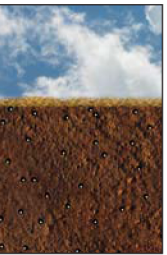
- RestorN

hance




 contains a proven water management system that:
 - ✓ Makes the most out of every drop of water.
 - ✓ Reduces leaching of fertilizers from the soil.
 - ✓ Reduces nitrogen losses by denitrification.
 - ✓ Creates macrospores in the soil to facilitate oxygen penetration, water infiltration, root penetration and accelerate revegetation.
 - ✓ Helps **restore** brine impacted sites after successful **remediation** using **Ca⁺⁺N


hance**.
 - ✓ Helps restore hydrocarbon-impacted and hydrophobic (water-repelling) soils following remediation

RestorNhance restoration and revegetation process

| Restoration Site | RestorN <h2>hance</h2> Treatment | Water Management & Soil Aeration | Revegetation |
|---|---|---|---|
|  |  |  |  |

Water Management System Demonstration

| WATER ADDED | WATER ABSORBED | |
|---|---|---|
|  |  |  |



RestorN

hance

Swells and absorbs over 200X its weight in water!

The active component of the water management system is an environmentally safe, non-toxic, water-absorbing polymer that swells and absorbs over 200 times its weight in water during irrigation or rainfall. As the soil dries the polymer slowly releases water into the soil, making that water available to germinating seeds and developing root systems.

As the polymer swells and shrinks, macrospores are created in the soil which increase soil aeration, water infiltration and root penetration.



Ryegrass Study

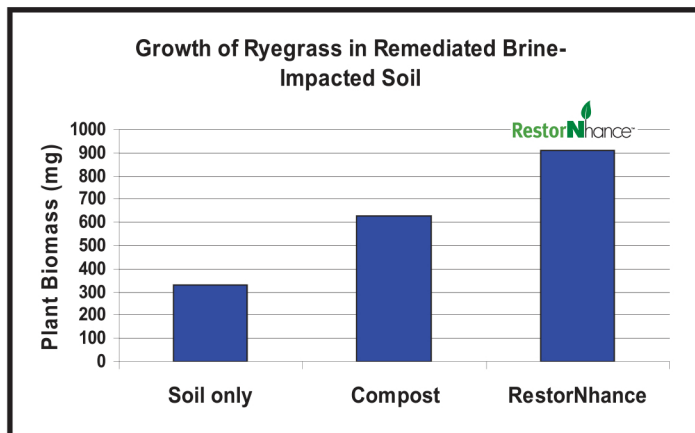
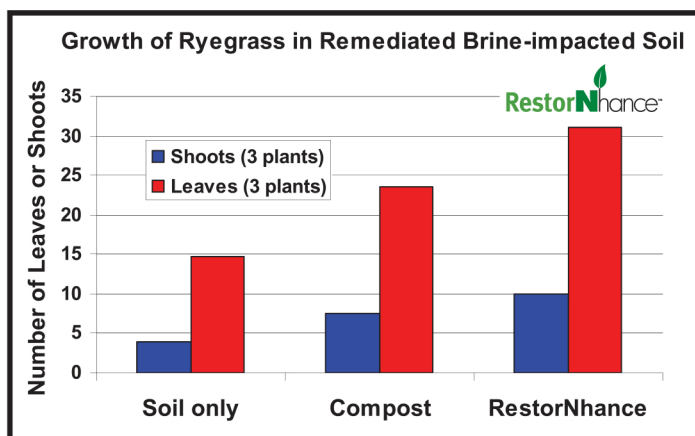
RestorNhance, with its proprietary water management system, demonstrated superior performance over basic organic matter, augmented with fertilizer, in recent bench test results for revegetation of brine-impacted soil. The soil used was from a previously remediated 10-year old brine impacted site. The test was conducted with a randomized block design with triplicate treatments in pots. The watering was minimal, with low humidity, to replicate an arid environment. The plants were annual ryegrass, and are not part of the RestorNhance product. The fertilizer used was 14-14-14, again separately provided.

As shown in the figure, RestorNhance had a strong impact on revegetation as measured by above ground biomass of the ryegrass and numbers of shoots and leaves. Other positive effects on soil properties and soil fertility (compared to the organic matter plus fertilizer treatment) included:

- ✓ Greater rates of water infiltration
- ✓ 25% increase in soil organic carbon
- ✓ 21% increase in soil organic nitrogen
- ✓ Increased bioavailability of potassium and phosphorous
- ✓ Complete study results and more...at RestorNhance.net

How to Use RestorNhance™

Seedbed preparation is critical to any revegetation effort. The seedbed must be sufficiently firm to allow new plants to become anchored to the soil, but loose enough to allow root penetration. When preparing the seedbed, till in 50 lbs of RestorNhance per 500 ft² to a depth of 6 inches to provide water holding capacity for newly developing roots. The top of the seedbed should consist of a loose aggregate of RestorNhance and soil to hold water for germinating seeds. Apply RestorNhance lightly over the surface after broadcast seeding for this purpose. Use 50 lbs of RestorNhance per 500 ft². For best results also apply a thin top dressing of hay. In windy climates use a jute netting to hold the hay in place.



BioNhance™ *Hydrocarbon remediation*
 is a source of high quality organic matter with a unique water management system that makes the most out of any available water while increasing the permeability of the soil to air.

Ca⁺⁺Nhance™ *Brine remediation*
 is a mixture of food grade organic acids that react with calcium carbonate in the soil to produce free calcium to combat sodicity. Ca⁺⁺Nhance requires 20X less water than gypsum to produce equivalent amounts of soluble calcium without the negative effects of gypsum on nutrient cycling and revegetation.

InfiltrationNhance™ *Brine remediation*
 maintains critical water infiltration during remediation of brine-impacted soils in the presence of swelling clays.

Be sure to check soil nutrients before preparing the seedbed.



Bovaird Supply Company LLC
Mailing Address:
 P.O. Box 52826, Tulsa, OK 74152
Street Address:
 1636 E. 6th St, Tulsa, OK 74120
 918-293-0223 Fax 918-894-6742
 888-525-5103
 sales@bovairdsupply.com
 bovairdsupply.com

Developed in collaboration with

