THE SCIENCE OF REDWORMS FOR SOIL IMPROVEMENT

The Worm Farm's special redworms (Eisenia Fetida species) play a key role in the development of soil and are a cornerstone for soil fertility. We like to refer to them as honey bees of the soil: pollinating the soil and acting as a mass transit system to aid in the colonization of beneficial micro-organisms and high quality nutrients.

Our redworms consume large amounts of organic debris, up to ½ their body weight per day (some studies show even more, but we prefer to be conservative). After grinding and mixing this food in their gizzard, the pulverized food contains more surface area on which beneficial microbes will feed and thrive before being excreted. The hormones, enzymes, castings (worm manure) and micro-organisms in the worm excretions contribute to creating an ideal soil environment, and will release nutrients over time in a safe and holistic method entirely geared towards your plants health.

Studies conducted by Cornell University[1] in collaboration with international research centers from Colombia and Brazil have found castings to have greater NPK values and up to 15 times more calcium than in top soils. USDA studies have found worm castings several times higher in nitrogen, phosphorus, potassium, and magnesium than topsoil,[2] and have also demonstrated that the use of worm castings will significantly increase the growth of plants[3].

The electrical charge on the surface of the skin of redworms helps protect them from toxins in the soil; they also have high concentrations of protective enzymes for cell replication. Studies have shown[4] that redworms in some cases can actually help to break down hazardous materials in the soil (reducing heavy metals such as lead by as much as 30-50%), and have been found to reduce pathogens such as E-coli, Salmonella and Helminth ova.

Other effects that redworms have on the soil are aeration. While they hunt for food, their tunneling, turning and mixing of earth creates aeration in the soil which helps it to drain better, to prevent erosion and reduce the amount of water needed during irrigating. Aerated soil will better resist compaction (a growers nightmare) and contribute to maintaining a healthy soil food web. Trials in the U.S. and overseas have shown that redworms have the ability to increase pasture production by 40%, lift wheat yields by 35% and improve grain protein levels[5].

Encourage redworms to occupy the soil in your gardens and on your farms by disturbing the soil as little as possible, and add castings and plenty of organic matter for a food supply. For further information on how to improve your soils, please visit our Soil Amendments pages on The Worm Farm web site, or call us for more information.

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[1] http://ddr.nal.usda.gov/bitstream/10113/6874/1/IND43843703.pdf - 2004
[2] http://www.nrcs.usda.gov/feature/backyard/wonworm.html - USDA Natural Resources Conservation Service
[3] http://plant-materials.nrcs.usda.gov/pubs/capmctn630801.pdf - USDA, 2001. "Soil quality improvement using worm castings and its effects on propagation of conservation plants"
[4] news.BBC.co.uk - 2008 research by Reading University
[5] Worm Digest

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