Cedar Grove Landscape
& Construction Services
http://www.cedar-grove.com/services.asp

SCIENTIFIC VERIFICATION: BENEFITS OF COMPOST USE IN LANDSCAPES, FARMING, REMEDIATION & EROSION CONTROL

Below is a partial list of scientifically verified horticultural and environmental benefits of compost use, with citations for published documentation.

Scientifically Verified Compost Benefits (citations below)

1. **Improves soil structure and porosity – for better plant root growth, reduced runoff and erosion**
2. **Reduces density of clay soils – increasing moisture infiltration, reducing erosion and runoff**
3. **Improves moisture-holding capacity of sandy soils – reducing water loss and nutrient leaching.**
4. **Supplies and supports proliferation of beneficial microorganisms in soils and growing media**
5. **Supplies organic matter and humus – aiding soil aggregation and plant nutrient uptake**
6. **Improves soils cation-exchange capacity (CEC) – improving nutrient retention**
7. **Helps plants to more effectively utilize nutrients**
8. **Buffers soil pH – improves nutrient availability and soil aggregation**
9. **Binds and degrades specific pollutants**

Adapted from a summary of research assembled by the Washington Organic Recycling Council, under a grant from the Washington State Department of Ecology - more information at www.compostwashington.org .

1. Improves soil structure and porosity – for better plant root growth, reduced runoff and erosion

Avnimelech, Shkedy, Kochva, and Yotal. The Use of Compost For Reclamation of Saline and Alkaline Soils. Compost Science and Utilization, Summer 1994.

Biocycle. 2002. Water savings From Compost Use. Biocycle (October). .JG Press, Emmaus PA.

Chen, McConnell, Robinson, Caldwell and Huang. 2003. Rooting Foliage Plant Cuttings in Compost-formulated Substrates. Hort. Technology, 13:110-114.

Darst and Murphy. 1990. Soil Organic Matter: An Integral Ingredient in Crop Production. Better Crops, 74(1):4-5.

Landschoot and McNitt. 1995. Improving Turf with Compost. Green Industry Composting. JG Press, Emmaus PA.

Logsdon, G. 1995. Using Compost for Plant Disease Control. Farm Scale Composting. JG Press, Emmaus PA.

Ozores-Hampton, Bryan, and McMilan. 1994. Suppressing Disease in Field Crops. Biocycle, Vol. 35 No. 7:60-61.

2. Reduces density of clay soils– increasing moisture infiltration, reducing erosion and runoff

Avnimelech, Shkedy, Kochva, and Yotal. The Use of Compost For Reclamation of Saline and Alkaline Soils. Compost Science and Utilization, Summer, 1994.

Darst and Murphy. 1990. Soil Organic Matter: An integral Ingredient in Crop Production. Better Crops 74 (1):4-5.

Maynard and Hill. 1994. Impact of Compost on Vegetable Yields. Biocycle, 35 (3):66-67.

Mays, Terman and Duggan. 1973. Municipal Compost: Effects on Crop Yield and Soil Properties. Journal of Environmental Quality 2:89-92.

McConnell, Shiralipour, and Smith. 1993. Compost Application Improves Soil Properties. Biocycle, 34 (4):61-63.

Porter. 1999. California Wineries Take Major Steps to Improve Vineyards. Biocycle, 40 (1):59-62.

USEPA. 1998. An Analysis of Composting as an Environmental Remediation Technology. Solid Waste and Emergency Response (5305W) EPA530-R-98-008.

3. Improves moisture-holding capacity of sandy soils – reducing water loss and nutrient leaching.

Cisar and Snyder. 1995. Amending Turfgrass Sand Soils to Improve Water Retention and Reduce Agrichemical Leaching. Florida Water Conservation/Compost Utilization Program Final Report.

Epstein, Taylor and Chaney. 1976. Effects of Sewage Sludge and Sludge Compost Applied to Soil on Some Soil Physical and Chemical Properties. Journal of Environmental Quality, 5:422-426.

Maynard. 1995. Protecting Groundwater While Recycling Nutrients. Farm Scale Composting. JG Press. Emmaus PA.

Mays, Terman and Duggan. 1973. Municipal Compost: Effects on Crop Yield and Soil Properties. Journal of Environmental Quality, 2:89-92.

McConnell, Shiralipour and Smith. 1993. Compost Application Improves Soil Properties. Biocycle, 34 (4):61-63

4. Supplies and supports proliferation of beneficial microorganisms in soil and growing media

Cole, Zhang and Liu. 1995. Remediation of Pesticides Contaminated Soil by Planting and Compost Addition. Compost Science and Utilization, 34(4):20-30.

Dick and McCoy. 1993. Enhancing Soil Fertility by Addition of Compost. In. Science and Engineering of Composting. Hoitink and Keener (Ed), 622-644. Renaissance Publications, Worthington, OH.

Epstein, Taylor and Chaney. 1976. Effects of Sewage Sludge and Sludge Compost Applied to Soil on Some Soil Physical and Chemical Properties. Journal of Environmental Quality, 5:422-426.

Hoitink and Boehm. 1993. Mechanisms of Suppression of Soilborne Plant Pathogens in Compost-Amended Substrates. Science and Engineering of Composting, Renaissance Publications, Worthington, OH.

Ozores-Hampton, Bryan, and McMillan. 1994. Suppressing Disease in Field Crops. Biocycle, 35 (7).

Pera, Vallini, Ines Sireno, Lorella, Bianchin and de Bertoldi. 1983. Effect of Organic Matter on Rhizosphere Microorganisms and Root Development of Sorghum Plants in Two Different Soils. Plant & Soil, 74:3-18.

5. Supplies organic matter and humus – aiding soil aggregation and plant nutrient uptake

Albrecht. 1938. Loss of Soil Organic Matter and Its Restoration, pp. 347-360. Soils and Men, 1938 Yearbook of Agriculture, US Govt. Printing Office, Washington, DC.

Avnimelech and Cohen. 1988. On the Use of Organic Manures for Amendment of Compacted Clay Soils: Effects of Aerobic and Anaerobic Conditions. Biological Wastes 26:331-339.

Darst and Murphy. 1990. Soil Organic Matter: An integral Ingredient in Crop Production. Better Crops 74(1):4-5.

Maynard. 1995. Protecting Groundwater While Recycling Nutrients. Farm Scale Composting. JG Press, Emmaus PA.

McConnell, Shiralipour, and Smith. 1993. Compost Application Improves Soil Properties. Biocycle, 34 (4):61-63.

USEPA. 1998. An Analysis of Composting as an Environmental Remediation Technology. Solid Waste and Emergency Response (5305W) EPA530-R-98-008.

6. Improves soil cation-exchange capacity (CEC) – improving nutrient retention

Brady, N.C. 1974. The Nature and Properties of Soils, 8th Edition. Cation Exchange Capacity (p.99-104).

Darst and Murphy. 1990. Soil Organic Matter: An integral Ingredient in Crop Production. Better Crops, 74(1):4-5.

Epstein, Taylor and Chaney. 1976. Effects of Sewage Sludge and Sludge Compost Applied to Soil on Some Soil Physical and Chemical Properties. Journal of Environmental Quality, 5:422-426.

McConnell, Shiralipour and Smith. 1993. Compost Application Improves Soil Properties. Biocycle, 34 (4):61-63.

Soil & Water Conservation Society. 2000. Soil Biology Primer (p.5-8, 15).

7. Helps plants to more effectively utilize nutrients

Cisar and Snyder. 1995. Amending Turfgrass Sand soils to Improve Water Retention and Reduce Agrichemical Leaching. Florida Water Conservation/Compost Utilization Program - Final Report.

Darst and Murphy. 1990. Soil Organic Matter: An integral Ingredient in Crop Production. Better Crops, 74(1):4-5.

Goldstein. 2002. A Compost-Based Budget for Sustainable Farming. Biocycle, 43(8):59-62.

Maynard. 1995. Protecting Groundwater While Recycling Nutrients. Farm Scale Composting. JG Press, Emmaus, PA.

McConnell, Shiralipour and Smith. 1993. Compost Application Improves Soil Properties. Biocycle, 34 (4):61-63.

National Research Council. 1989. Alternative Agriculture Research and Science, (p.141-144). National Academy Press, Washington, D.C.

8. Buffers soil pH –improves nutrient availability and soil aggregation

Brady. 1974. The Nature and Properties of Soils, 8th Edition. Buffer Capacity of Soils (p.385-387).

Darst and Murphy. 1990. Soil organic matter: An integral ingredient in crop Production. Better Crops 74(1):4-5.

Dick and McCoy. 1993. Enhancing Soil Fertility by Addition of Compost. In. Science and Engineering of Composting. H. Hoitink and H.M. Keener (Ed), 622-644. Renaissance Publications, Worthington, OH.

Maynard and Hill. 1994. Impact of Compost on Vegetable Yields. Biocycle, Vol. 35, No. 3:66-67.

McConnell, Shiralipour, and Smith. 1993. Compost Application Improves Soil Properties. Biocycle, 34 (4):61-63.

9. Binds and degrades specific pollutants

Cole, Zhang and Liu. 1995. Remediation of Pesticides Contaminated Soil by Planting and Compost Addition. Compost Science and Utilization, 34(4):20-30.

Ettlin and Stewart. 1993.Yard Debris Compost for Erosion Control. BioCycle, 34(12): 46-47.

Garlan, Gist and Green. 1995. The Compost Story From Soil Enrichment to Pollution Remediation. Biocycle, 36(10):53-6.

Maynard 1995. Protecting Groundwater While Recycling Nutrients. Farm Scale Composting. JG Press. Emmaus PA.

Soil and Water Conservation Society with the Natural Resources Conservation Service. 2000. Soil Biology Primer

USEPA. 1997. Innovative Uses of Compost: Bioremediation and Pollution Prevention. Solid Waste and Emergency Response (5306W). EPA530-F-97-0421.

USEPA. 1998. An Analysis of Composting as an Environmental Remediation Technology. Solid Waste and Emergency Response (5305W) EPA530-R-98-008.