Sustainable soils education

The Dirt on Dirt: Part 2—Presenter’s Guide

Introduction

Part 2 consists of the various sub-disciplines within Soil Science. We cover Soil Fertility, Soil Physics and Soil Biology. This section contains information that is generally pertinent to all audiences. The presenter should know the background of the audience, as well as what their objectives are for taking the class. This accommodates customization for the audience. The contents may be the same, but the implications are very different for an urban gardener, a small farmer raising horticultural crops, or a cash crop farmer.

Educational objectives

* Participants will understand soil testing, and fertilizing for optimum plant growth.
* Participants will understand soil and water relations and basic soil physical implications on plant growth.
* Participants will understand the concept of Soil Structure and why it is important.

Activities and discussions

Slide 3

Review part one being sure to ask participants what they consider to be the most important parts, or things they learned.

Slide 14

Attendees can be directed to take a soil sample for their property. Soil sampling procedure is not covered in the presentation, but the presenter can advise the students of accepted methodology. Attempts can be made to do one of the following: Submit a sample and have test results available by the time of the presentation; direct attendees to take a sample and have it tested, making attempts to have it available next week; use soil test results from an unrelated soil and discuss aspects of the report.

Slide 21

If you did not use the sponge exercise outlined in Slide 6 of Part 1, you might consider using it here.

Slide 23

Measuring bulk density is laborious. It is probably not within the scope of this series to actually conduct measurement yourself. If it seems pertinent, you might want to identify some areas with compaction problems (such as a garden that has a “plow pan” caused by over-use of a roto-tiller). Dig into this area (or have the participants dig) and discuss.

Slide 29

Instruct the students to conduct this exercise on their own, or do it during the class. **If you do any out-of class exercises in this series, this one is the most important.**

Identify a “virgin” soil such as in a wood, fence line, or other native, undisturbed area. Also find a soil that has been affected by tillage such as a garden or farm field. Saturate both soils with water, and then dig in them with shovels. The differences will be strikingly obvious, and are caused by differences in soil structure. Discuss the differences and what the implications are for a plant growing on the respective sites. Also discuss the management implications. If participants are instructed to do this during out-of-class time, be sure to have this discussion prior to the start of Part 3.

Resources

* Slide 1 – Brad Carlson, University of Minnesota
* Slide 2 – Brad Carlson, University of Minnesota
* Slide 3 – Diane De Witte, University of Minnesota
* Slide 5 – photographer unknown, University of Minnesota
* Slide 7 – Brad Carlson, University of Minnesota
* Slide 10 – NRCS
* Slide 11 – Don Breneman, University of Minnesota
* Slide 12 – unknown
* Slide 13 – Brad Carlson, University of Minnesota
* Slide 16 – Brad Carlson, University of Minnesota
* Slide 18 – unknown, Reptile Gardens, Rapid City, SD
* Slide 19 – Associated Press
* Slide 21 – Brad Carlson, University of Minnesota
* Slide 23 – Brad Carlson, University of Minnesota
* Slide 25 – Ryan Miller, University of Minnesota
* Slide 27 – Debrah Allan, University of Minnesota
* Slide 28 – unknown
* Slide 29 – Brad Carlson, University of Minnesota
* Slide 31 – unknown
* Slide 32 – Ishikawa Musayuki
* Slide 37 – Don Breneman, University of Minnesota
* Slide3 6 – NASA



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