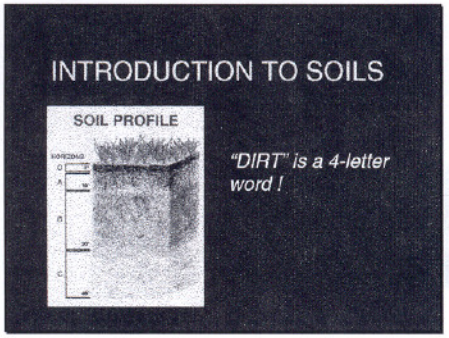
Part 1. An Introduction to Soils

Slide 1



This is the first of six slide sets on "Soils, Plant Nutrition and Fertilizer".
Each slide set is independent and does not have to be viewed in sequence.
PART 1, "Dirt is a Four-letter Word - AN INTRODUCTION TO SOILS" (25 slides with text; presentation time is approximately 30 minutes; file: *MG1-intro.ppt*)
PART 2. "Getting to the Root of the Problem - SOIL PHYSICAL COMPONENTS" (17 slides with text; presentation time is approximately 40 minutes; file: *MG2-components.ppt*)
PART 3. "The Earth Beneath Our Feet - SOILS OF ALABAMA" (41 slides/no text; presentation time is approximately 60 minutes; file: *MG3-alasoils.ppt*)
PART 4. "SOIL ACIDITY AND LIMING" (15 slides with text; presentation time is approximately 20 minutes; file: *MG4-pH.ppt*)
PART 5. "The ABCs and NPKs for Healthy Plants - ESSENTIAL PLANT NUTRIENTS" (46 slides with text; presentation time is approximately 40 minutes; file: *MG5-nutrients.ppt*)
PART 6. "SOIL TESTING FOR HOME GROUNDS" (49 slides with text; presentation time is approximately 20 minutes.)

Slide 2

2. What is soil? As a gardener, you probably have a pretty good idea what it is. (*Ask for concepts. Explain the difference between "dirt" and "soil"*)

Slide 3

3. To us gardeners, the soil
earth's surface that support
basis of all agriculture. It p
and the clothes we wear.

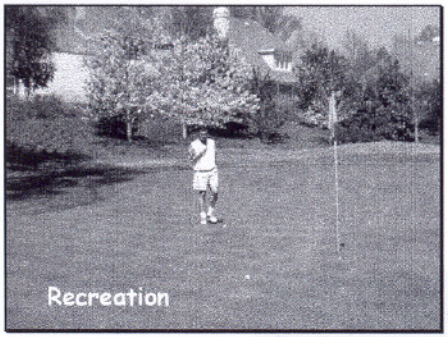
Slide 4

4. Soil is also used for bui
and cities.

Slide 5

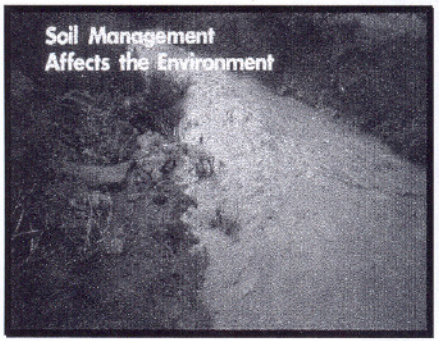
5. We use it for waste trea
septic tanks and landfills.

Slide 6



6. We use it for recreation.

Slide 7



7. Soils purify water and is a sink for atmospheric carbon in the form of soil organic matter. Therefore, soils are essential to a clean environment.

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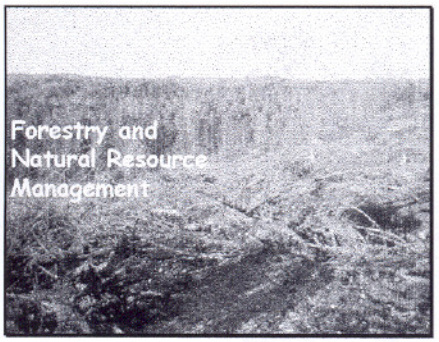
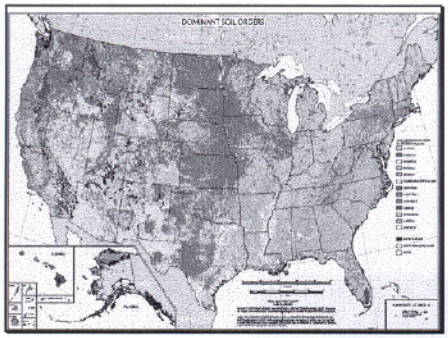


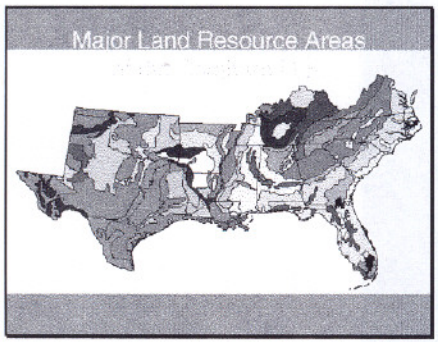
8. And, of course, our soil is, perhaps, one of our most important natural resources because it produces our food, our forests, and supports all other forms of life on earth.

Slide 9



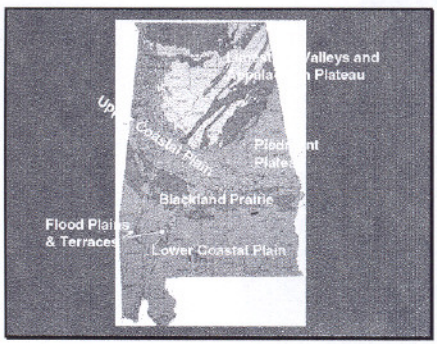
9. The soil in your yard or garden is different from your neighbor's. The soils in South Alabama are different from those in North Alabama. And the soils of Alabama are certainly different from those in the Midwestern or Western U.S.

Slide 10



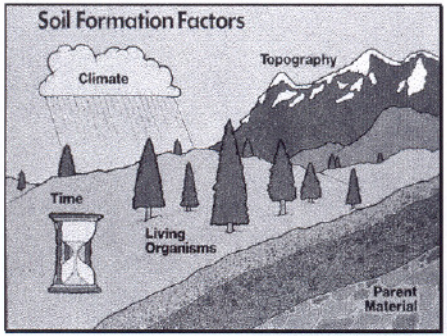
10. Major land resource areas of the southern U.S. are based primarily on soil differences.

Slide 11



11. A generalized soil map of Alabama resembles a major land resource area map and also a geological map.

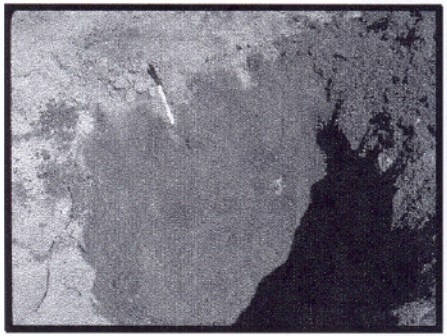
Slide 12



12. Soils are different because of one or more of these five soil forming factors: (1) the parent material from which the soils were formed, (2) the climate under which the soils developed, (3) living organisms on and in the soil, (4) the topography or slope of the land, and (5) the age of the soil itself.

[Take time to discuss each of these five soil forming factors with respect to the soils in your county. Ask, "What is the primary 'parent material' of the soils of your county? Is it sandy marine (ocean) deposits typical of the Gulf Coastal Plain soils? Alkaline, Selma chalk and clayey marine deposits of the Alabama Black Belt? Highly weathered granite, mica, feldspars, and gneiss of the Piedmont Plateau of East-central Alabama? Sandstone and shale of the Appalachian Plateau? Limestone of the valleys of North Alabama?" Discuss how erosion, both natural and man made, changes soils. Point out that man is a living organism; he has had a profound effect on our soils.]

Slide 13



13. When you dig into an undisturbed Alabama soil, you may have noticed that it changes with depth. The color may change and the texture or the size of the soil particles may change.

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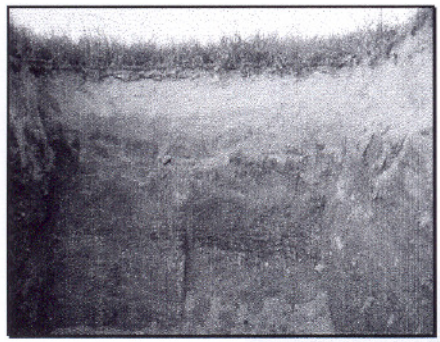

14. You may have noticed these layers of soil in a freshly cut roadbank.

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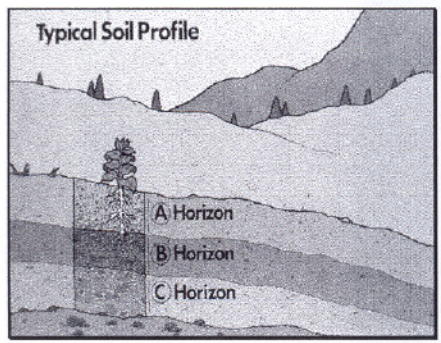

15. These layers of soil are called "soil horizons". The characteristics of the different horizons are used to distinguish and name different soils.

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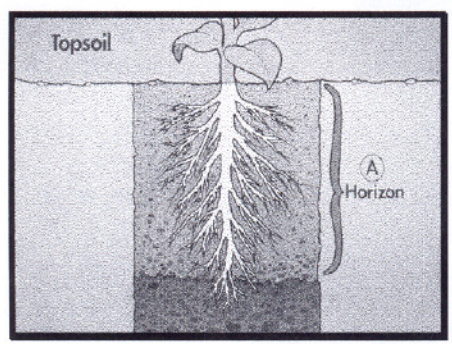

16. The upper horizon is called the A horizon or topsoil. This is the zone of maximum biological activity. This is where 80 percent of the roots are found along with most of the soil's bacteria, fungi, actinomycetes, and other microorganisms. Here is where you'll find earthworms, larva of insects, nematodes, moles, crickets and other living organisms. The topsoil is also where most recycling occurs as dead leaves, twigs, roots and other organisms decompose and their nutrients are taken up by new roots. Organic matter accumulates in the topsoil which often gives it a darker color.

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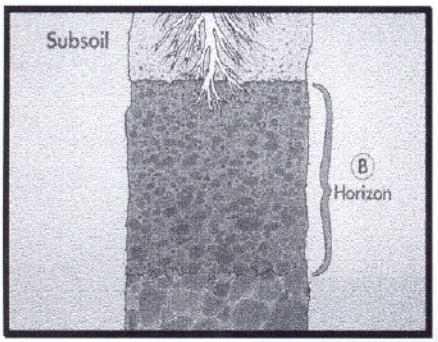
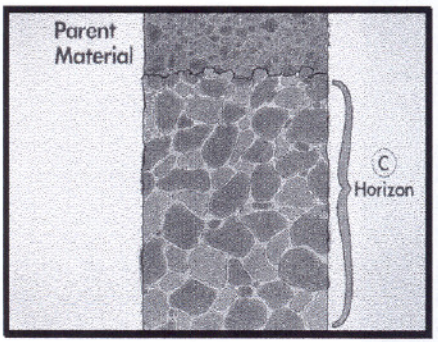


17. We average around 55 inches of rainfall a year in Alabama. Some of this water moves through the soil. As it trickles downward in a well drained soil, it carries with it dissolved minerals. This is called leaching. It also can carry with it the smallest soil particles which we call clay. This clay accumulates in the B horizon or what you and I call the subsoil. This is a zone of accumulation. In many Alabama soils, it is an accumulation of clay. This is why subsoils are generally more sticky than topsoil. In arid regions the B horizon could be an accumulation of salts or other minerals that have leached down from the topsoil. Roots can and do grow into the B horizon. This subsoil can be a tremendous reserve of moisture and can provide some nutrients for plants when the topsoil is too dry.

Slide 18



18. Beneath the B horizon is the C horizon or parent material. This is the stuff from which the topsoil and subsoils formed. It can be the sands and clays deposited by the oceans millions of years ago or weathered and crumbling rocks. However, the C horizon has been relatively unaffected by the soil forming factors that made the A and B horizons.

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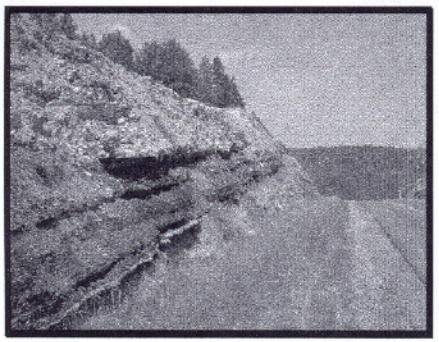


19. A typical soil may be a few inches to a few feet thick. Below about 5 or 6 feet or so, we are below the zone affected by the soil forming factors. This is where the study of soils end and geology begins.

Slide 20

20. What would happen if we removed all the topsoil. Let's go even deeper and remove all the topsoil and subsoil and dig into the parent material. It happens all the time. We build new homes with basements, shopping centers, highways, etc. And somehow we manage to create a new landscape from this dug-out parent material. So what important soil component is missing from this scraped-over parent material that makes a good topsoil? What do we need to add to this scraped-over stuff to make it more like a productive topsoil? [*Organic matter e.g compost, manure, rotted leaves, pine bark, peat, anything to reactivate the biological activity that characterizes a topsoil*]

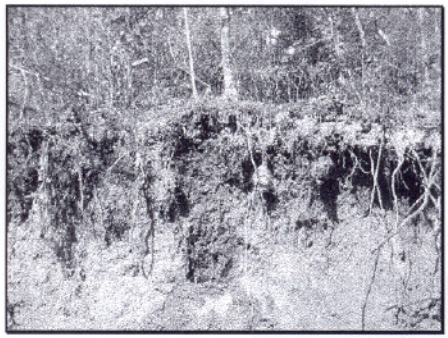
Slide 21

21. If we abandoned a scraped-over site, nature would eventually build a new topsoil. After a few years, we'd see some struggling pine trees, maybe boomsedge, and some other vegetation creeping in. These plants would gradually put roots into the hard, crusty material. Old root channels allow moisture to enter and new roots to grow. Organic matter is deposited on the surface

Slide 22

22. After 10 or 20 years, a new forest is developing and the beginnings of a new A horizon is forming. Soil formation is proceeding.

Slide 23

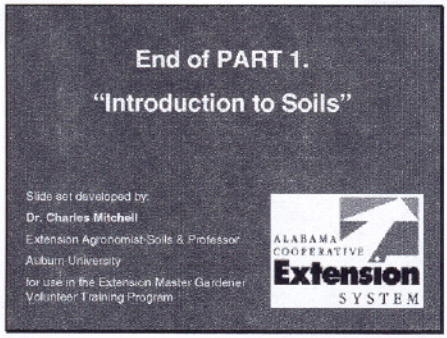


23. And, after 100+ years, we'll have a new soil profile starting to develop. We can now identify the A horizon (topsoil), the B horizon (subsoil), and the old parent material (the C horizon).

Slide 24

24. But we can't wait 100 years for a new topsoil to form. We want an instant landscape, a beautiful lawn, shrubs, flowers etc. That is why it is so important to start with a good, organically rich topsoil if we want a nice landscape. We can either haul in good topsoil, stockpile the old topsoil before construction begins, or create a new topsoil from the old parent material by adding organic matter, lime, and fertilizer before the sod is put down or the landscape is planted.

Slide 25



END OF SLIDE SET

End of PART 1, " An Introduction to Soils"
Proceed to PART 2, "Soil Physical Components - Getting to the Root of the Problem" (MG2-components.ppt)
or to PART 3, "The Earth Beneath Our Feet - Soils of Alabama" (MG3-alasoils.ppt)