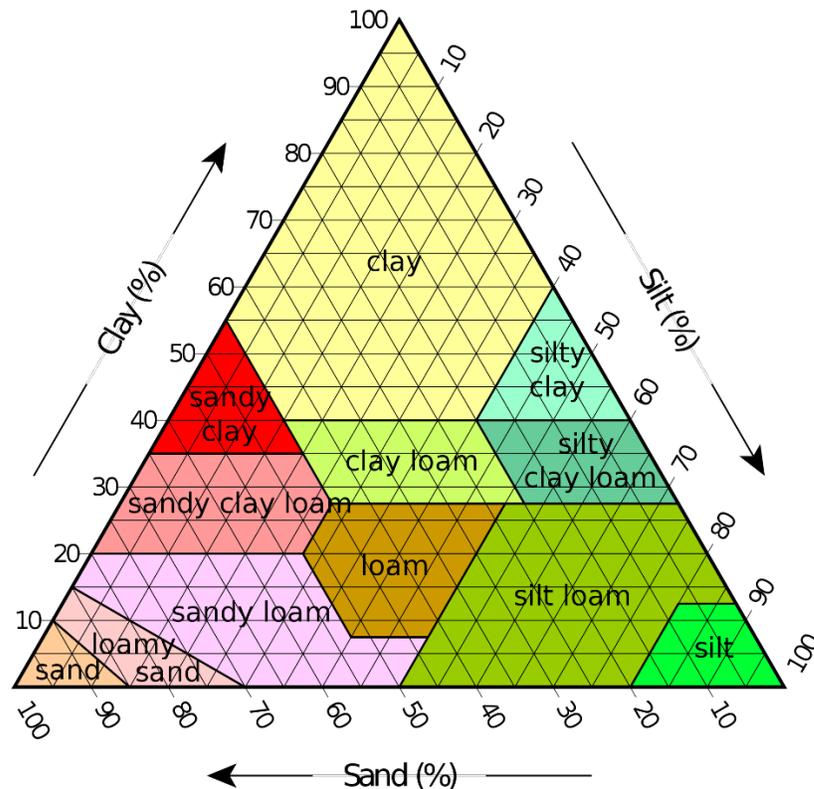


# You're stuck with the soil you've got - now deal with it!

- I. Soil characteristics
  - A. Physical, chemical, and nutritional characteristics
    - 1. Sand, silt and clay - soil triangle
    - 2. Organic material
  - B. Native vs. urban/suburban soils
    - 1. Unlikely to have native soils at home
    - 2. Urban/suburban soils not native, not agricultural
- II. The finger test for estimating soil texture (adapted from *Sustainable Landscapes and Gardens*, 2009). If you don't know your soil texture, you can't predict how water will move.
  - A. Mix some of your soil with water until it's fully moistened
  - B. Try to form a ribbon of soil by squeezing it between your thumb and fingers
    - 1. Predominantly sand: gritty texture; will not form ribbons
    - 2. Loam: soft, gritty ribbons that do not hold fingerprints
    - 3. Predominantly silt: soft, soapy texture; will not form ribbons
    - 4. Predominantly clay: slick texture; will form long, thin ribbons that hold fingerprints
  - C. If it falls apart, it probably has too much organic matter in it



- III. What plant roots need
  - A. Water
  - B. Nutrients
  - C. Oxygen

- IV. Water movement in soil
  - A. Compaction will reduce movement
  - B. Textural interfaces reduce movement
    - 1. Includes layered soils
    - 2. Includes amended soil
    - 3. Includes adding “rocks for drainage”
  - C. Barriers reduce movement
    - 1. Sheet mulches (two dimensional) including plastic mulch, weed fabric, cardboard, and newspaper. Lasagna mulch is HORRIBLE in this regard
    - 2. Does not include coarse mulches (three dimensional)
  - D. Restricted water movement creates a perched water table
  - E. If water can't move, neither can oxygen, and roots won't grow either
  - F. And roots aren't the only living things underground
  
- V. Adjusting soil conditions
  - A. What can be changed easily if not permanently
    - 1. Organic material - from the top!
      - a) Avoid working OM into the soil
      - b) Much easier to add material on top and let it be incorporated naturally
      - c) Method is better for soil structure as well
    - 2. Nutrient deficiency - ONLY if needed, add specific nutrients to the top along with organic material
    - 3. pH - only for containers
    - 4. Compaction/drainage/aeration - mulches can do this without disturbing the soil
  - B. To till or not to till?
    - a) Rototilling, double digging - all extremely bad for soil structure and health
    - b) Damage to beneficial microbes, roots and soil structure
    - c) No till approaches
      - (1) Increasingly common in production agriculture
      - (2) Use a coarse, organic mulch to suppress weeds, prepare soil for planting

In the words of an esteemed colleague - if you've got a problem with soil, the answer is MULCH!

For more information

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