How To Choose A "Good" Topsoil

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The requirements for an "ideal" topsoil can change widely depending on the soil use (sports fields, lawns, etc), management practices (i.e. sprinkler irrigation vs. rainfall), species and climates. Each situation will present specific requirements that need to be addressed and there are common pitfalls that should be avoided.

Soil properties, even being related to each other, can be grouped in three basic types:

1- Physical properties: texture, structure, pore size distribution, drainage, water holding capacity, soil strength; organic matter content and adequate depth.

2- Chemical properties: pH, CEC (cation exchange capacity), low soluble salts level, absence of toxic elements or chemicals (herbicides, etc) and adequate concentration of nutrients.

3- Biological properties: availability to sustain microbial populations, absence of weeds, insects, diseases, and nematodes.

Many of these important properties can be measured by specific laboratory analysis, but some basic practical evaluations can be done visually. One of these is soil texture.

1-Physical properties are closely related to the particle size distribution, which is determined by the ratio of sand, silt and clay in a sample. The particle size distribution can be found in an approximate way by the "feel" method, which is explained, in the last page. For example, soil with a high sand content usually presents a coarser texture, more macropores, less micropores, low water holding capacity and faster drainage. These are the type of soils that are used in sport fields or highly trafficked lawns since sand gives the soil the capacity to avoid compaction and maintain drainage. Soil with a high clay content have a finer texture, less macropores, more micropores, high water holding capacity and a slower drainage.

2-Chemical properties can't be observed but by knowing the particle size distribution we can estimate approximately the CEC (cation exchange capacity) which is an indicator of the nutrient holding capability of the soil. Soils with a high content of clay or organic matter will have the highest cation exchange capacity. Usually sands have less than 4 meq, loamy sands 4-8, sandy loams 8-12 and greater than 12 for loams, clay loams and

clays. Organic matter usually has between 100 and 400 meq (the highest value corresponds to the most decomposed), this is why adding organic matter is one of the bests ways to increase the CEC and the nutrient holding capacity of the soil. Soils with a low cation exchange capacity require lower fertilization rates per application and the applications should be
done more frequently. Even being something rare sometimes herbicide residues can be found; atrazine is the most common specially in topsoil coming from corn fields and there where few cases were dicamba was reported.

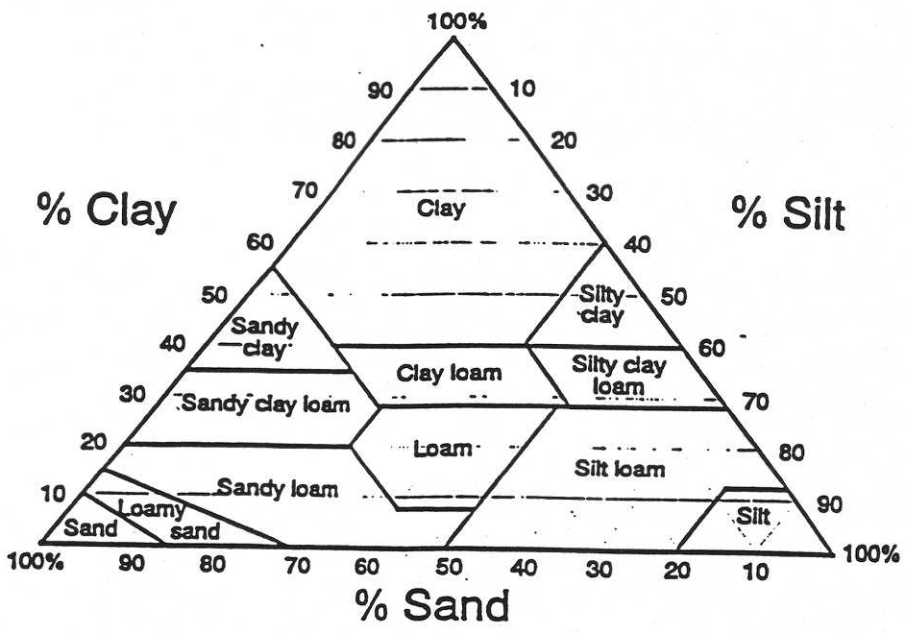
3-Biological properties can be very difficult to evaluate even by lab tests as is the case of availability to sustain microbial populations or presence of diseases. But there are some general advises that should be followed:

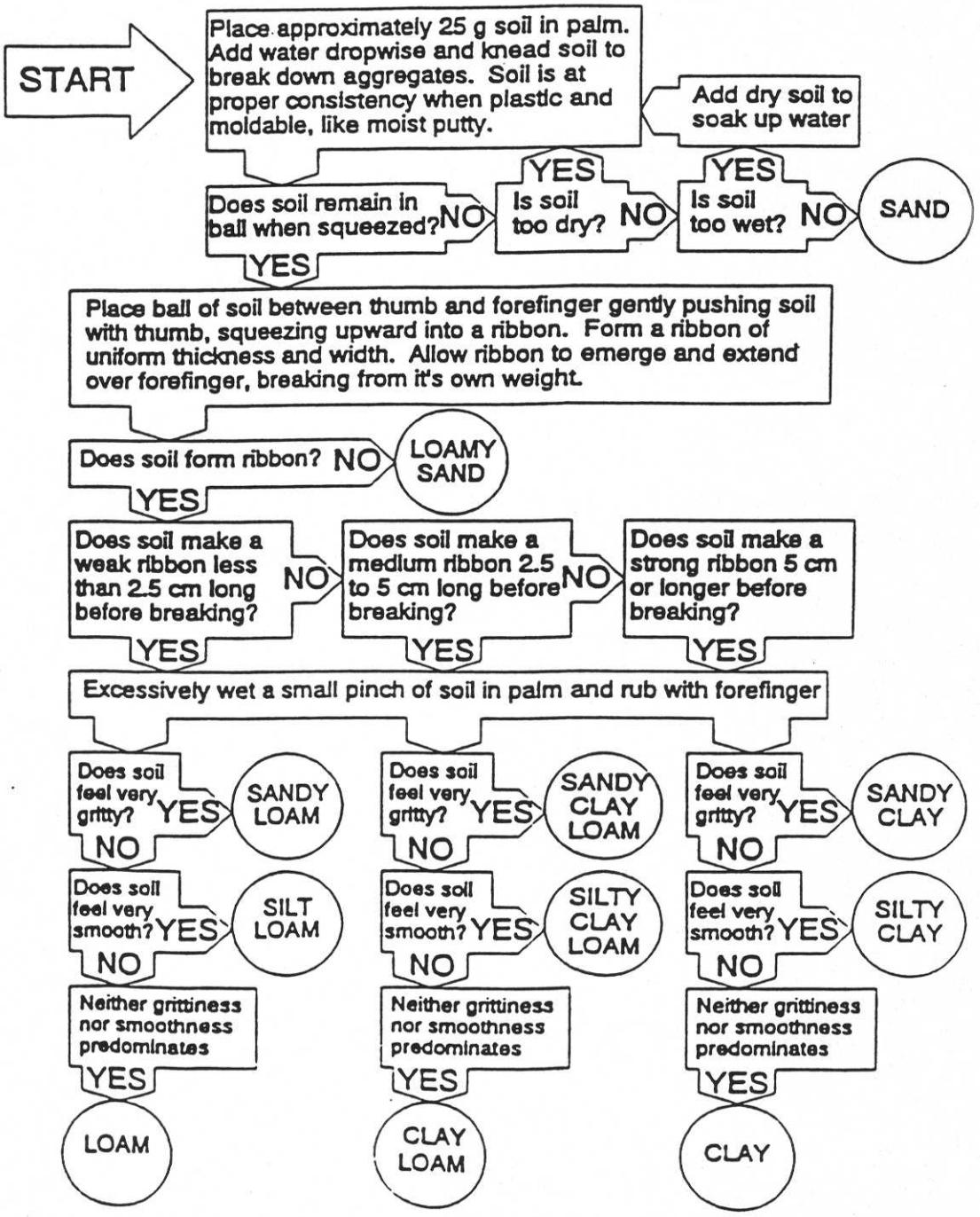
-In the case of weeds: the soil can be scouted to see if we found rhizomes from crabgrass, stolons of oxalis or the small nutlets of the sedges.

-In the case of insects, the only problem we can observe are white grubs (like the ones from June Beetle, European schafer or Japanese beetles) to know if they can be a problem an approximate threshold can be more than 10 or 15 per cubic yard. Ants are usually not a problem and earthworms are a good indicator.

-Diseases cannot be seen, the only indicator can be mushrooms that can lead to the formation of fairy-ring in the grass.

All the above described methods for visual observations can only be used as a basic reference, and should not replace in any way the laboratory tests which are by far more precise and accurate.





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