SOIL TEXTURE

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The mineral particles in the soil are divided into the following size classes:

Coarse fragments (gravel, cobbles, stones)	larger than 2 mm
Sand	.05 to 2 mm
Silt	.002 to .05 mm
Clay	smaller than .002 mm

To put these in perspective, if a particle of clay were the size of a BB, then a particle of silt would be about the size of a golf ball, and a grain of sand would be about the size of a chair. Sand, Silt and Clay are referred to as **soil separates**.

Sand is gritty when wet or when dry. Sands are the smallest soil particles you can see with the naked eye. Sand grains are put in the following size classes:

- Very fine sand
- Fine sand
- Medium sand
- Coarse sand
- Very coarse sand

Silt is smooth and floury when dry and it is greasy feeling when wet.
Clay is hard when dry and it is sticky and plastic when wet. Clay exhibits both **cohesion** (it sticks to itself) and **adhesion** (it sticks to other things).

Texture is a word used to describe how something feels. Soil **texture** refers to the relative proportion of each of the soil separates in a specific soil or **horizon** (layer) in the soil, because this determines how a soil feels. The texture triangle, shown below, is used to determine which texture class a soil belongs to based on the specific amounts of sand, silt and clay it contains.

Following is a description of some of the texture classes. There is also a chart at the back of this section that shows you how to determine soil texture.

SAND (s) Sand is loose and single grained. The individual grains can readily be seen and felt. Squeezed in the hand when dry, it will fall apart when the pressure is released. Squeezed when moist, it will form a cast, but will crumble when touched.

The terms **very coarse sand (vcos), coarse sand (cos), fine sand (fs)** or **very fine sand (vfs)** if and of the applicable size classes of sand predominate.

LOAMY SAND (ls) When dry, loamy sand is loose and single grained; When wet it is gritty, it does not ribbon and lacks stickiness, but it may show faint clay stainings. Squeezed when moist, it forms a cast that does not break with very careful handling. Individual grains of sand can be readily seen or felt.

The terms **loamy very coarse sand (lvcos), loamy coarse sand (lcos), loamy fine sand (lfs)** or **loamy very fine sand (lvfs)** if and of the applicable size classes of sand predominate.

SANDY LOAM (sl) A sandy loam soil forms weak aggregates, it contains 45 to 85% sand, but has enough silt and up to 20 % clay which makes it somewhat coherent. Individual sand grains can be seen and felt. Squeezed when dry, it will form a cast that will readily fall apart; but when moist it will form a cast that will bear careful handling without breaking. It will definitely stain fingers. When placed in water it turns the water cloudy.

The terms **very coarse sandy loam (vcosl), coarse sandy loam (cosl), fine sandy loam (fsl)** or **very fine sandy loam (vfsl)** if and of the applicable size classes of sand predominate.

LOAM (l) Loam is a soil having a relatively even mixture of different grades of sand, silt and clay. It is mellow with a somewhat gritty feel, yet fairly smooth and slightly sticky and slightly plastic. Dry aggregates are slightly hard or hard to break. When moist it will form a cast that can be handled without breaking. It stains fingers. When placed in water it turns the water cloudy.

SILT LOAM (sil) A silt loam is a soil having moderate amounts of the fine grades of sand and less then 27% clay; over half of the particles are silt sized. When dry, aggregates break with some difficulty. When moist it forms a firm ball and ribbons fairly well. Either dry or moist it will form casts that can be freely handled without breaking.

SILT (si) Silt is a rare textural class that is not easy to find in nature. Silt feels quite floury and soft when dry. When moist it is greasy feeling and is neither sticky nor plastic.

SANDY CLAY LOAM (scl) A sandy clay loam is a soil with 45 to 80% sand, 20 to 35% clay and 0 to 28% silt. Dry aggregates are hard and break with difficulty. When moist, it forms a firm ball and can be squeezed into a ribbon and may show a fingerprint. It is sticky and plastic; it stains fingers and it turns water cloudy.

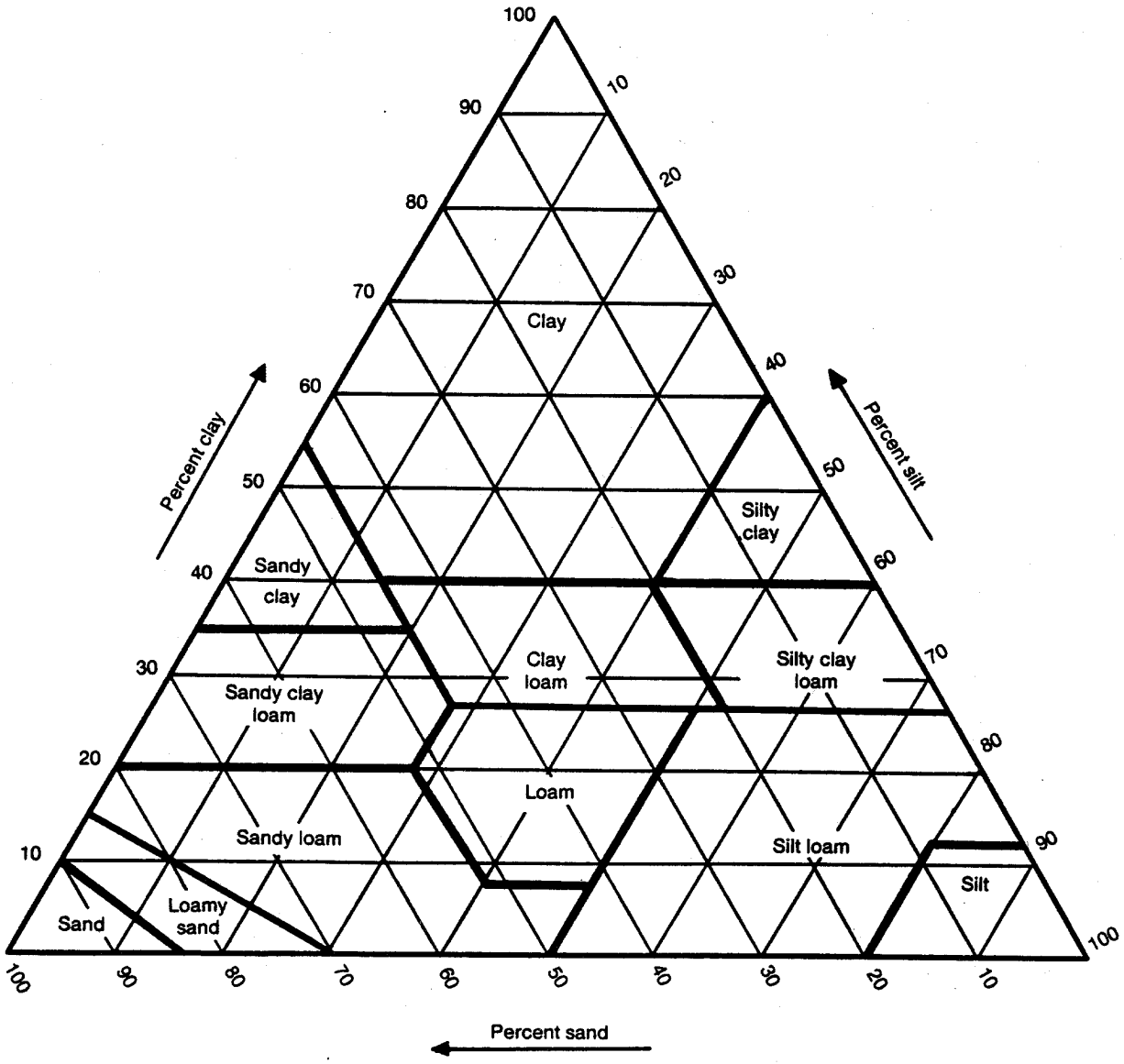
CLAY LOAM (cl) A clay loam is a moderately fine textured soil that usually breaks into aggregates or lumps that are hard when dry and friable or firm moist. The soil ribbons well when moist, shows a good fingerprint; is sticky and plastic and will form a cast that can bear much handling. It stains fingers.

SILTY CLAY LOAM (sicl) A silty clay loam handles like silt loam but it is sticky, plastic and friable or firm when moist. Also, when moist, the soil shows a good fingerprint and, like clay loam, will form a cast that can bear good handling. It stains fingers. When the soil is pulverized, it feels floury.

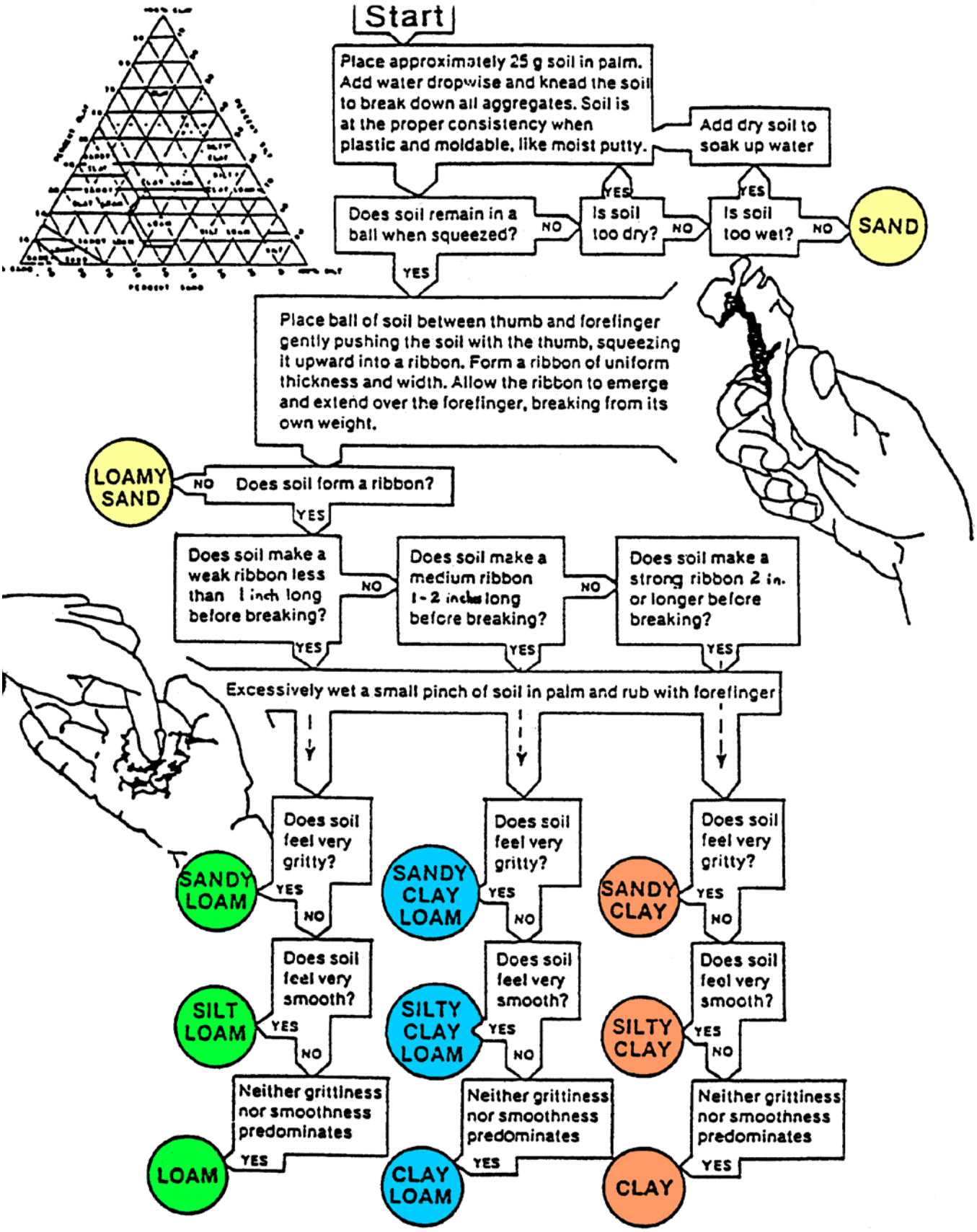
SANDY CLAY (sc) A sandy clay is a fine texture soil with 45 to 65% sand, 35 to 55% clay and 0 to 20% silt. Dry, it is very hard-- aggregates can only be broken with extreme pressure. Moist it is sticky or very sticky and plastic and shows a good fingerprint; it ribbons well and stains fingers.

SILTY CLAY (sic) A silty clay soil is a fine textured soil with 40 to 60% silt, up to 20% sand and 40 to 60% clay. Dry it is extremely hard and it feels quite floury when crushed. It is very sticky and very plastic when moist and it shows a good fingerprint; it forms a cast that can bear much handling and ribbons very well and clouds water and stains fingers.

CLAY (c) Clay is also a fine textured soil that usually forms very hard or extremely hard blocks or prisms. It is very sticky and very plastic when moist, it ribbons very well and forms a very good fingerprint. Some clays are very firm or extremely firm moist.



SOIL TEXTURAL TRIANGLE



From: ***A Flow Diagram for Teaching Texture-by-Feel Analysis,*** **by Steve J. Thien, Journal of Agronomic Education; Vol. 8, 1979, pp 54-55.**