

**Pathways to precision in
soil analysis: advancing
soil laboratories in Latin
America and the
Caribbean**

**Caminos hacia la
Precisión en el Análisis de
Suelos: avance de los
Laboratorios de Suelos
en América Latina y el
Caribe**

 **LATSOLAN**
LATIN AMERICAN SOIL LABORATORY NETWORK

Soil Texture (Hydrometer)

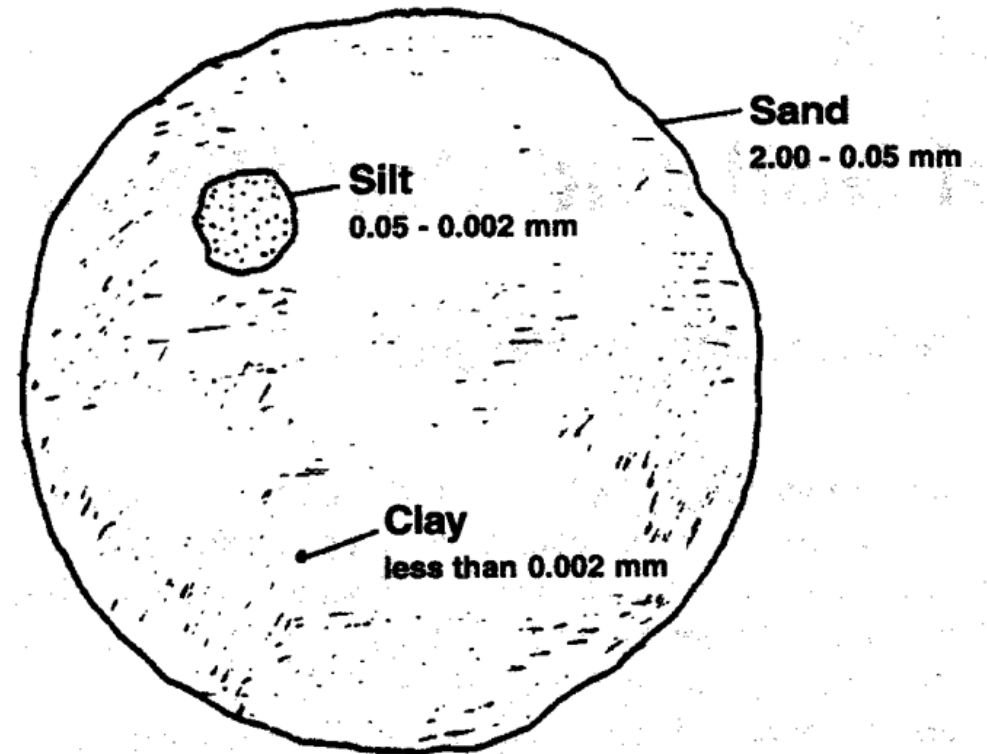
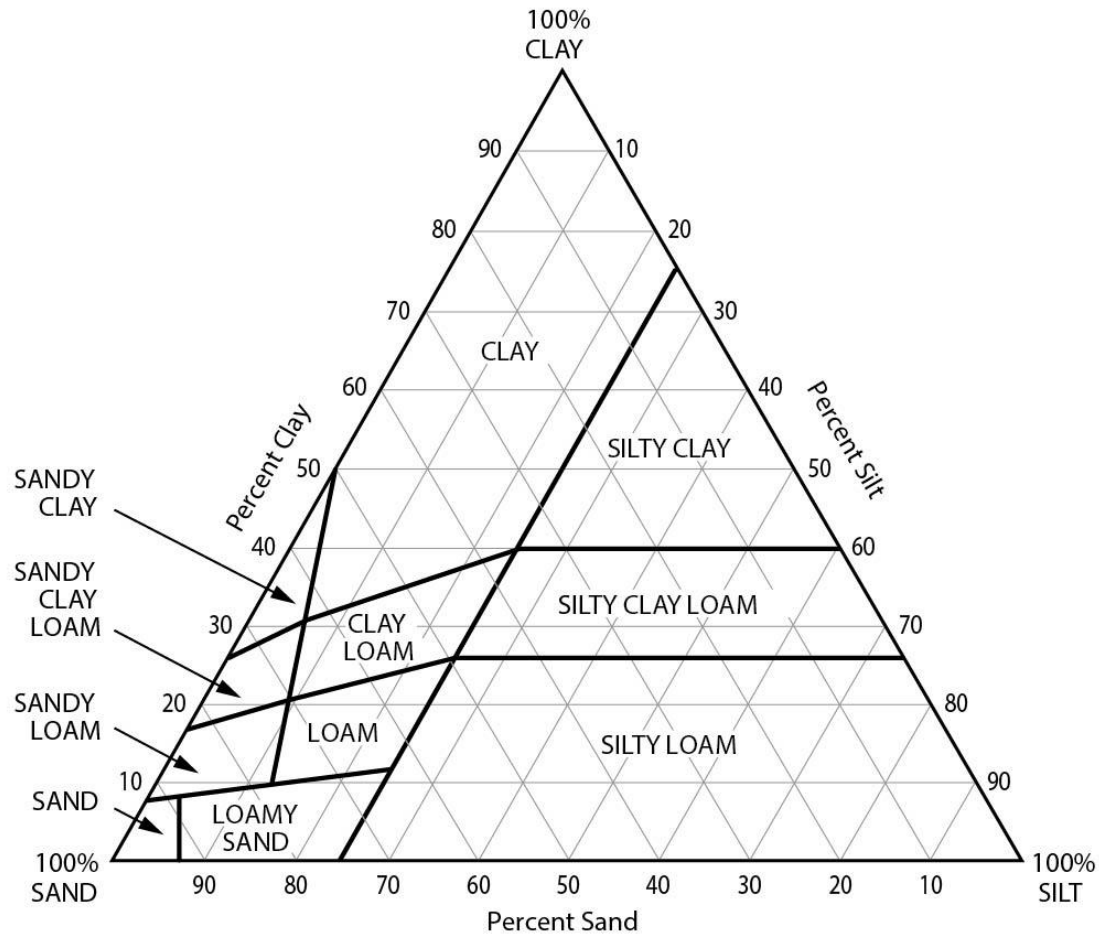
WORKSHOP
SANTIAGO - CHILLÁN | CHILE
8-11 APRIL 2024

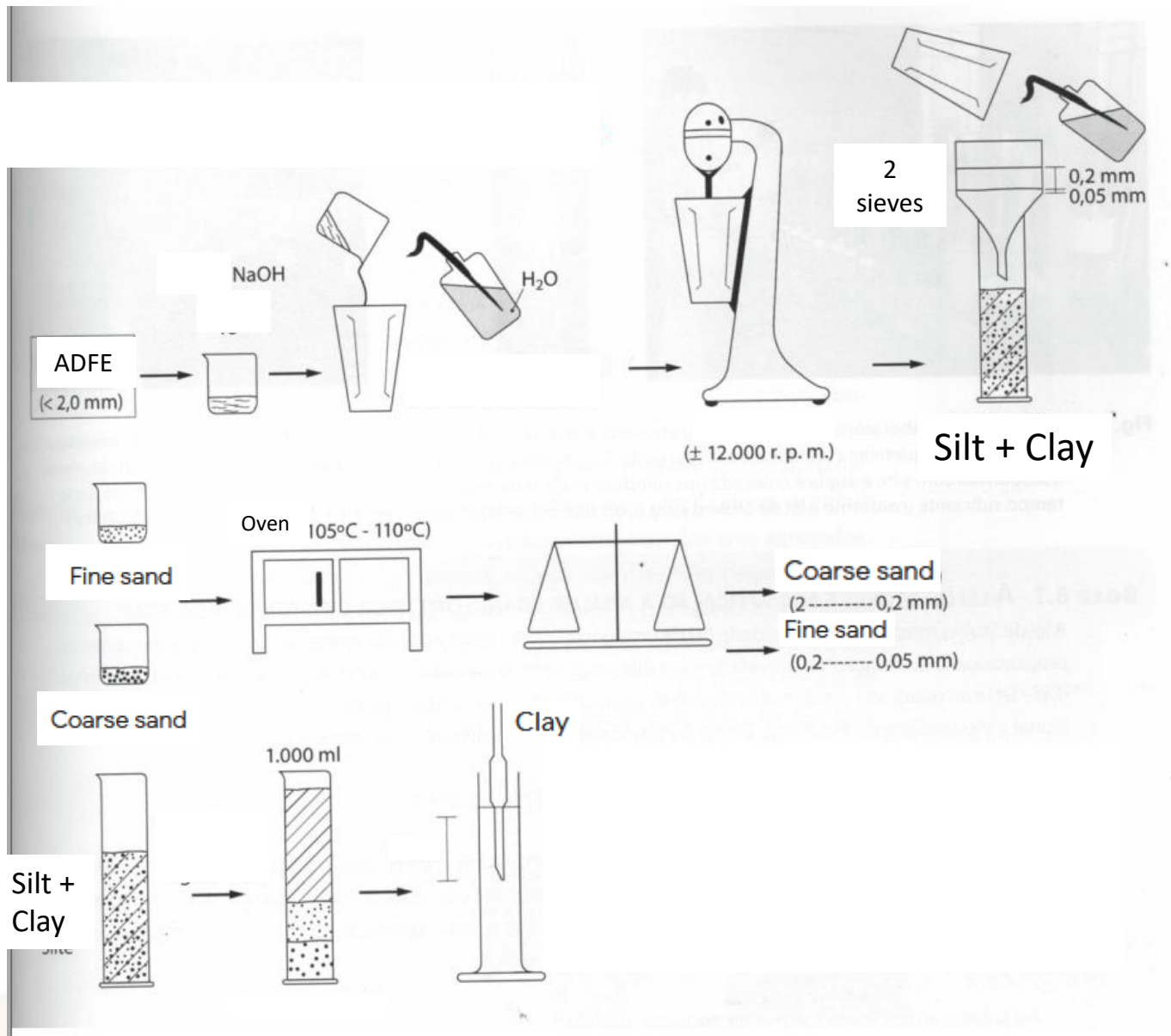
Daniel Vidal Pérez



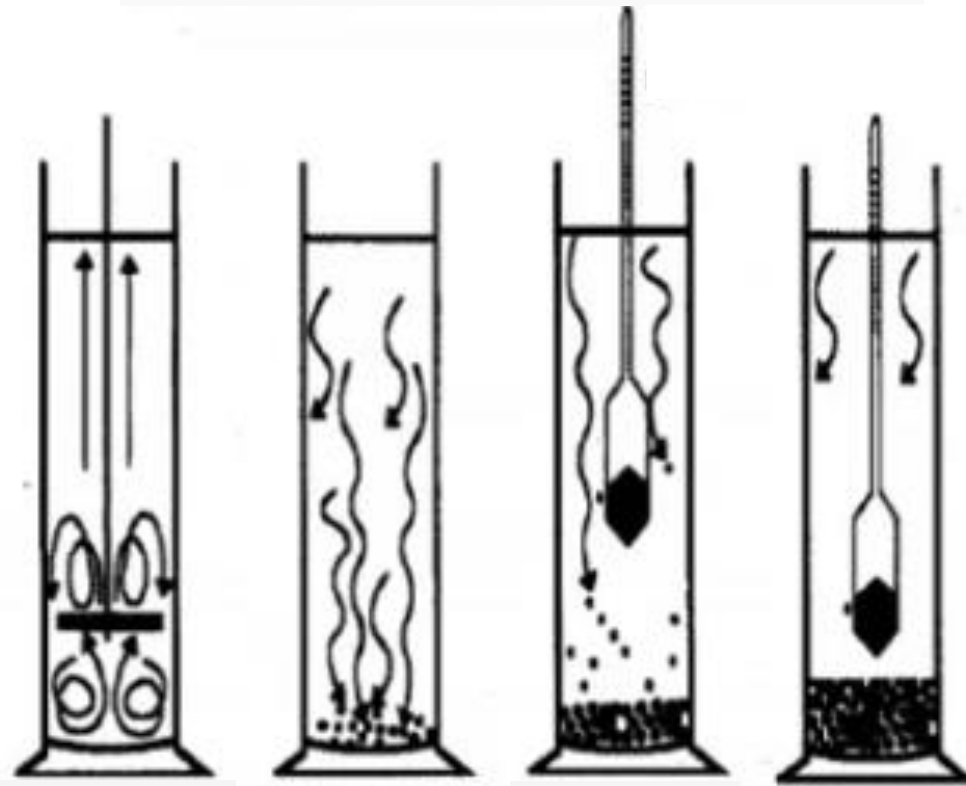
Soil Texture

Three categories for soil particles have been established





Bouyoucos Densimeter



homogenize

sedimentation

Reading

Reading



Dispersants

- NaOH
- Sodium Hexametaphosphate

Pretreatments

- Calcareous soils = HCl
- Organic Soil = H₂O₂
- Saline Soils = Pre-wash the soil with alcohol

Hydrometer

- The hydrometer was graduated to indicate the grams of suspended solids per liter of suspension at a given temperature (20°C) assuming a particle density of 2.65 g/mL and that the suspension medium was pure water.
- The density of the liquid phase will be affected by variations in temperature (viscosity) and by the presence of reactive agents added to disperse the soil.

These factors can be corrected with BLANK.

Sedimentation

The clay sedimentation time (fraction smaller than 0.002mm in diameter) was calculated considering an aqueous suspension, to a depth of 5cm, at different temperatures, according to the data in the table below:

Temperature °C	Time	Temperature °C	Time
10	5h-11'	23	3h-43'
11	5h-03'	24	3h-38'
12	4h-55'	25	3h-33'
13	4h-47'	26	3h-28'
14	4h-39'	27	3h-24'
15	4h-33'	28	3h-19'
16	4h-26'	29	3h-15'
17	4h-20'	30	3h-10'
18	4h-12'	31	3h-07'
19	4h-06'	32	3h-03'
20	4h-00'	33	2h-58'
21	3h-54'	34	2h-55'
22	3h-48'	35	2h-52'

Note: Calculated by Stokes' Law, considering the (real) particle density equal to 2.65.

Figures and Illustrations - References

- <https://www.qld.gov.au/environment/land/management/soil/soil-properties/texture>
- <https://repositorio.iica.int/handle/11324/7841>





Food and Agriculture
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Thank you

