

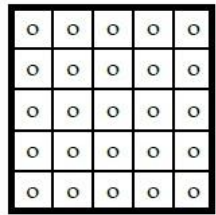


Instituto Nacional de Investigación Agropecuaria
U R U G U A Y

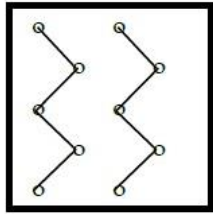
Diagnostico de la calidad física del suelo

Valentina Rubio

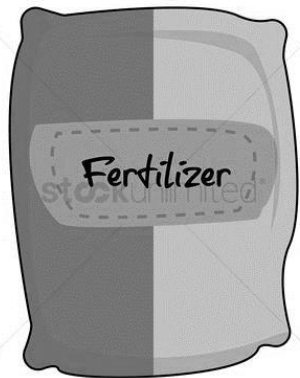
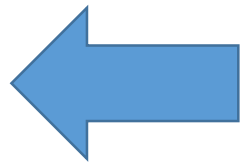
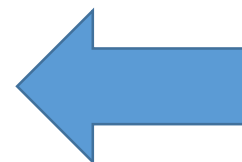
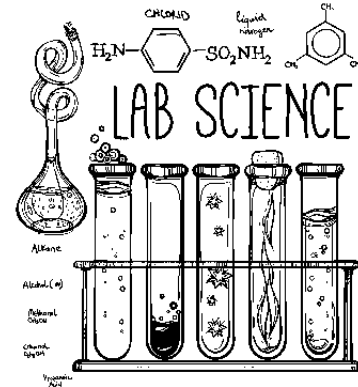
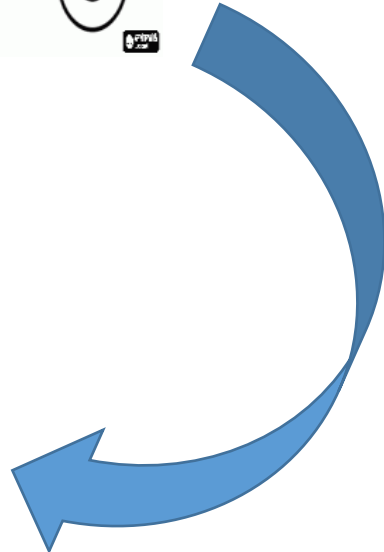
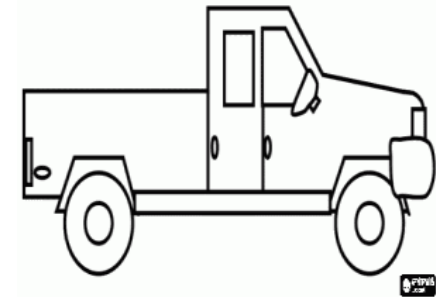
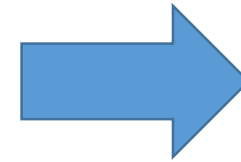
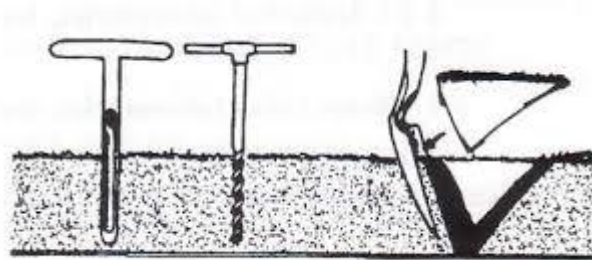
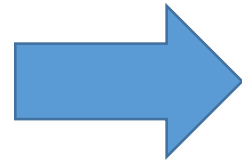
Diagnóstico de la fertilidad



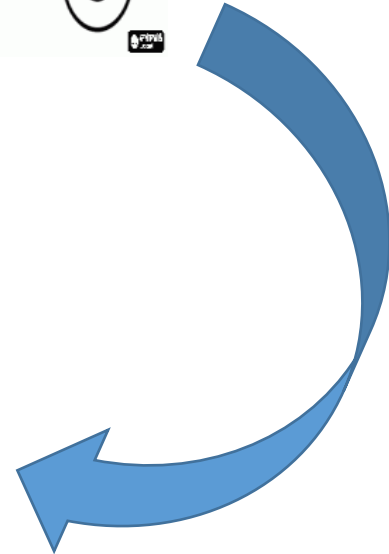
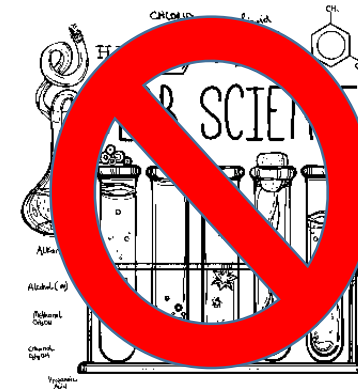
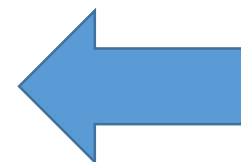
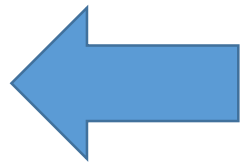
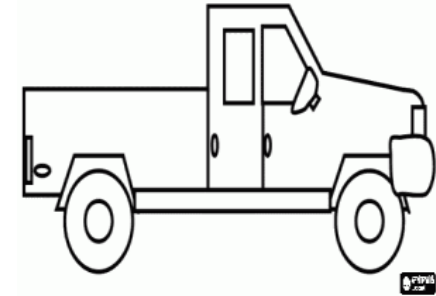
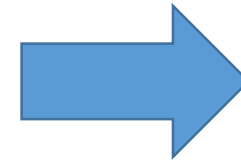
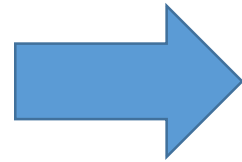
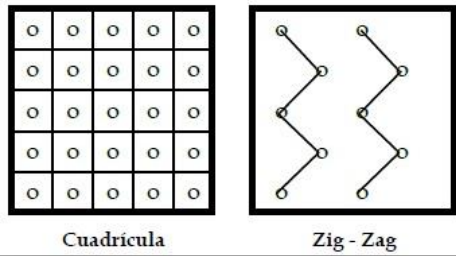
Cuadrícula



Zig - Zag



Diagnóstico de la Calidad física del suelo

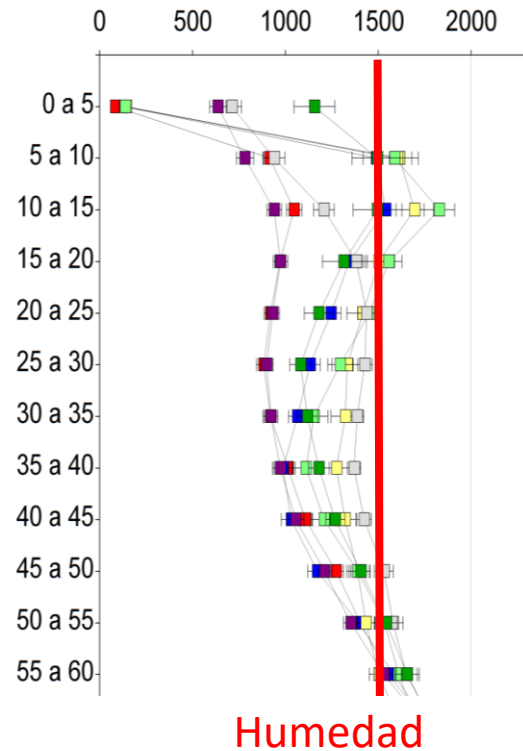


“Lo esencial es visible a los ojos”

Calidad Física

Ambiente favorable para las raíces y la biota edáfica

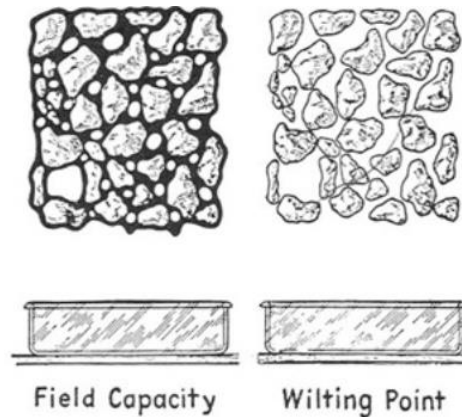
↓ Resistencia a la penetración



Calidad Física

Ambiente favorable para las raíces y la biota edáfica

Suministre y almacene agua



- CAAD ↑

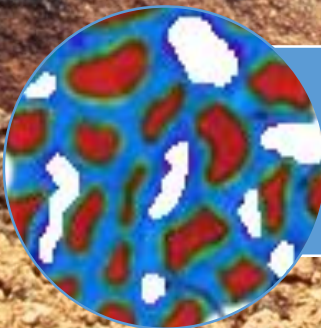
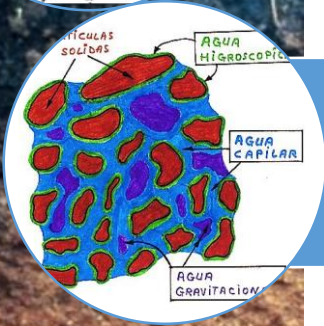
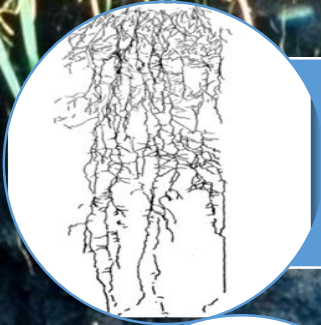
- Infiltración ↑
 - Macroporosidad ↑
 - Continuidad de poros
 - Sin estructural laminares/capas compactadas/costras

Calidad Física

Ambiente favorable para las raíces y la biota edáfica

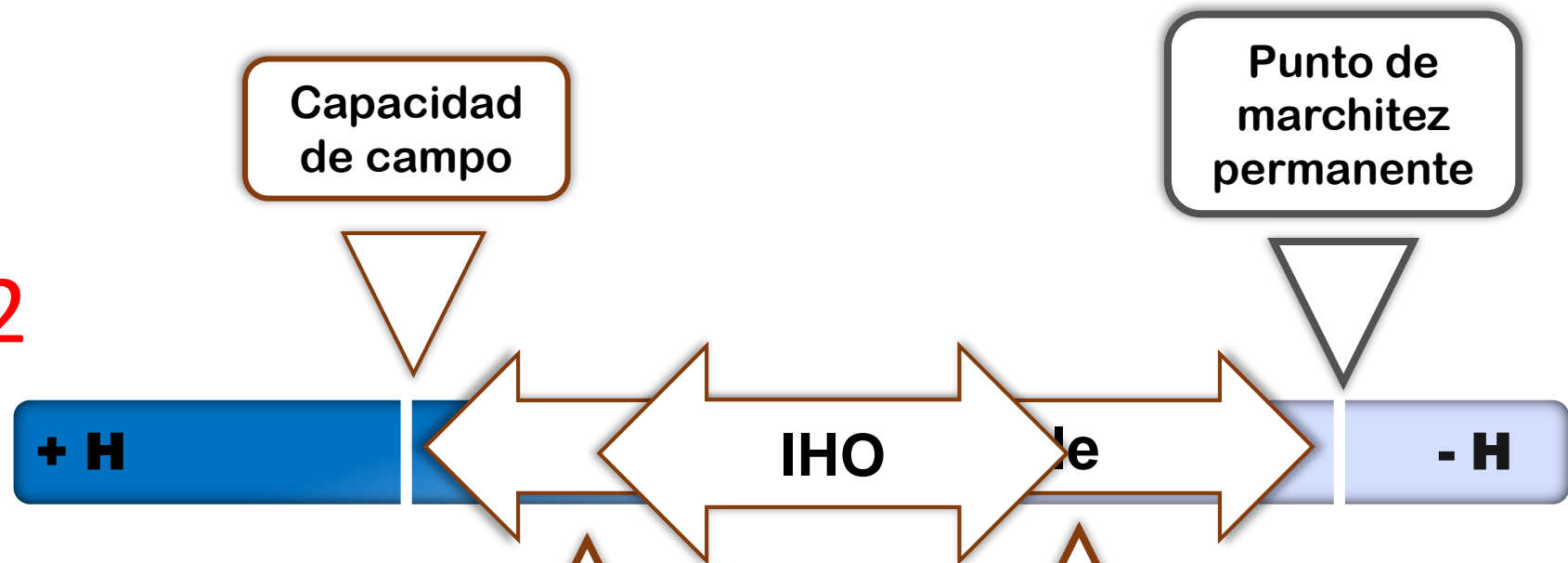
Suministre y almacene agua

Suministre O₂

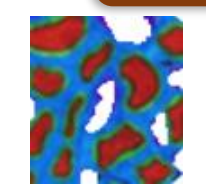


Falta O2

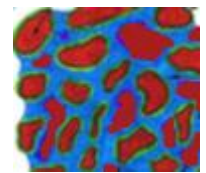
+ RP



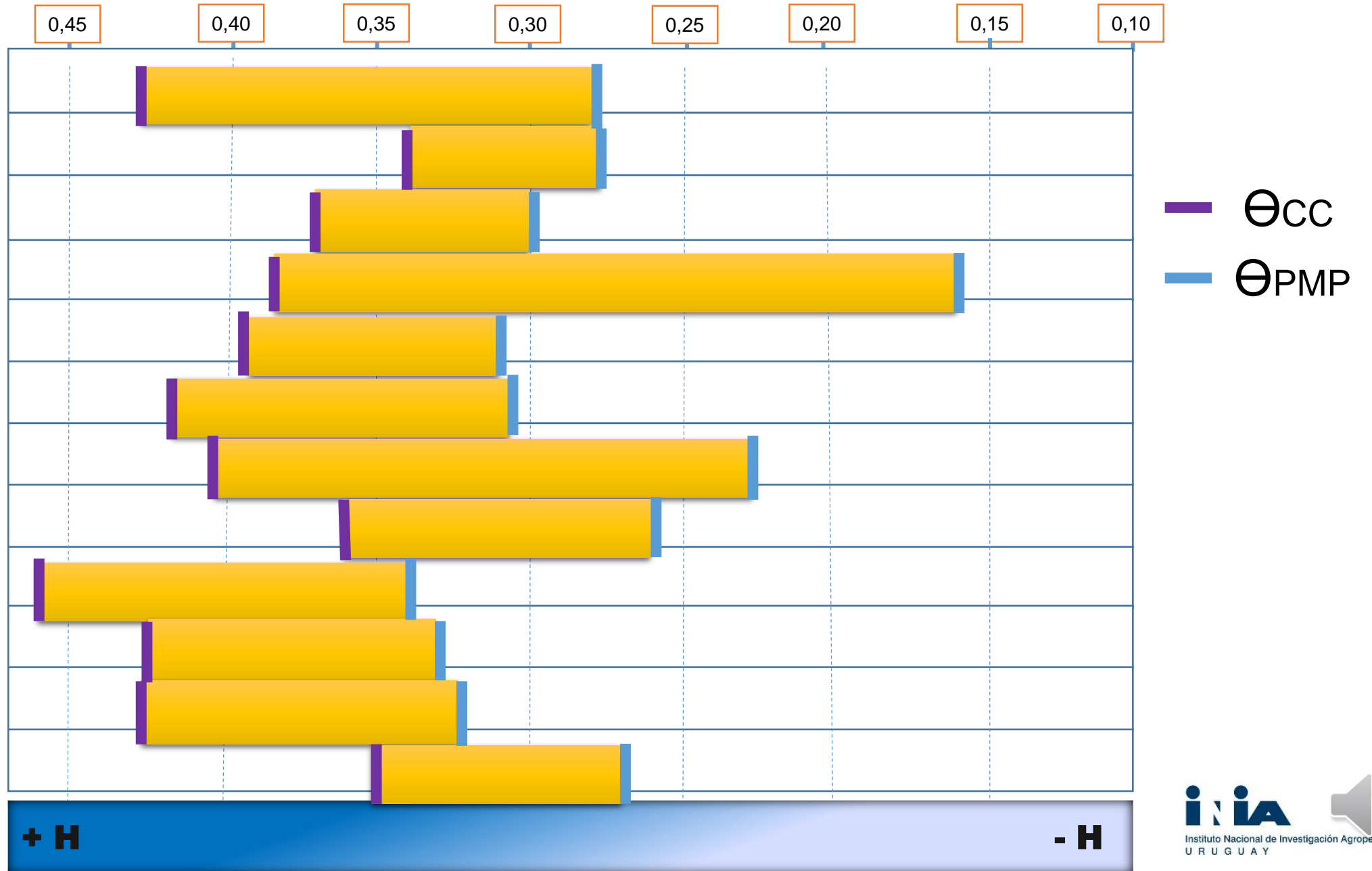
Suelo "normal"



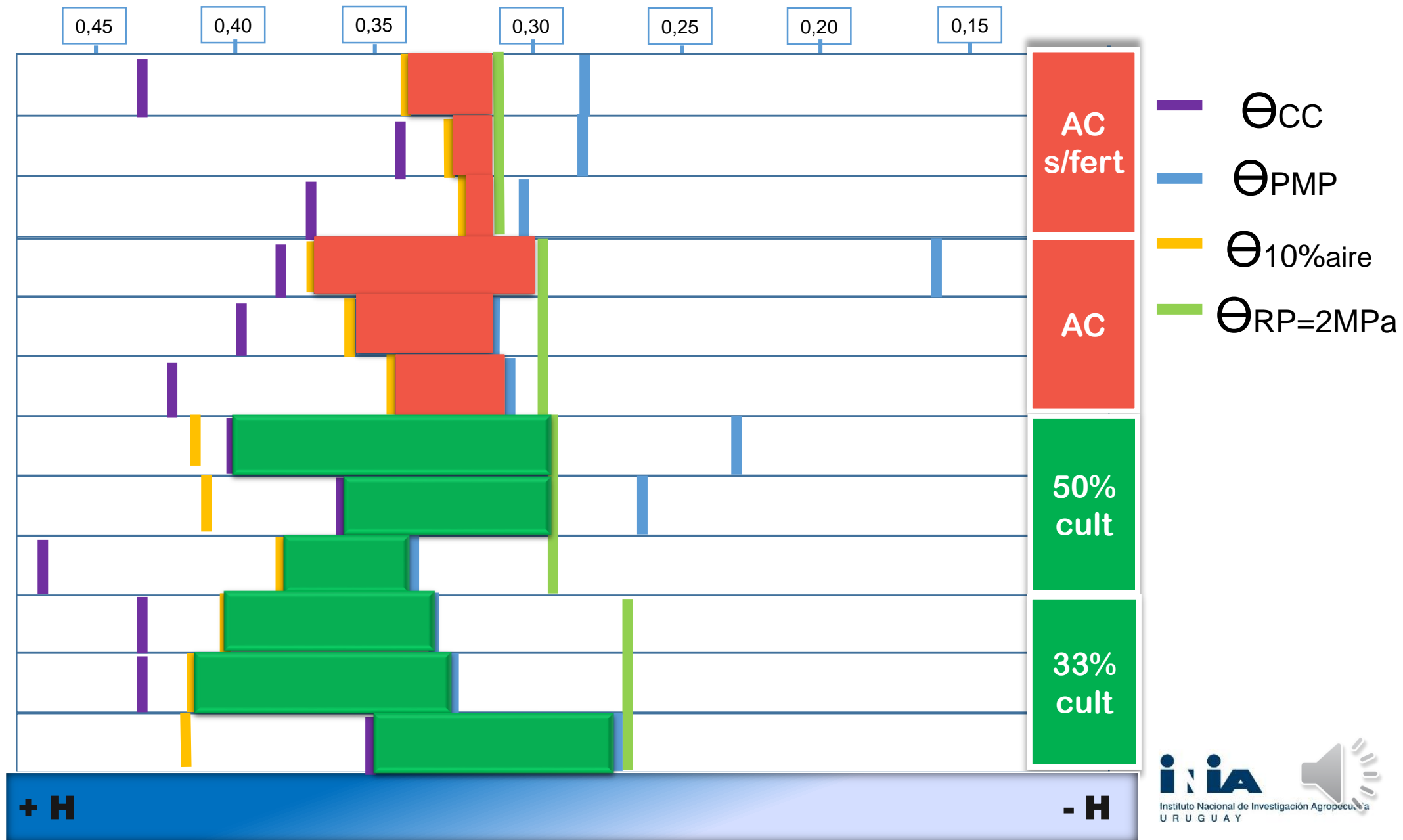
Suelo compactado



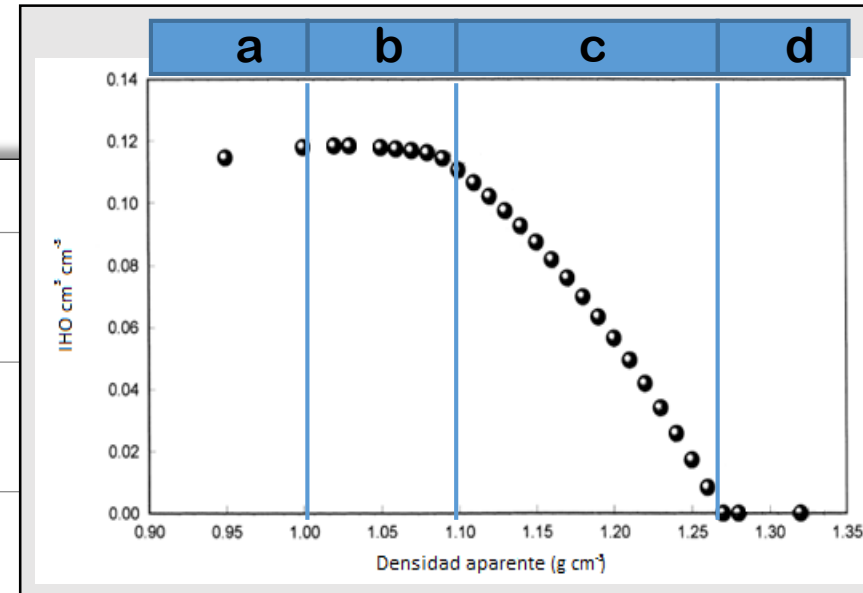
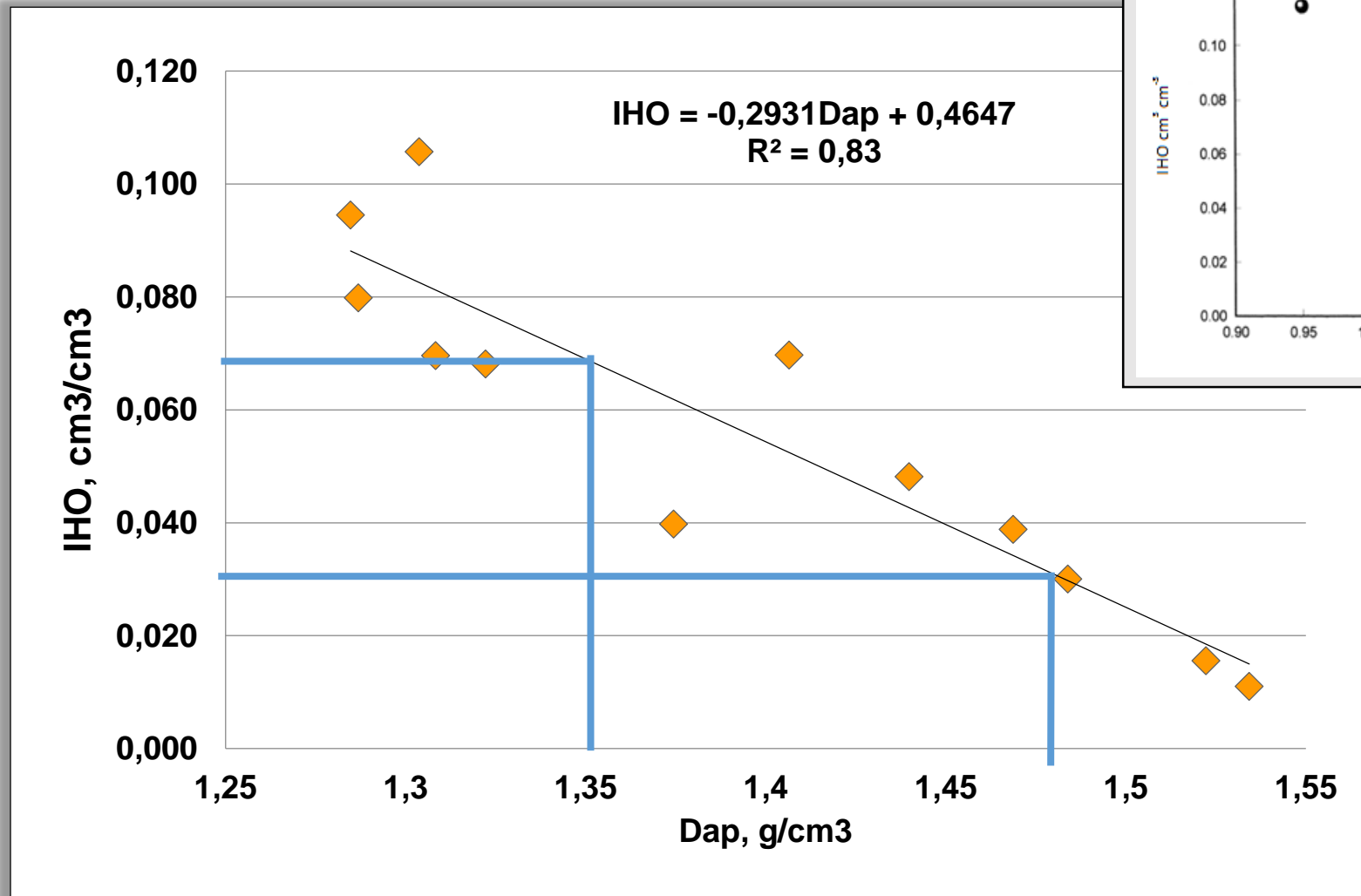
Agua disponible



Intervalo hídrico óptimo



Relación IHO y Dap



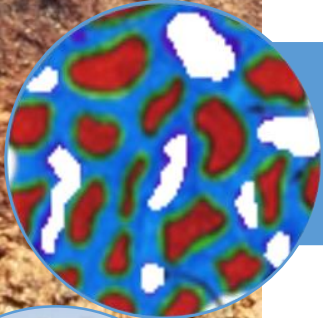
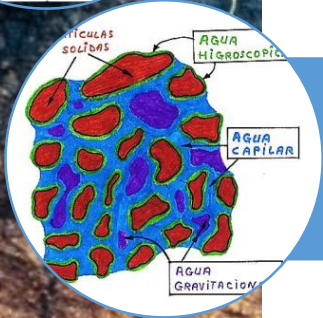
Calidad Física

Ambiente favorable para las raíces y la biota edáfica

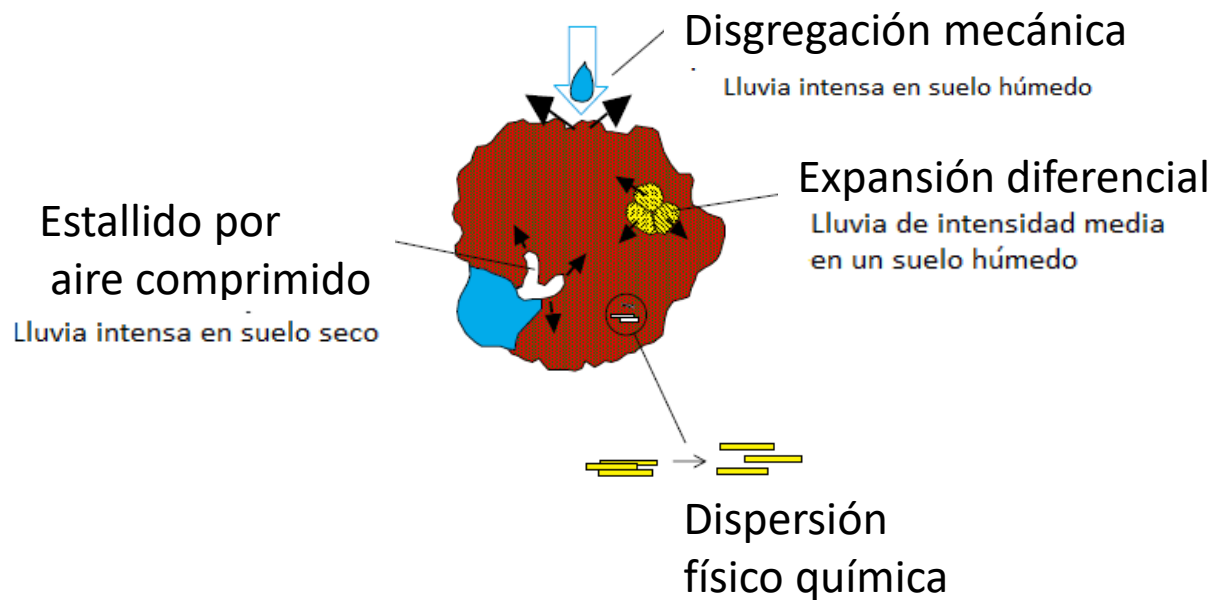
Suministre y almacene agua

Suministre O₂

Resista la degradación

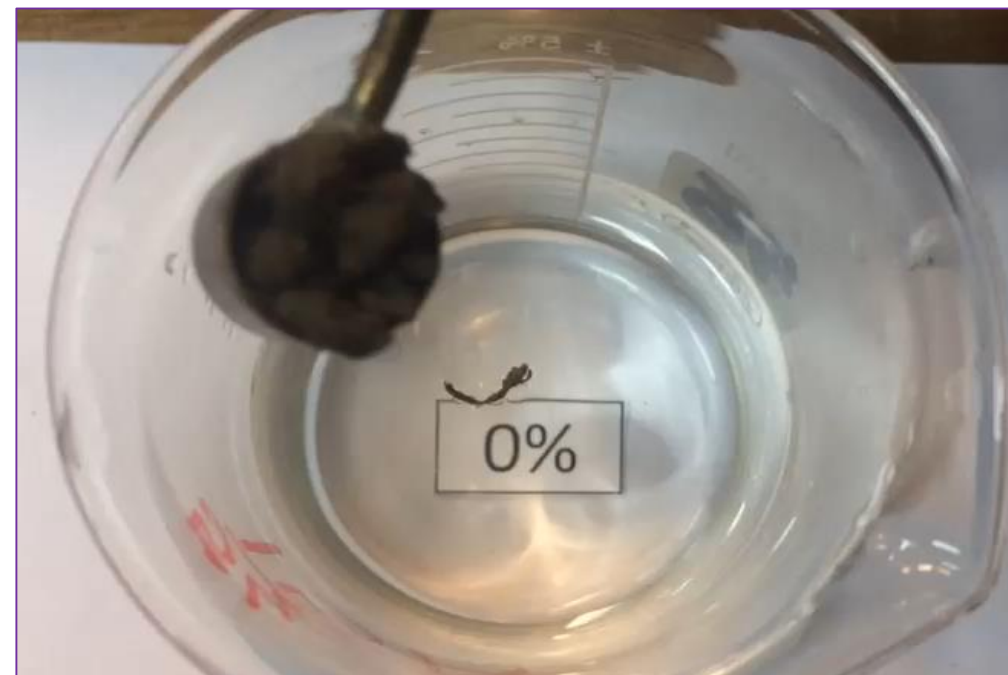


Estabilidad de Agregados



Adaptado de Chenu y Cosentino, 2007

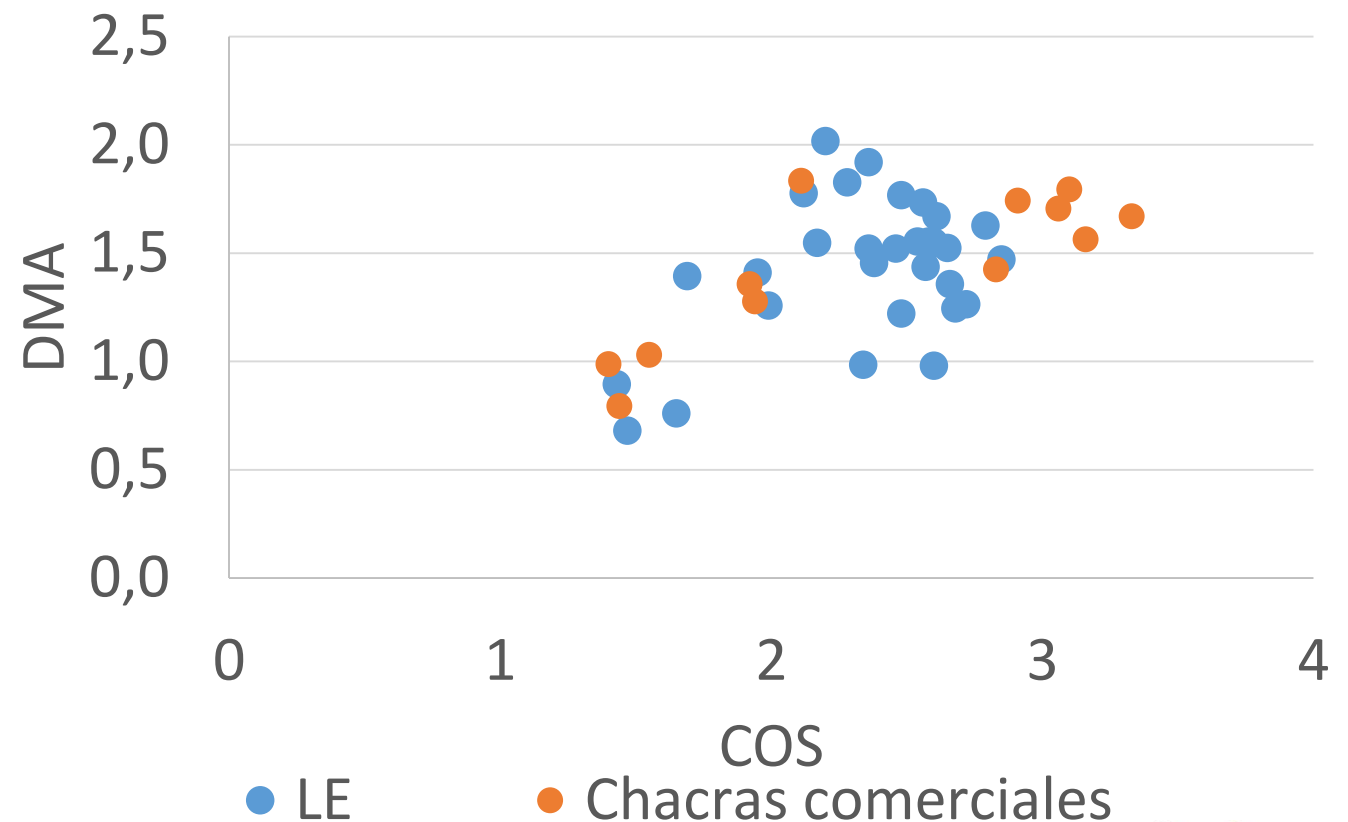
Resistencia del suelo a mantener su arreglo espacial (Amézqueta, 1999).



Estabilidad de Agregados

Le Bissonais (1996)

Entender la importancia de los diferentes procesos involucrados en la ruptura de agregados, y las propiedades del suelo que hacen a su susceptibilidad, para poder fomentar prácticas de conservación.



Caracterización del sitio (0-20cm)

- VESS: Evaluación visual de la estructura del suelo. “Método de pala” AARHUS University

Escala del 1-5 (1 es mejor 5 peor):

- Tamaño y apariencia de agregados
- Presencia de raíces
- Apariencia del pan luego de ruptura
- Porosidad de macro agregados
- Apariencia de agregados pequeños (1,5 cm)



Soil Structure	Soil Profile	Soil Structure	Soil Structure	Soil Structure	Soil Structure	Soil Structure
1-1 Structure Highly porous with large aggregates	Highly porous fluffy fluffy	Highly porous fluffy fluffy	Highly porous fluffy fluffy	Highly porous fluffy fluffy	Highly porous fluffy fluffy	Highly porous fluffy fluffy
1-2 Structure A mixture of porous and non-porous aggregates	Mix of porous and non-porous aggregates	Mix of porous and non-porous aggregates	Mix of porous and non-porous aggregates	Mix of porous and non-porous aggregates	Mix of porous and non-porous aggregates	Mix of porous and non-porous aggregates
1-3 Structure A mixture of porous aggregates from 20% to 50% and non-porous aggregates	Mix of porous and non-porous aggregates	Mix of porous and non-porous aggregates	Mix of porous and non-porous aggregates	Mix of porous and non-porous aggregates	Mix of porous and non-porous aggregates	Mix of porous and non-porous aggregates
1-4 Structure Mostly large > 10 cm and sub-angular non-porous aggregates	Mostly large > 10 cm and sub-angular non-porous aggregates	Mostly large > 10 cm and sub-angular non-porous aggregates	Mostly large > 10 cm and sub-angular non-porous aggregates	Mostly large > 10 cm and sub-angular non-porous aggregates	Mostly large > 10 cm and sub-angular non-porous aggregates	Mostly large > 10 cm and sub-angular non-porous aggregates
1-5 Structure Mostly large > 10 cm very few < 2 cm angular and non- porous	Mostly large > 10 cm very few < 2 cm angular and non- porous	Mostly large > 10 cm very few < 2 cm angular and non- porous	Mostly large > 10 cm very few < 2 cm angular and non- porous	Mostly large > 10 cm very few < 2 cm angular and non- porous	Mostly large > 10 cm very few < 2 cm angular and non- porous	Mostly large > 10 cm very few < 2 cm angular and non- porous



VESS Promedio

1.53



VESS Promedio

1.46



VESS Promedio

3.33



VESS Promedio

2.88

Relevamiento de suelos Quincke et al. s.p.

Algunas modificaciones

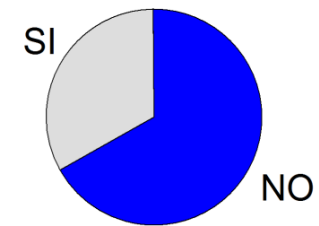


- Presencia de estructura laminar
- Es continua?
- Donde se ubica?
- Que espesor tiene

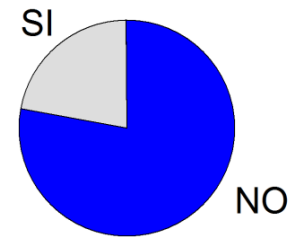


Estructura laminar

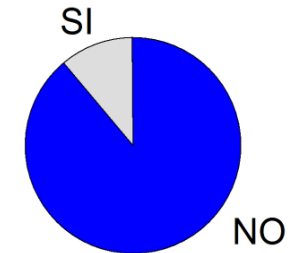
HISTORIA 33-66



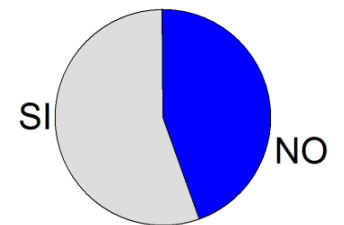
HISTORIA 50-50



HISTORIA 50-50B



HISTORIA AC



Resumen

- Importancia de mirar el suelo y las raíces
- Buscar la profundidad en la cual tengo limitantes (RP, visual)
- Monitoreo en el tiempo
 - COS
 - Dap

Consultas

- vrubio@inia.org.uy