

# Degradação Física e Química do Solo

**Prof Miguel Cooper**  
**Depto de Solos e Nutrição de Plantas**  
**ESALQ/USP**  
**E-mail: [mcooper@esalq.usp.br](mailto:mcooper@esalq.usp.br)**



# PRINCIPAIS TIPOS DE DEGRADAÇÃO

## INDUZIDOS PELO HOMEM

*RÁPIDO*

### TERRAS AGRÍCOLAS

### TERRAS URBANAS

- Poluição
- Compactação
- Erosão

### TERRAS INDUSTRIAIS

- Poluição do solo
- Contaminação do solo
- Chuva ácida

Físicas

Químicas

Biológicas

## NATURAL

*LENTO*

### FÍSICAS

- Formação de "pans"
- endurec.

### QUÍMICAS

- Laterização
- Calcificação
- Lixiviação
- Iluviação

### BIOLÓGICAS

- Declínio na biodiversidade do solo



croûte structurale  
(certains fragments  
restent bien distincts)

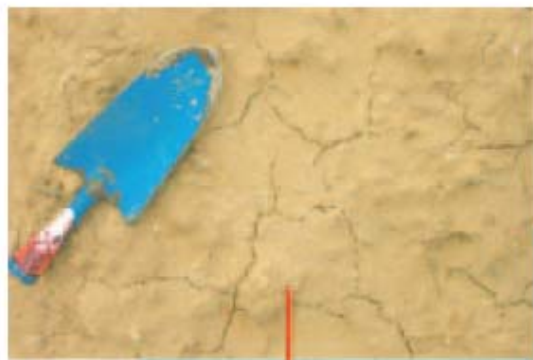
croûte sédimentaire  
(lissage de la surface)



phase 0

état initial fragmentaire  
poreux et meuble  
après un travail du sol

infiltration possible:  
30 à 60 mm/h

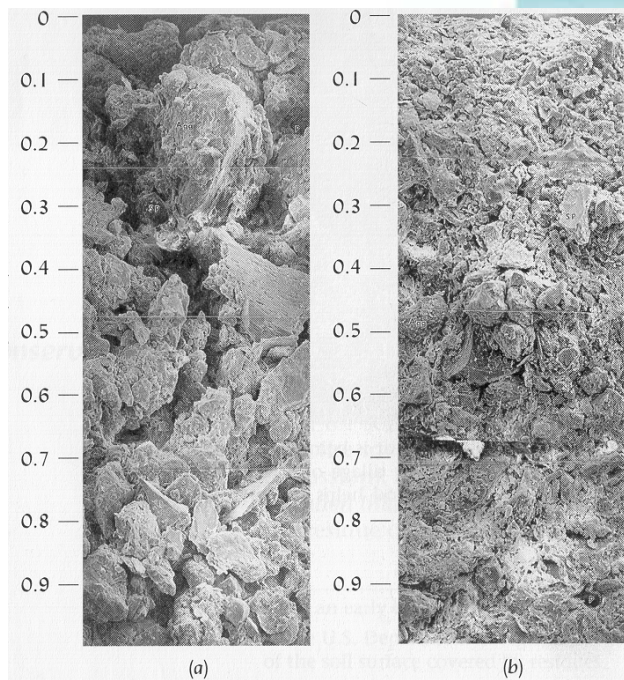


(a)



(b)

fig.2.2: Les stades de dégradat



(a)

(b)



(c)

FIGURE 4.34 Scanning electron micrographs of the upper 1 mm of a soil with stable aggregation (a) compared to one with unstable aggregates (b). Note that the aggregates in the immediate surface have been destroyed and a surface crust has formed. The bean seedling (c) must break the soil crust as it emerges from the seedbed. [Photos (a) and (b) from O'Nofiook and Singer (1984), used with permission of Soil Science Society of America; photo (c) courtesy of R. Weil]

(non-crust), and two enlarged  
from a distance of 80cm.



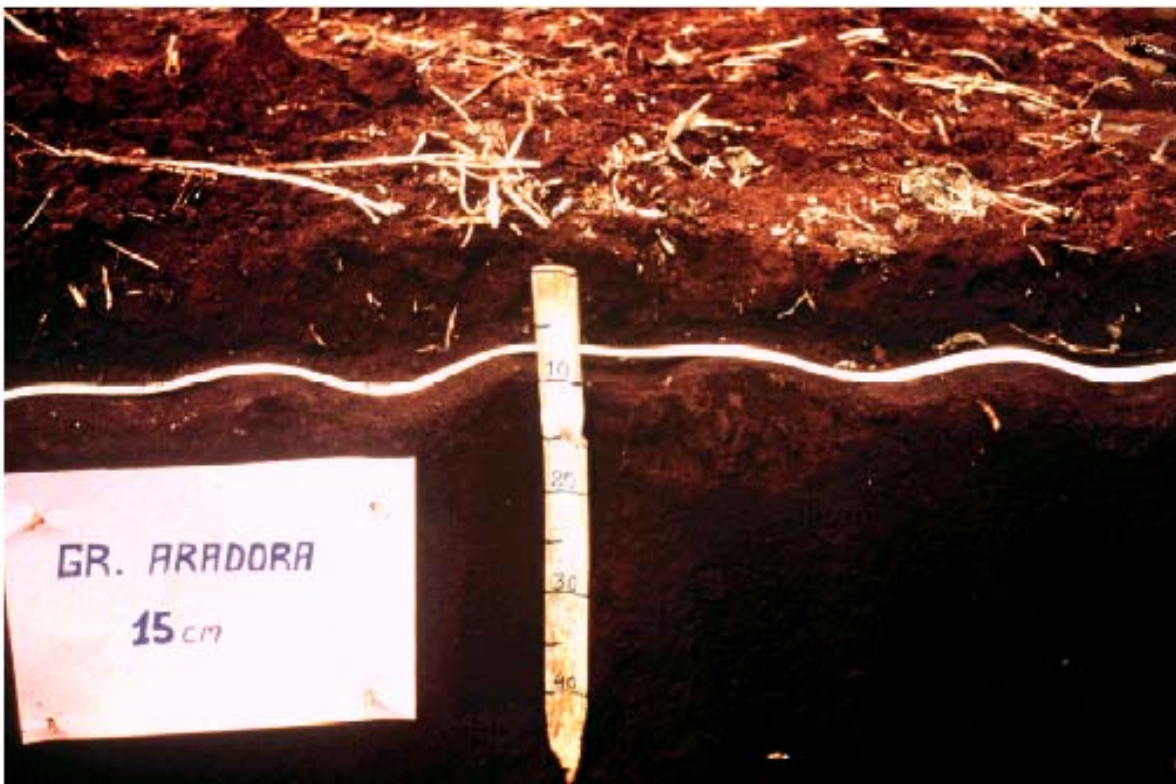
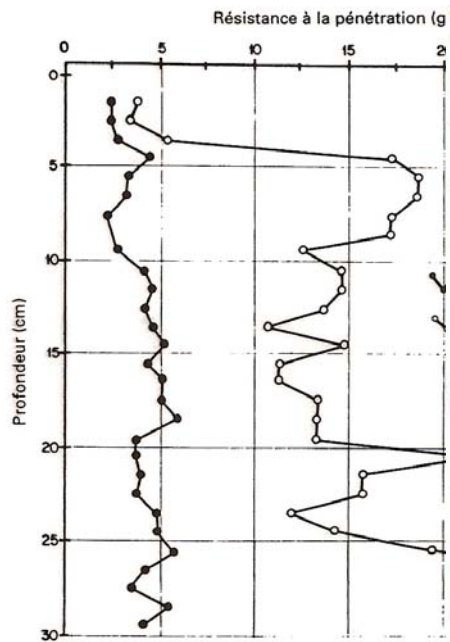
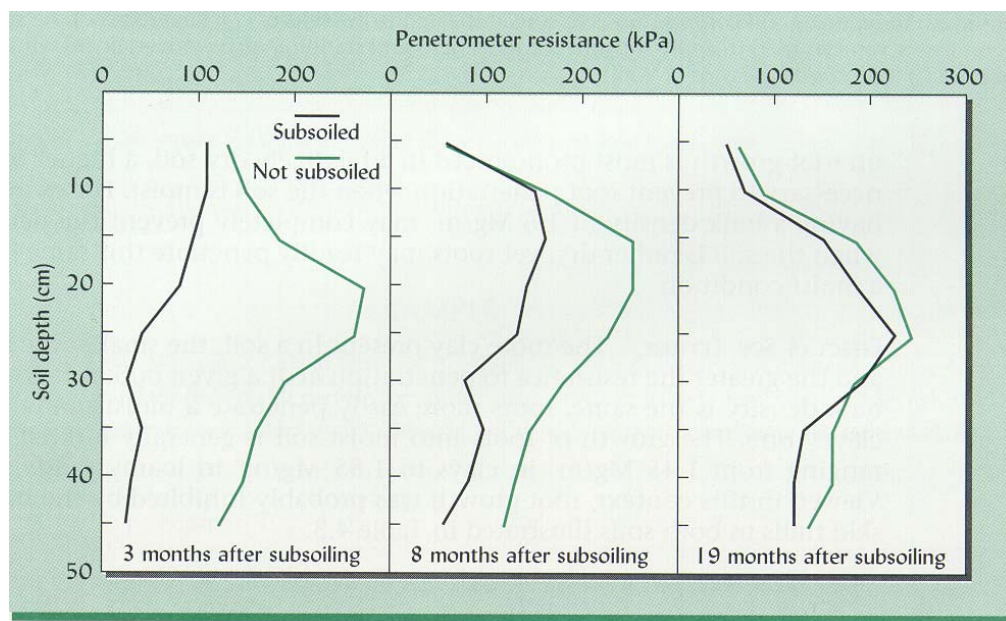
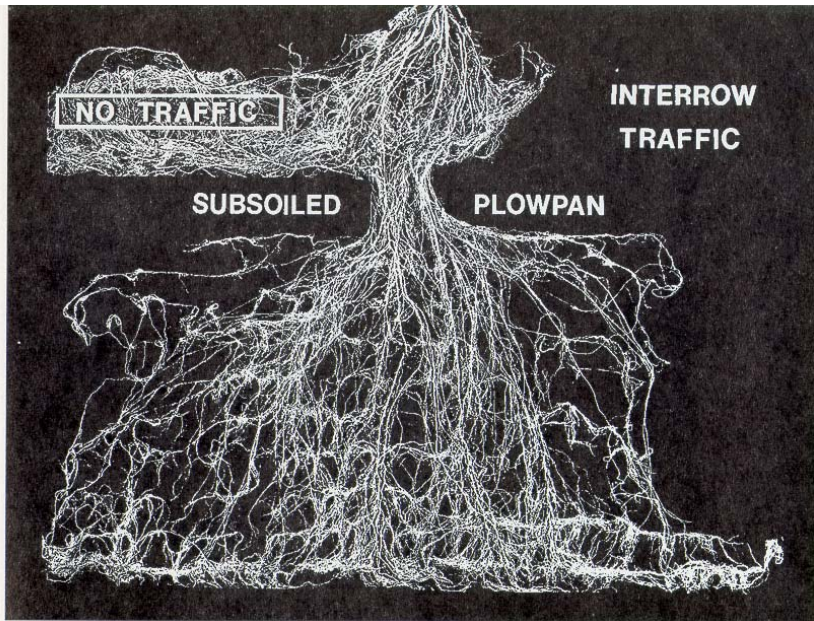


FIG. 3. — Résistance mécanique à la pénétration d'un sol ferrallitique (latossolo vermelho-amarelo).  
 Mechanical resistance to penetration in a red-yellow ferrallitic soil (latossolo vermelho-amarelo).







