

Cone Penetrometers for Agricultural Applications

Field Cone Penetrometers:

(mostly for compaction, tillage and root growth studies)

ASAE Standards:

- 1) Cone tip angle: 30°
- 2) Cone base diameter:
 - a) 12.83 mm (recessed shaft: 9.53 mm) for hard soils
 - b) 20.27 mm (recessed shaft: 15.88 mm) for soft and extremely hard soils
- 3) Insertion speed: 2 m min^{-1} (2000 mm min^{-1})



Lab Cone Penetrometers (Micro-Penetrometers and Needle Penetrometers): (mainly for root growth studies and crust strength measurements)

- 1) Cone tip angle: usually 30° and 60° (semi-angle 15° and 30°)
- 2) Cone base diameter: usually in the range 1–5 mm
- 3) Insertion speed: usually in the range $0.001\text{--}0.004 \text{ m min}^{-1}$ ($1\text{--}4 \text{ mm min}^{-1}$)

