Root turnover - the unknown input of soil carbon

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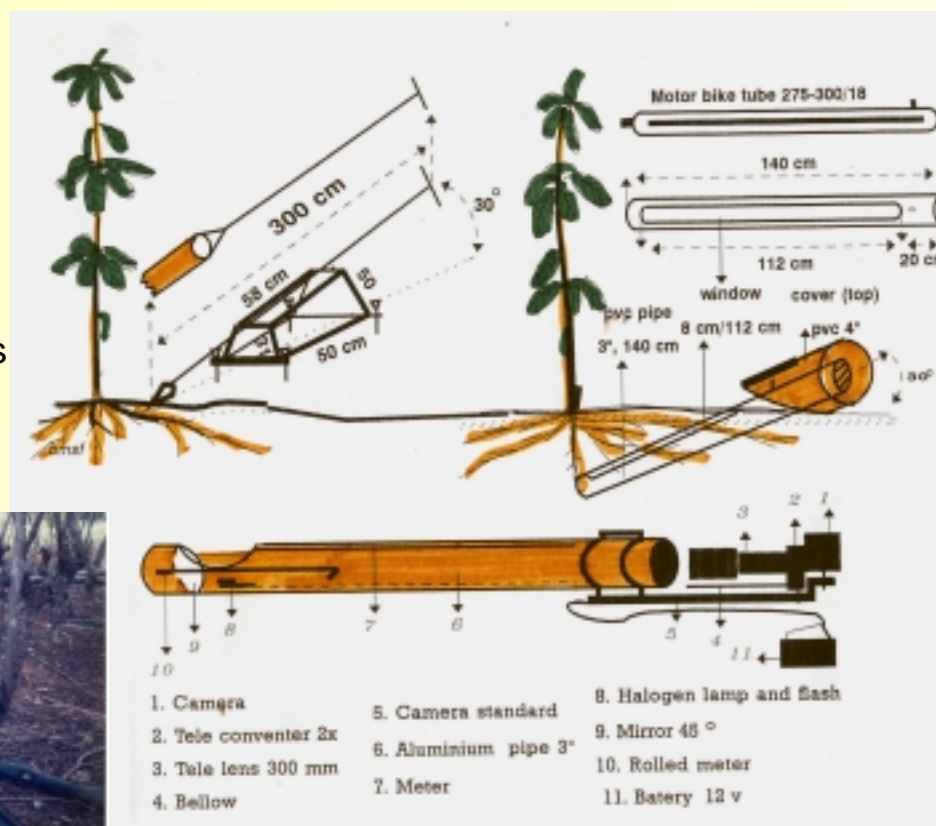
[1]. Brawijaya University, [2]. ICRAF-S.E. Asia

Introduction

• Belowground inputs to the soil C balance may be at leat as important as aboveground litter inputs - yet few reliable data exist

• Estimates of the average lifespan of roots vary from 1 week to 1 year

• Annual structural root input thus varies from 1 - 50 x standing stock present at any time of sampling
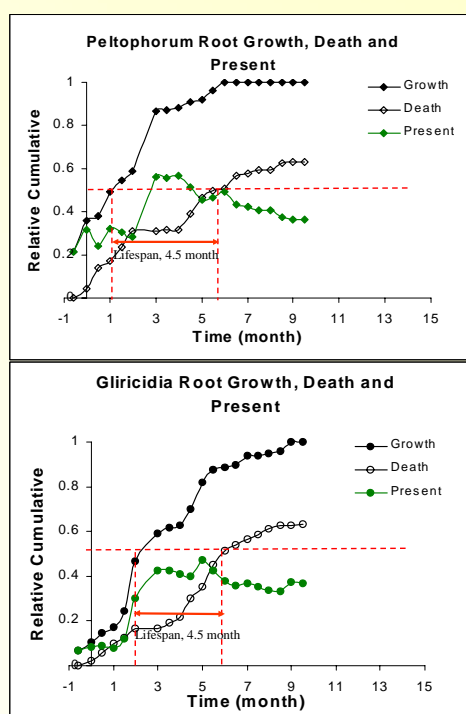
Methods

• Root photographs with 'endoscope' in 'inflatable minirhizotron'

• Sequential analysis of images taken at 2-weekly of monthly interval

• Observation in:
Imperata grassland, woodlots of *Gliricidia* (G) and *Peltophorum* (P) and mixed species hedgerow intercrop (pruned P and G trees, maize and rice)

1. Camera
2. Tele conventer 2x
3. Tele lens 300 mm
4. Bellow
5. Camera standard
6. Aluminium pipe 3"
7. Meter
8. Halogen lamp and flash
9. Mirror 45°
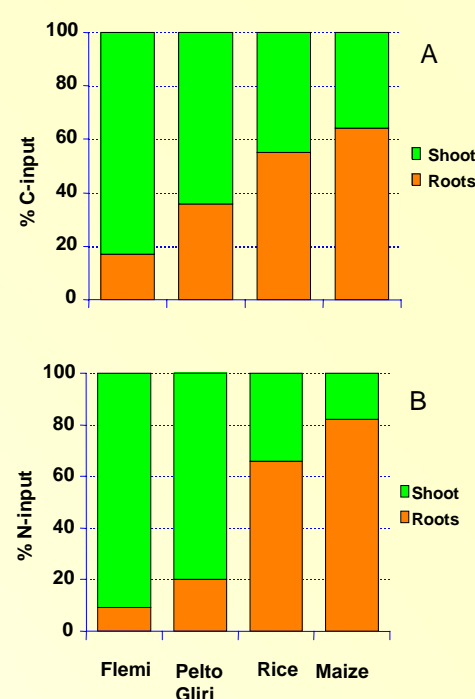10. Rolled meter
11. Batery 12 v

Result

Root growth of *Gliricidia* at different time observations

Relative cumulative root growth of 1.5 years *Peltophorum* and *Gliricidia* hedgerow.

Percentage of Carbon (A) and Nitrogen (B) from roots and shoots of hedgerow trees and food crops.

Conclusion

• Median life-span of Peltophorum and Gliricidia root are about 4.5 months for 1.5 years old trees

• Percentage C and N -input of hedgerow tree roots is about 30 % and 15 % of total input, respectively.

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