# **Morphological Indicators of Young Tree Health and Recovery in Agroforestry Systems**



Alexandre de Haldat du Lys<sup>1</sup>, Mathis Lecoq<sup>1</sup>, Yves Caraglio<sup>1</sup>, Claire Atger<sup>2</sup>, Eric Nicolini<sup>1</sup>

<sup>1</sup> AMAP – Botanique et Modélisation de l'Architecture des Plantes et des Végétations, Univ Montpellier, CIRAD, CNRS, INRAE, IRD, Montpellier, France.<sup>2</sup> Bureau d'étude PousseConseils



### **Objectives**

1) Identify morphological indicators on the aboveground

**system** that practitioners can use to assess the recovery and health of young trees



**2)** Identify the factors affecting tree recovery



### **3 root/shoot balances** before planting $\bullet$



Test the need for a high root/shoot → balance at planting

→ Capture the growth dynamics

• <u>Growth:</u> height, trunk diameter

## **Root System Excavations**

- 80 trees excavated 1 year after planting
- 32 trees excavated 2 years after planting
- Root traits: volume, number and diameter of newly established roots, percentage of pruning wound coverage
- Link the growth dynamics and root system regeneration and health

### Results 1) Different Growth Dynamics of Aboveground Systems



## 2) Growth Dynamics Reflect Root System Regeneration and Health





