Comparing antrachnose dynamics and leaf wetness duration in staked and unstaked plots of water yam

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COMPARING ANTHRACNOSE DYNAMICS AND LEAF WETNESS DURATION IN STAKED AND UNSTAKED PLOTS OF WATER YAM

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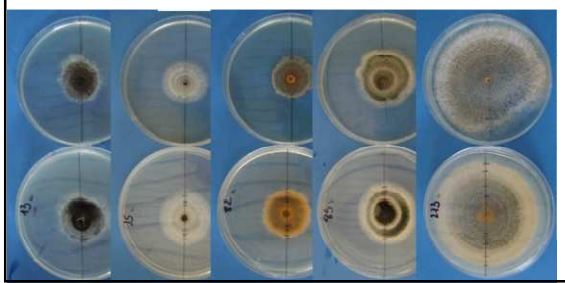
Water yam

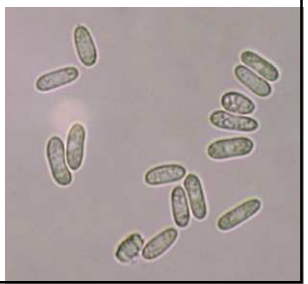
- Water yam: *Dioscorea alata*
- Root tuber: ranks 4th in worldwide tuber production
- Consumed as staple food in tropical countries
- Annual crop, 6 to 9-month cycle
- Main pest: anthracnose

  Losses of up to 80%

Anthracnose

- *Colletotrichum gloeosporioides*
- Spores (conidia) spread by rain splashing
- Leaf wetness plays crucial role in the infection process
- Hypothesis:
  - architecture or training system can affect leaf wetness duration (LWD), and disease severity
  - two training systems: staked *vs.* unstaked

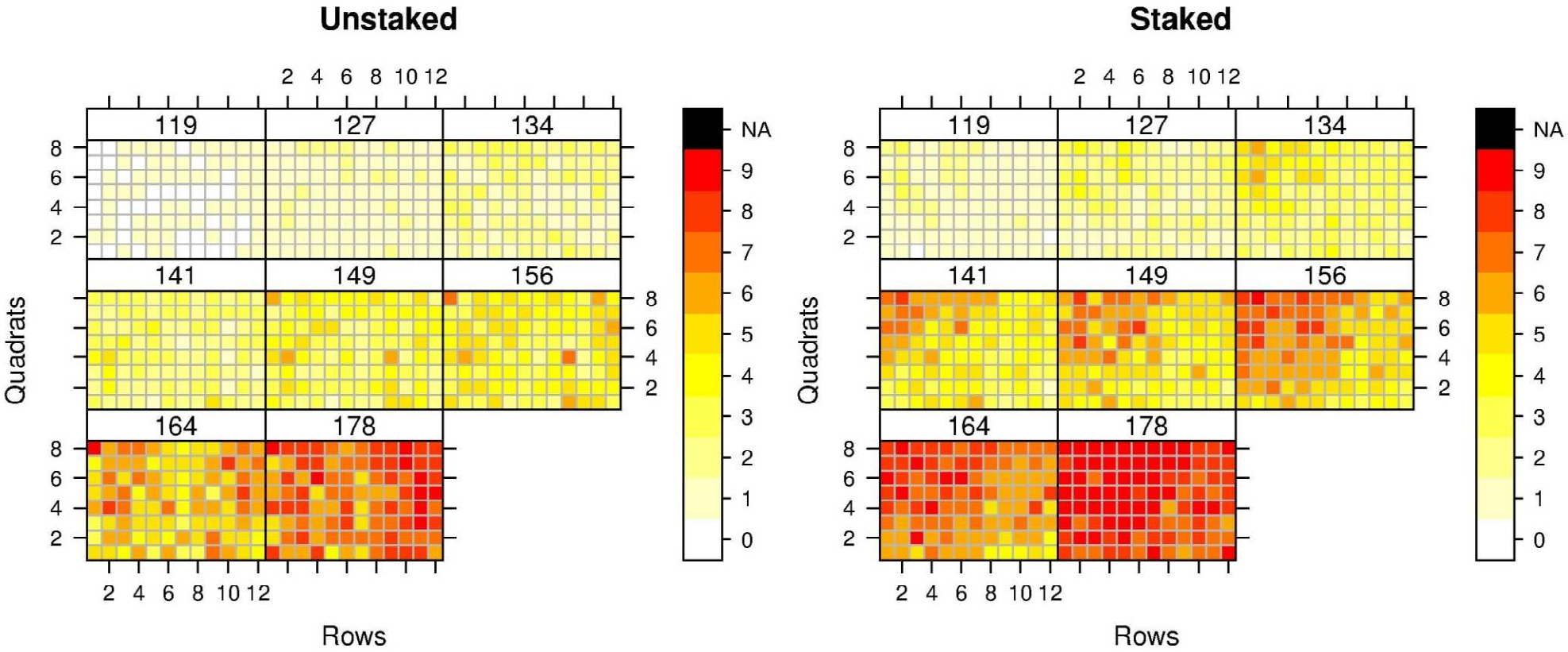




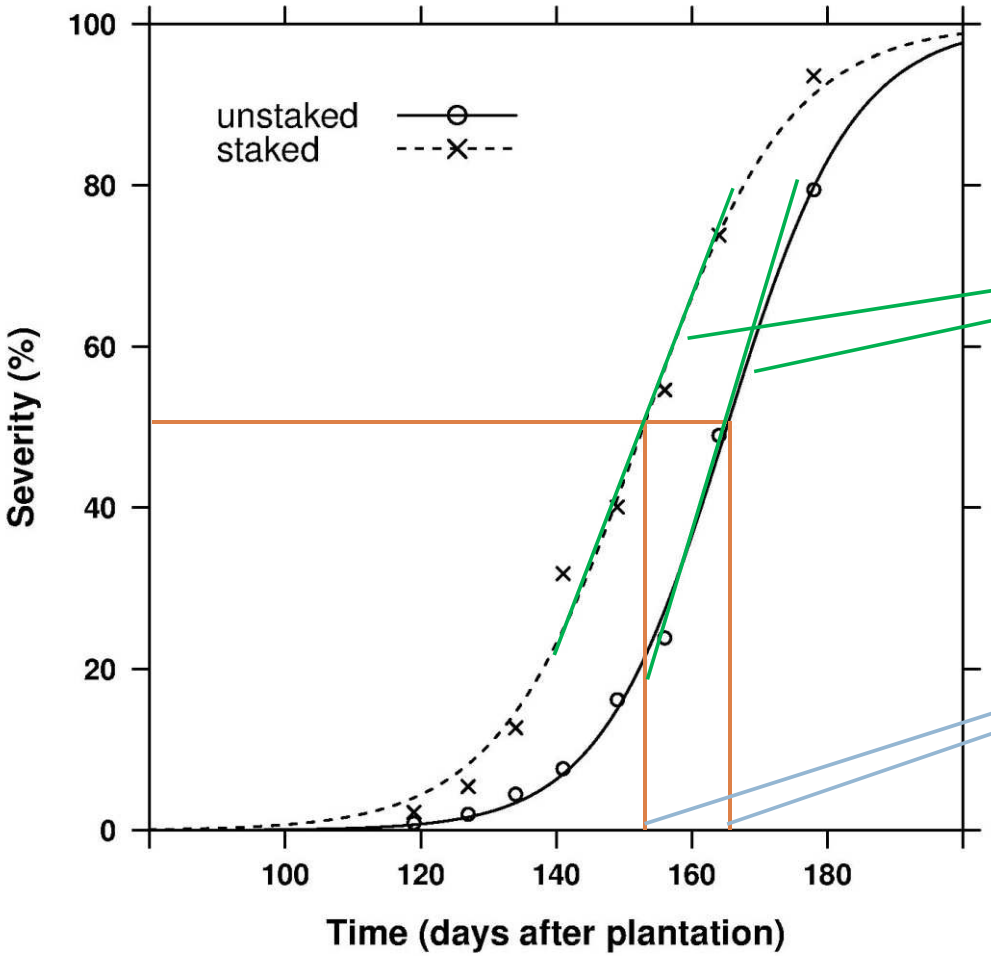
The experiment

- Goal: field trials to compare the disease dynamics and microclimate variables in staked and unstaked plots
- Conducted for 3 years, but only last year is exploitable
- Plants were naturally infected
- Measured variables:
  - disease severity
  - climatic variables (rain, RH, temperature…)
  - microclimatic variables (LWD, light, temp…)

Results: disease dynamics



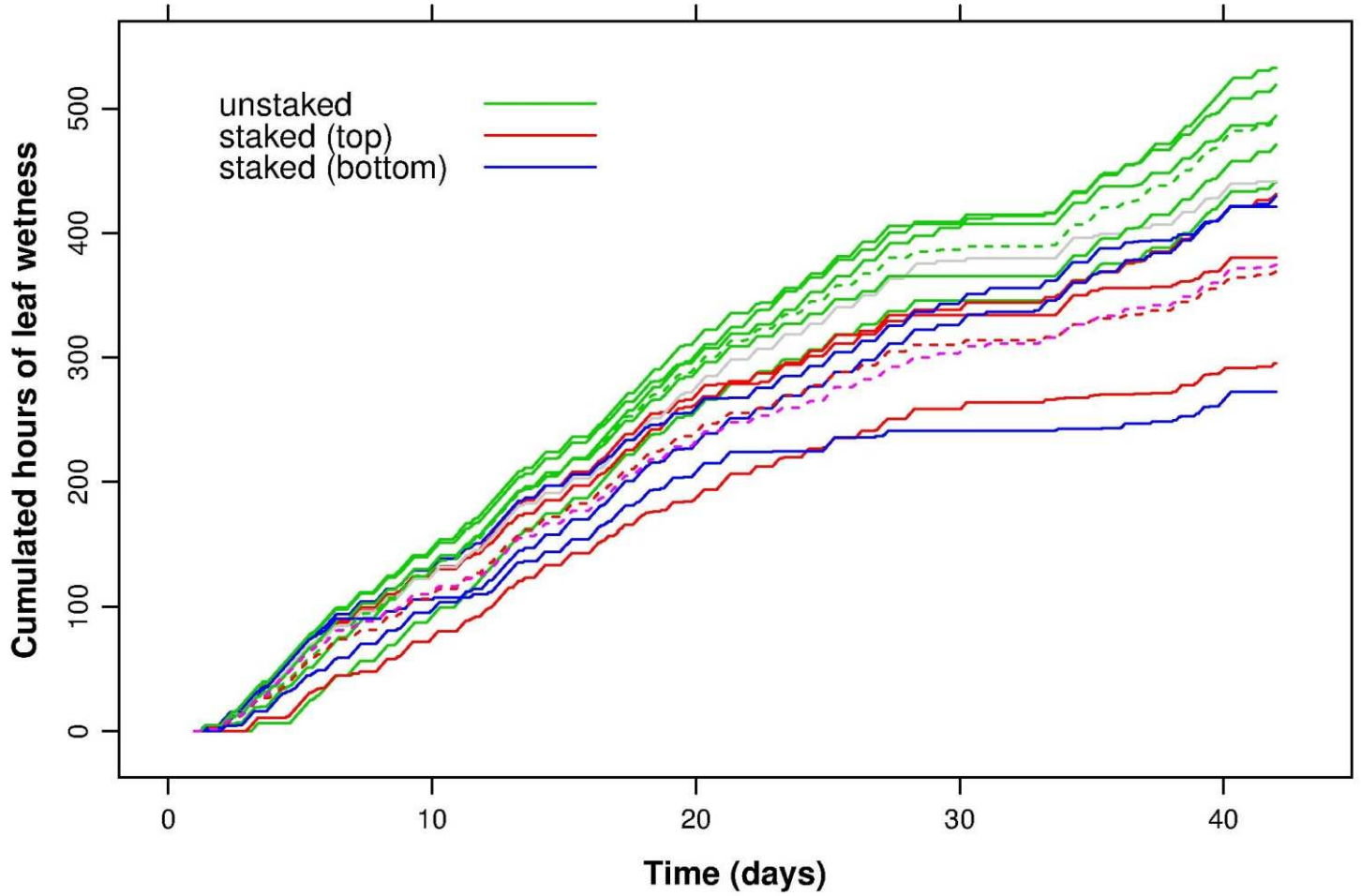
Results: disease dynamics



Increase rates**:
9.32 ≠ 10.69
(*P < 0.01*)

Inflexion points**: 153 ≠ 165 days
(P < 0.001)

Results: leaf wetness duration



Cumulated LWD**:

491 hrs ≠ 371 hrs
(KW test, *P=0.028*)

Conclusions

- The training system (staking or not) has an effect on disesase dynamics
- It does also have an effect on LWD

Longer LWDs in unstaked plots likely speed up the disease infection process

- However, primary inoculum (interception) may have an important effect on the disease onset

Aknowledgements

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- Archidemio project collaborators
- INRA Guadeloupe: T. Bajazet, J-B Nanette, F. Poliphème, M Pallud, M. Salles