

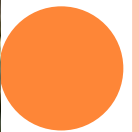
# THE PHYTOBIOME OF A UNIQUE ECOLOGICAL SYSTEM: PARASITIC WEED AND ITS HOST PLANT



Lilach Iasur Kruh, Jacline Abu-Nassar, Shiri Freilich  
and Radi Aly



# *OROBANCHE AEGYPTIACA* (BROOMRAPE)

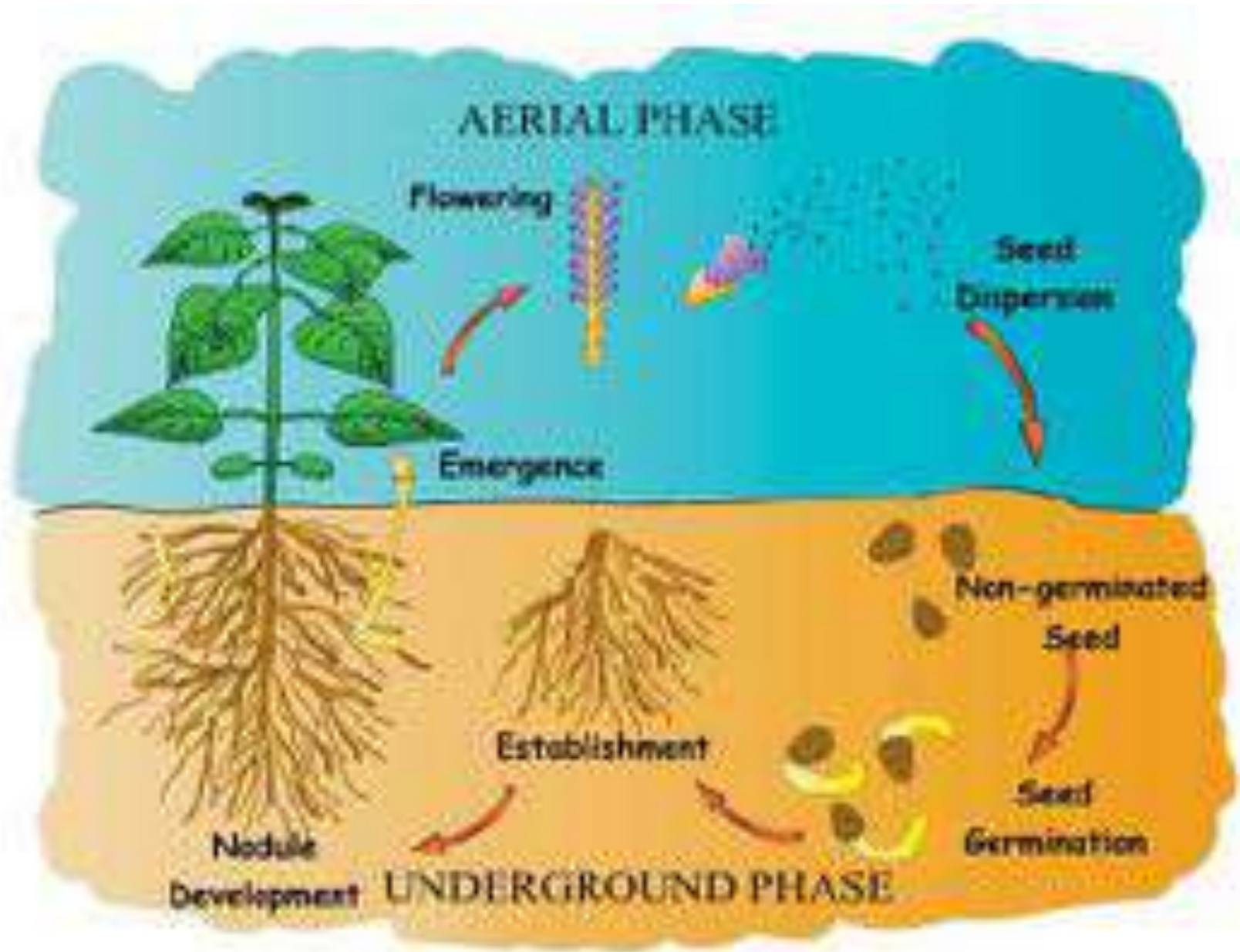




# BROOMRAPE REDUCED QUALITY AND YIELD QUANTITY IN TOMATO FIELDS



# THE DIFFICULTY TO CONTROL PARASITIC WEEDS





## HYPOTHESES

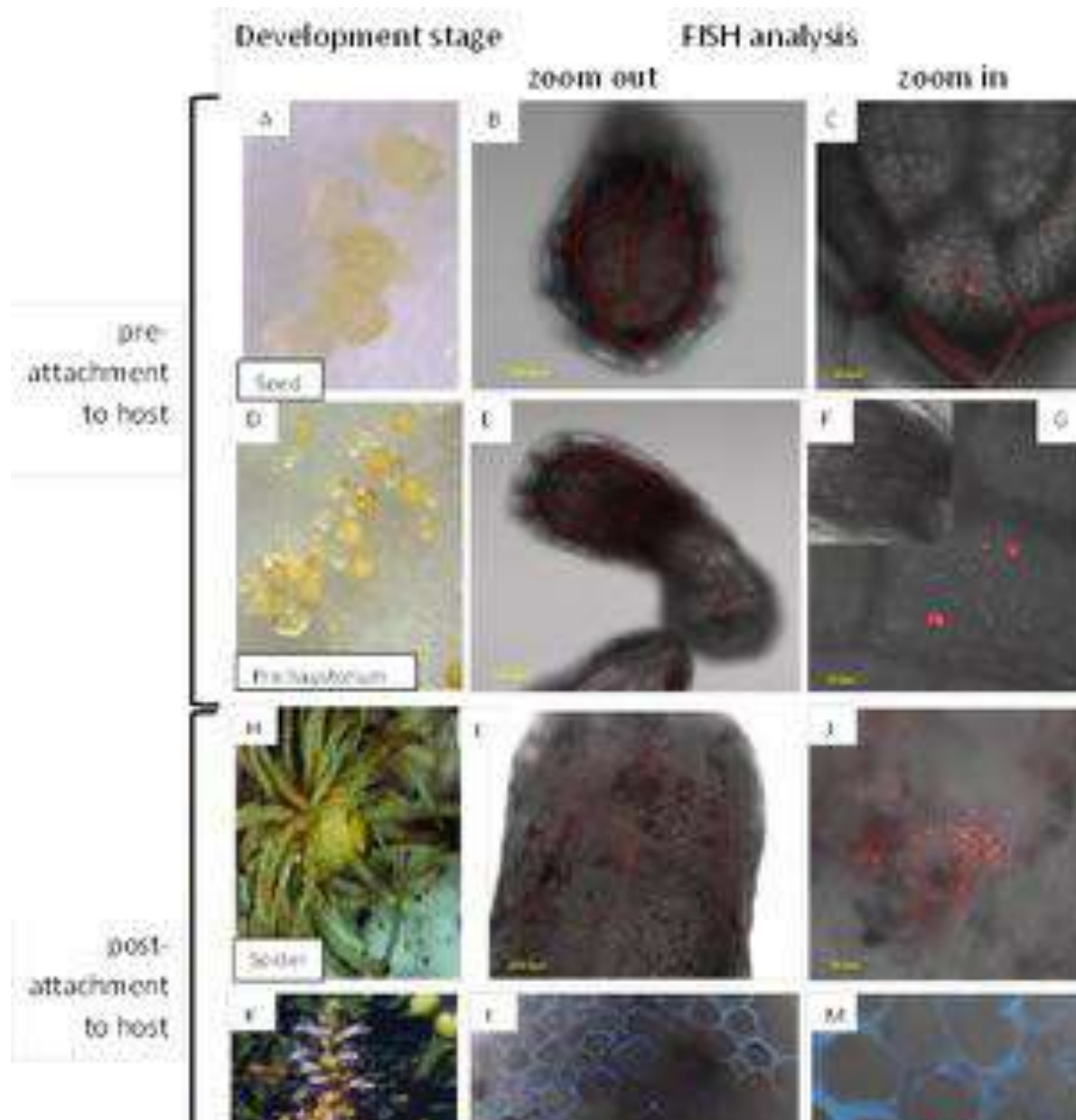
- The interactions between host plant and broomrape effecting the endophytic bacteria
- The interactions between host plant and broomrape are affected by bacteria
  - The host plant endophytic
  - The broomrape endophytic (if any...)



# THE EXPERIMENTAL SYSTEM

- Host plant: tomato (*Solanum lycopersicum*)
- Broomrape: *Orobanche aegyptiaca*

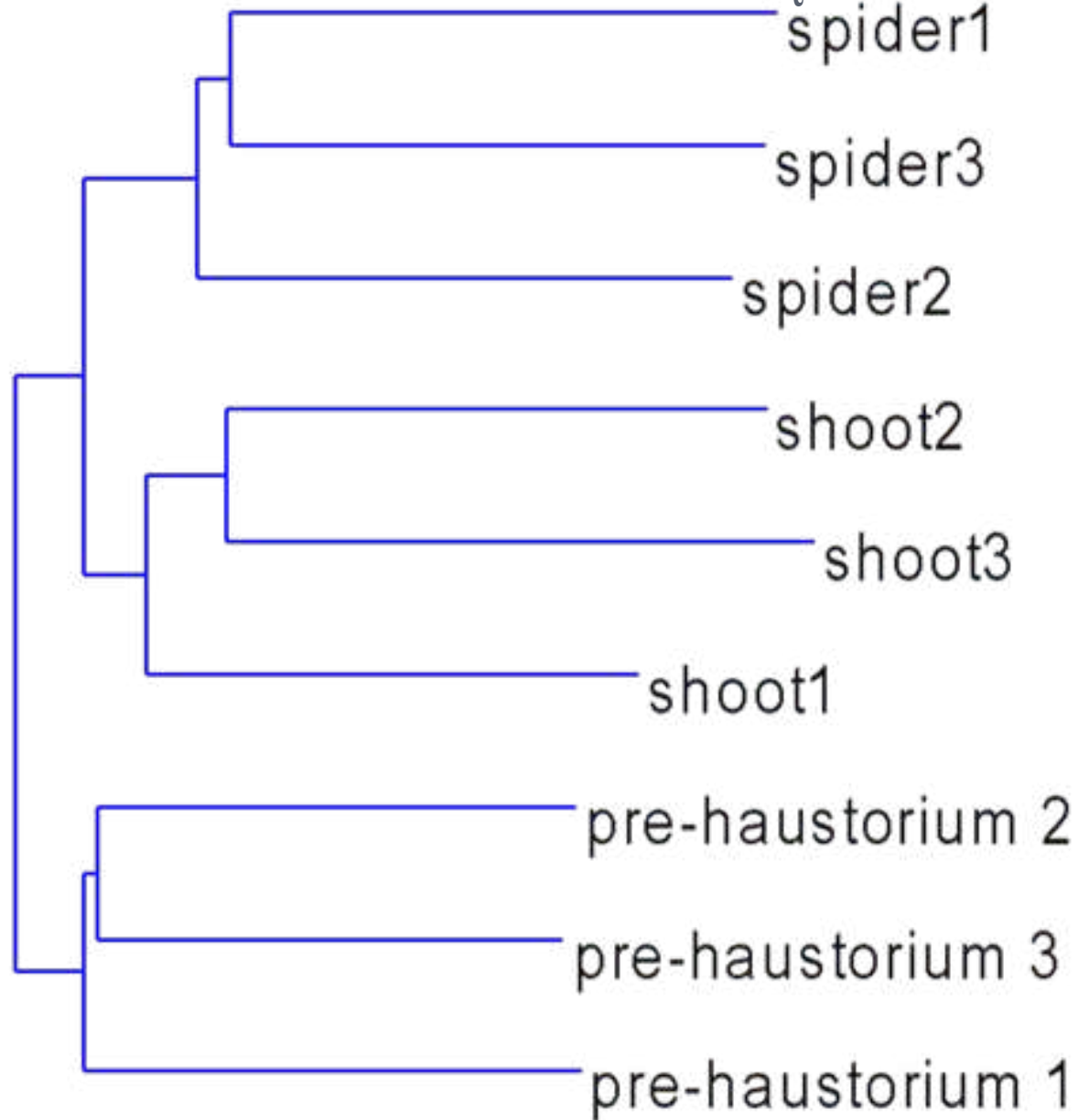




Bacteria were detected in the parasitic weed at all developmental stages examined

# BACTERIAL COMMUNITY COMPOSITION OF DIFFERENT BROOMRAPE DEVELOPMENTAL STAGES — MASS SEQUENCING

Composition analysis of the bacterial community resulted in two clusters: before and after attachment to host.





# POT EXPERIMENTS

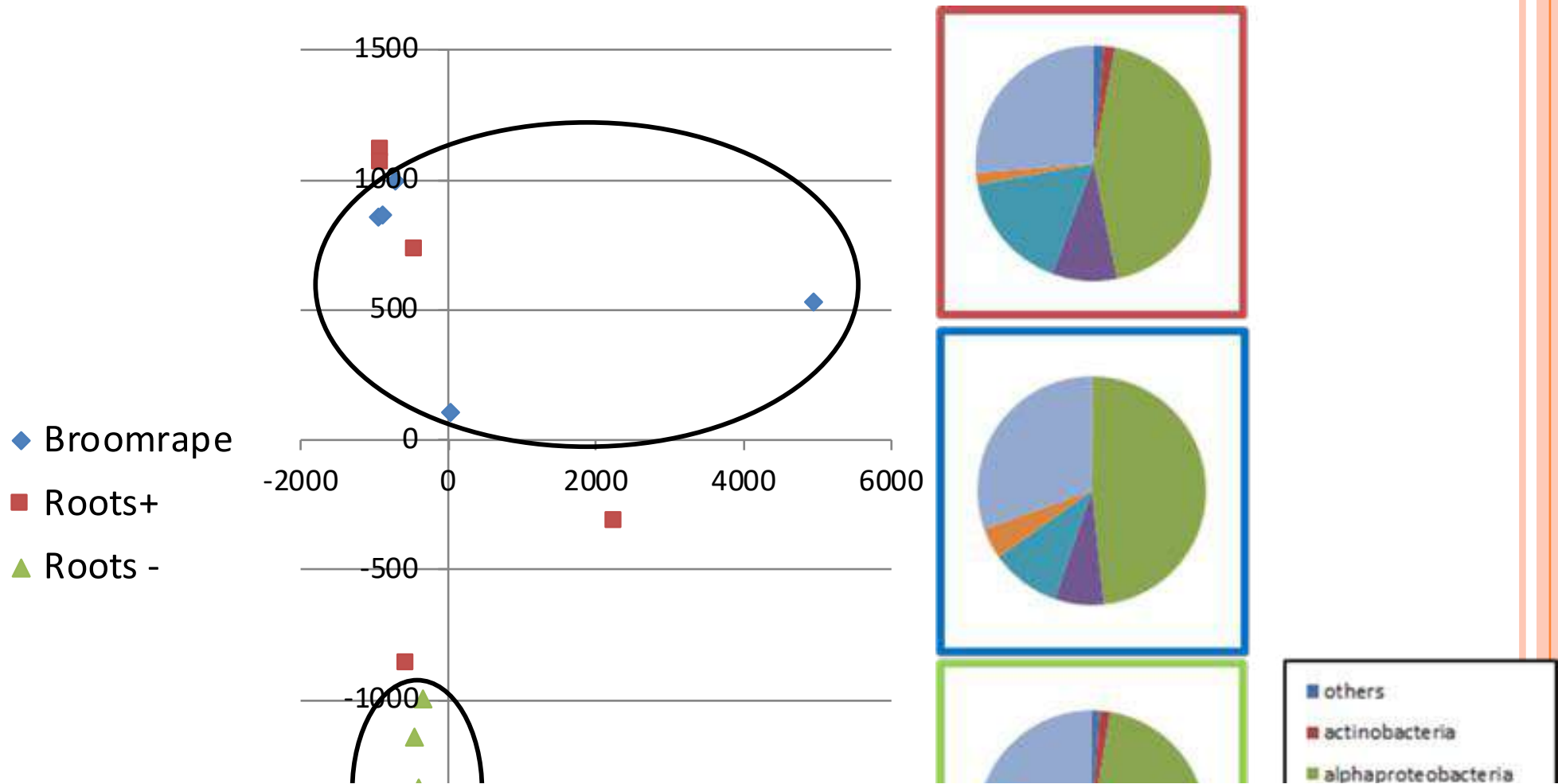
Control plants



Plants with  
broomrape  
seeds



# BACTERIAL COMMUNITY COMPOSITION OF BROOMRAPE AND HOST



A shift in the bacterial community composition of the parasitized root

Why?

## *Short Note*

(Department of Applied Biology, Jordan University of Science and Technology, Irbid-22110, Jordan)

### Antibacterial activity of *Orobanche cernua* extract

ISMAIL SAADOUN and KHALID M. HAMEED

- “...It can be concluded that the extract of *Orobanche* display remarkable activity against some bacteria”





# POT EXPERIMENTS

Control plants



Plants with  
broomrape  
seeds



# POT EXPERIMENTS

- Broomrape



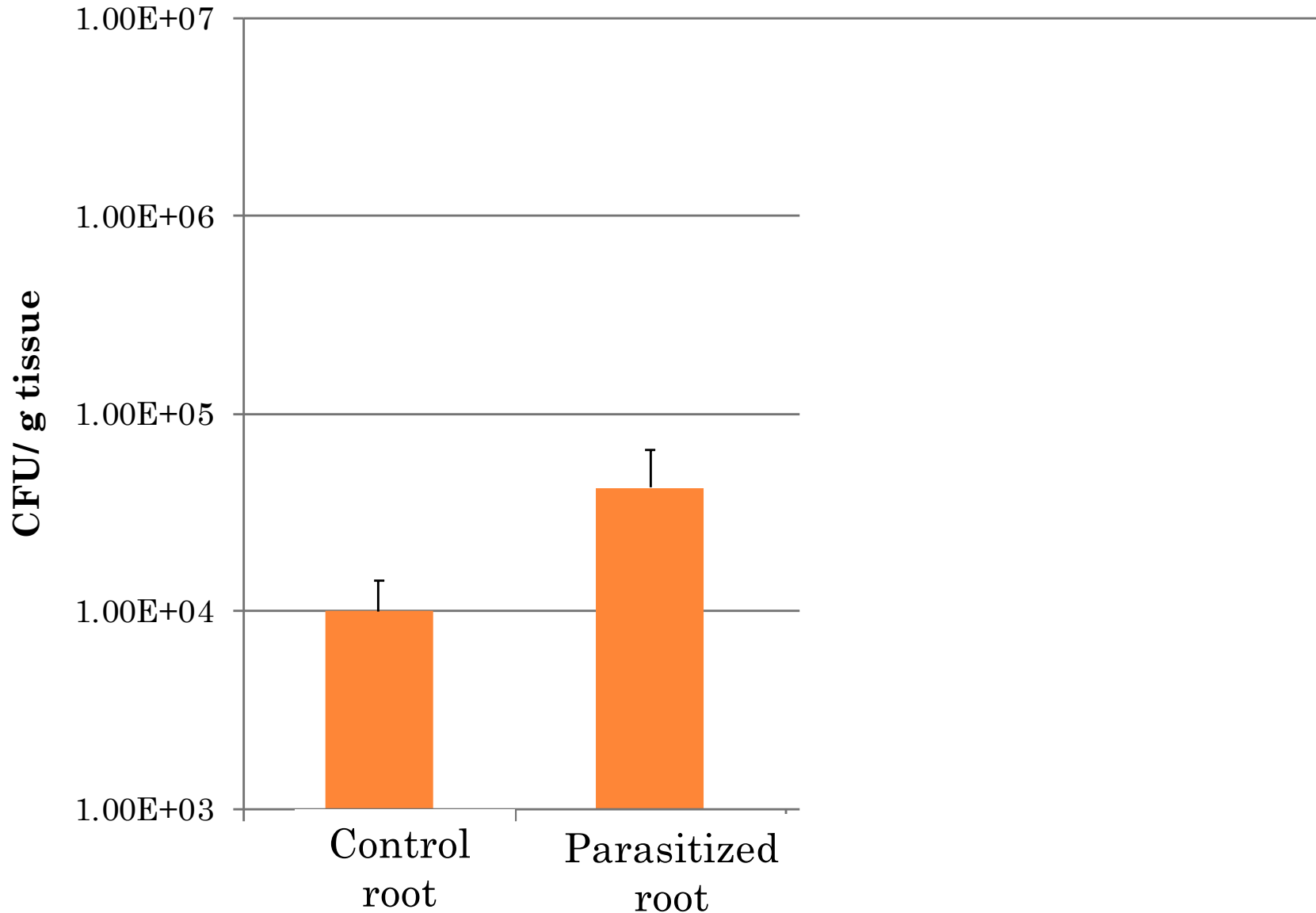
+ Broomrape



- Broomrape

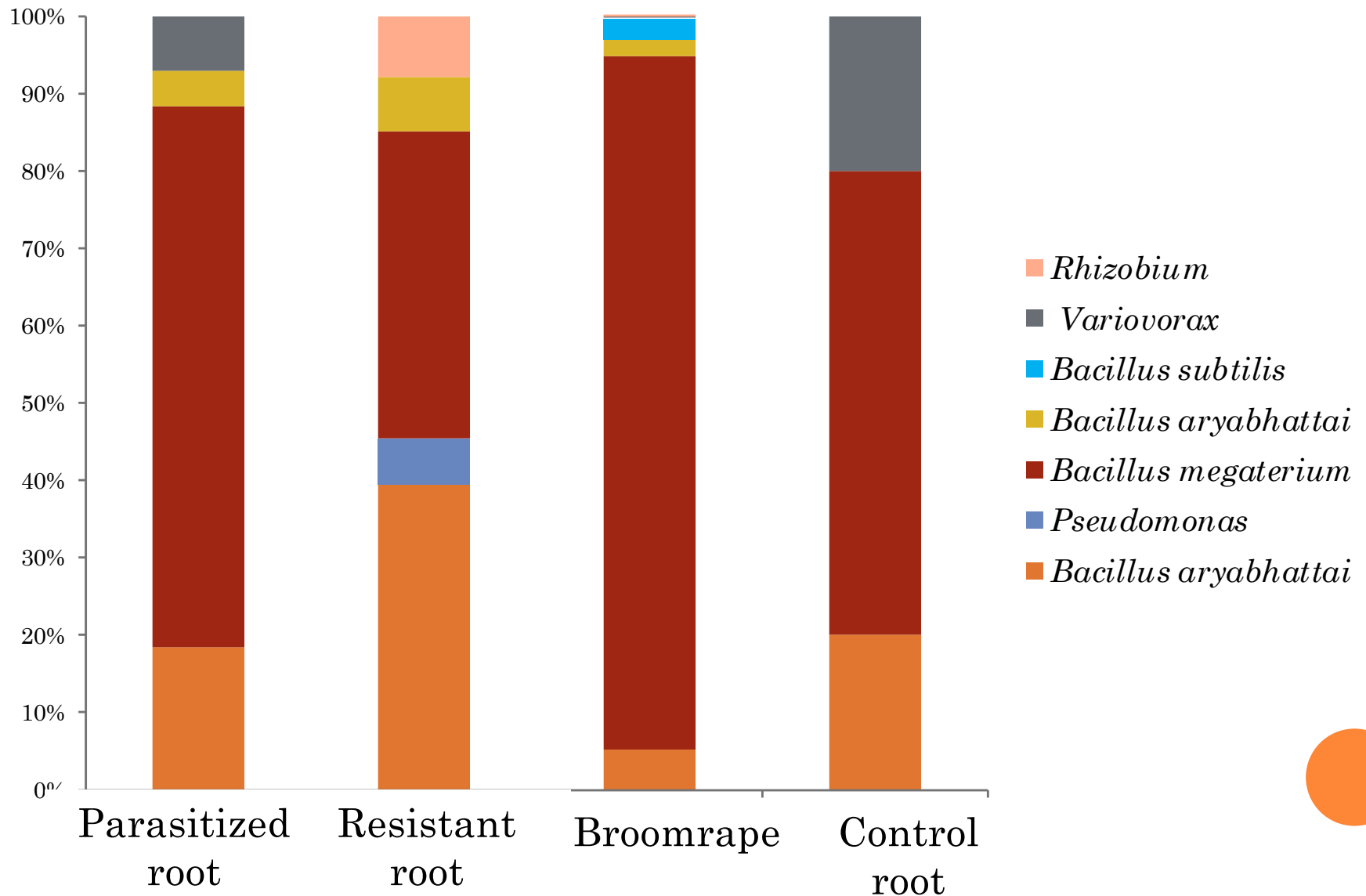


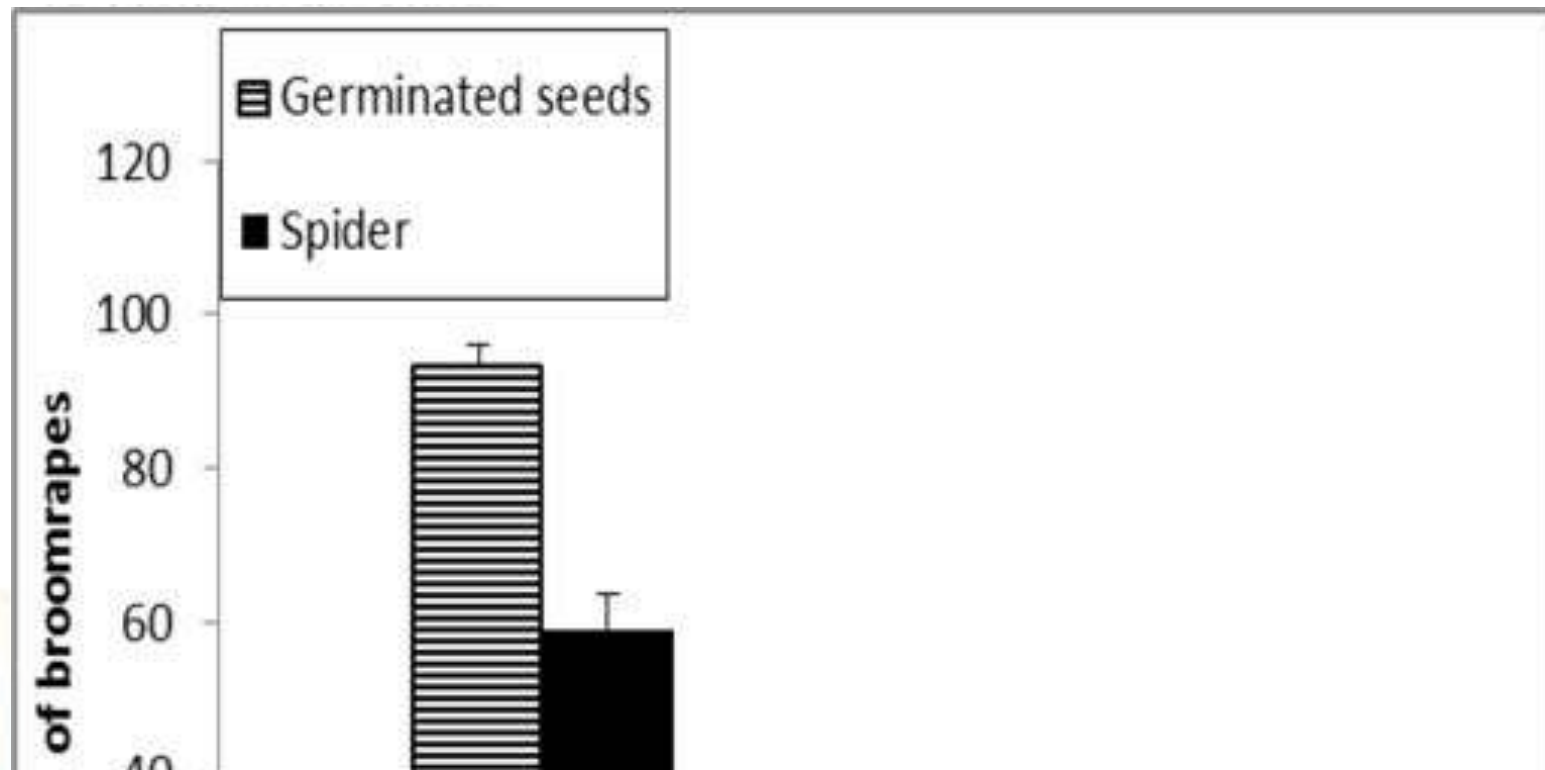
# ISOLATE BACTERIA QUANTITY FROM DIFFERENT SAMPLES





# ISOLATE COMMUNITY COMPOSITION OBTAINED FROM DIFFERENT SAMPLES





*Pseudomonas* was able to inhibit broomrape development *in vitro* and *in vivo*

Control

Pseudomonas

# TO SUM UP

- Bacteria are inhabiting all developmental stages of the broomrape
- Both classical and molecular methods demonstrated differences in bacterial community composition between host root and parasite tubercle
- Plating surface sterilized host root and parasite tubercle showed differences in the bacteria quantities
- Isolation of endophytic bacteria may help to develop bio-control agent against broomrapes





# THANK YOU

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