

Biology and Host Range of the Brazilian Thrips *Pseudophlothrips ichini* (Thysanoptera: Phlaeothripidae), a Candidate for Biological Control of *Schinus terebinthifolius* (Anacardiaceae) in Florida, USA

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Brazilian Peppertree,
Schinus terebinthifolius Raddi



- flowers berries
- ◆ Evergreen tree or shrub
 - ◆ Aromatic compound leaves
 - ◆ Aromatic, peppery smell
 - ◆ Dioecious
 - ◆ Five varieties (Langland & Burks, 1998; USDA - NRCS, 1999; PIER, 2000)

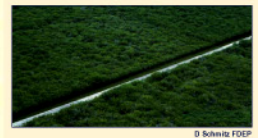
Brazilian Peppertree
In South Florida



Ken Langland/CAIPIS

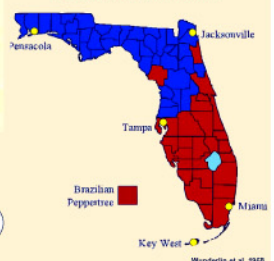


Brazilian Peppertree
Florida Everglades Monoculture



D. Schmitz/IFOP

Brazilian Peppertree
Distribution In Florida, USA



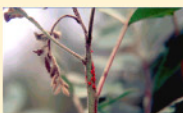
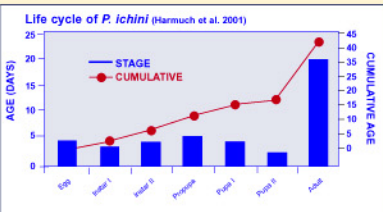
1. Why Classical Biological Control?

- ◆ Non-native invasive species
- ◆ No native congeners in United States
- ◆ Causes widespread ecological damage
- ◆ Toxic and allergenic
- ◆ Low beneficial value
- ◆ Conventional control practices temporary and costly
- ◆ Thrips are effective natural enemies (Ferreira, 1997; Julien & Griffiths, 1998; Vitorino et al., 1999)

2. Biology of *Pseudophlothrips ichini* (Hood)

- ◆ Adults, black & winged
- ◆ Larvae red & wingless
- ◆ Females live 60 days & produce ± 220 eggs
- ◆ Parthenogenetic reproduction
- ◆ Oviposit on new growth
- ◆ Life cycle 38-42 days at 24°C
- ◆ Four generations in Brazil (Garcia, 1977; Cuda et al., 1999)

adult female

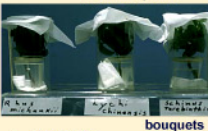


- ◆ Larvae cluster & feed on tender shoots
- ◆ Damage or kill new shoots and young plants
- ◆ Only on Brazilian peppertree in South America (Garcia, 1977; Harmouch et al., 2001)



4. Screening Procedures

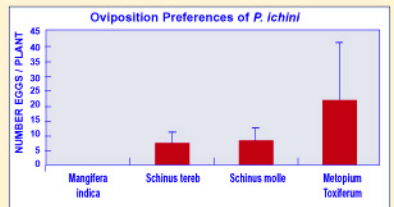
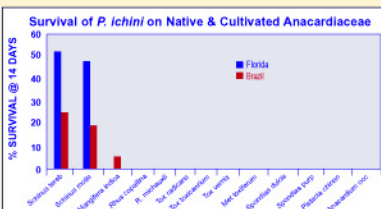
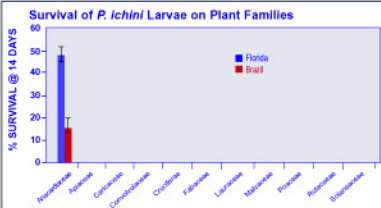
- ◆ Laboratory, glasshouse & quarantine studies
- ◆ No-choice and multiple choice tests
- ◆ Larval feeding / development & adult oviposition
- ◆ Experimental design
 - Randomized, 1-4 replications
 - 30-50 larvae/plant,
 - 20 adults / plants



- ◆ Test Plants:
 - Brazil, 3 Families 7 Species
 - Florida, 11 Families, 33 Species
 - Poison sumac (*T. vernix*)
 - Poison oak (*T. toxicarium*)
 - Poisonwood (*Meltopium toxiciferum*)
 - Poison ivy (*Toxicodendron radicans*)
 - Shining sumac (*Rhus copallina*)
 - Michaux's sumac (*Rhus michauxii*) (Federal Endangered Species, USFWS 1959)



5. Results



6. Conclusions

- ◆ Only two *Schinus* spp. accepted as host plants
- ◆ Low risk of non-target damage
 - No reports of *P. ichini* on California Peppertree (*S. molle*) in South America
 - California peppertree is a non-native ornamental listed as invasive species by California Exotic Pest Plant Council
 - Climate differences may preclude establishment of *P. ichini* in California
- ◆ Petition submitted to Federal Interagency Technical Advisory group (TAG) in October 2002.

7. Acknowledgments

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 - Florida Department of Environmental Protection
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8. References

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