

Papaya germplasm evaluation for resistance to papaya ringspot virus using artificial inoculation

Sumit Jangra¹, Jugpreet Singh²Department of Horticultural Sciences, UF/IFAS Tropical Research and Education Center¹Department of Horticultural Sciences, UF/IFAS Tropical Research and Education Center²

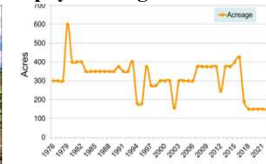
INTRODUCTION & AIM

- Papaya ringspot virus (PRSV) is present in all papaya-growing areas.
- Outbreaks in several countries: U.S. (Hawaii), India, the Philippines, Bangladesh, Pakistan, and others.
- 50–100% yield losses in susceptible cultivars.
- Replanting is needed almost every 2 years.
- Identification of PRSV resistance sources or tolerance in papaya.
- Integrate resistance or tolerance germplasm to improve commercial papaya germplasm.

Yield losses in susceptible cultivars



Papaya acreage in Florida



METHOD

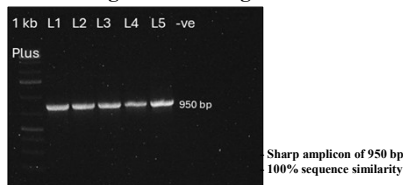
Papaya germplasm collection (wild papaya)



Scouting PRSV in papaya fields



Confirming PRSV through RT-PCR

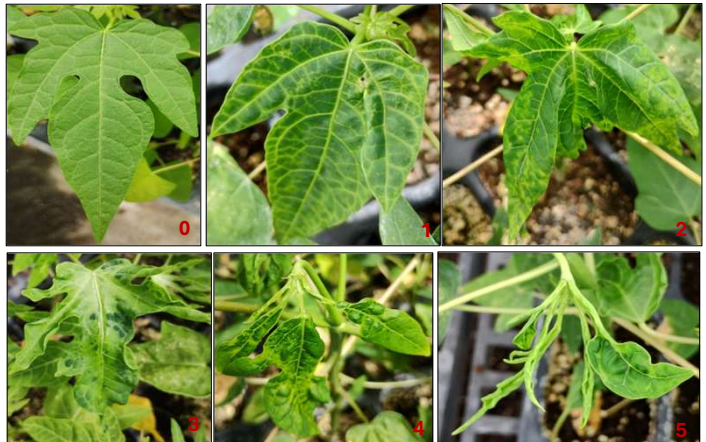


Sap inoculation of papaya accessions under controlled conditions

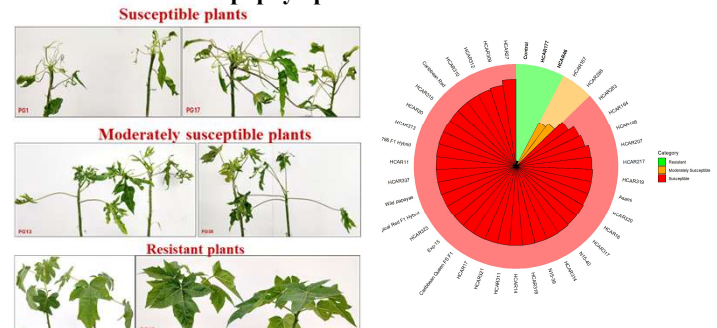


RESULTS & DISCUSSION

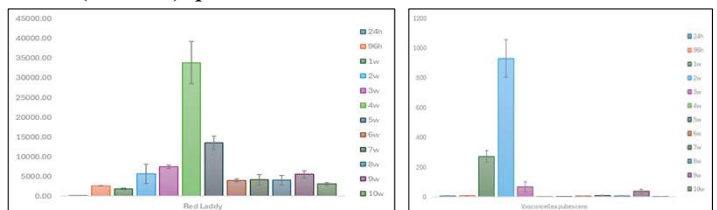
PRSV-P infection symptoms



Classification of the papaya plants



Virus (PRSV-P) quantification



CONCLUSION

- 89% papaya plants susceptible to PRSV-P
- Only 5% and 6% classified into moderately susceptible and resistant
- Average virus copy number 11-fold higher in susceptible papaya plants compared to resistant ones
- Only the *Vasconcellea* sp. showed resistance

FUTURE WORK / REFERENCES

- Limited natural PRSV resistance/tolerance in papaya.
- Vasconcellea* spp. can be used for introgression of PRSV resistance into papaya.
- Utility of modern gene-editing tools.