

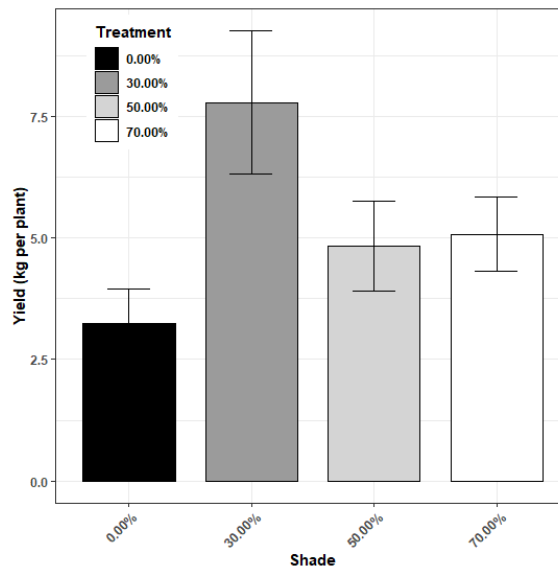
# Made in the Shade

**Researchers:** Christopher Vincent, Yu Wang, Nabil Killiny

**Contact:** Christopher Vincent

[civince@ufl.edu](mailto:civince@ufl.edu)

UF/IFAS CREC



Average yield per tree over two years (2019, 2020). Trees were 5-6 year-old 'Hamlin' trees on Kuharske, HLB-affected trees, infected before the start of the shade. Shade treatments began December 2018.

Shade has numerous positive effects on citrus trees. It reduces high temperature and water stresses. It may reduce HLB transmission, by making the trees less “apparent” to ACP. It also appears to reduce the severity of HLB symptoms in already infected trees. We began our research to test whether shade could be used horticulturally to reduce HLB transmission and severity in the field and improve yield. Shade reduced many symptoms of HLB in infected trees in the field. The two-year average yield of trees under continuous 30% shade was

double that of trees under full sun. Higher shade, though, (50% and 70% shade) reduced yields relative to the 30%. Shade improved water relations and enhanced photosynthesis in HLB-positive trees. Surprisingly it also made trees more heat tolerant. This may be because the combination of high light and HLB pushes trees beyond their capacity to acclimate. This information may be used in the future in three ways:

- Approaches that already use netting (CUPS, IPCs) can be optimized to provide the healthiest amount of shade.

- Particle film technology (kaolin clay) can be similarly dosed.
- Growers may be interested in investing in approaches to shade for production of high-value varieties.

We are continuing work on this project to understand the impacts of shade on HLB transmission and to know whether the effects of shade on HLB-affected trees are different from shade’s effect on healthy trees, as well as the costs and benefits of using shade in production.

## Funding

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