



CLR in Hawaii: insights from six months of monitoring on commercial farms

Melissa A. Johnson, Ph.D.

Research Biologist, USDA-ARS DKI US PBARC

Luis F. Aristizábal

Independent Consultant, SHAC

CLR Monitoring on Hawaii Island

- Monthly assessments from Dec. 2020 - Present
- Fields surveyed:
 - Kona: 35
 - Ka'u: 10
 - Hilo: 1
- Incidence (%)
 - $(\text{Leaves with CLR} / \text{Total leaves per branch}) \times 100$
- Severity (%)
 - $(\text{Leaf area with CLR lesions} / \text{Leaf area}) \times 100$
- Weather
- Shade
- Management practices



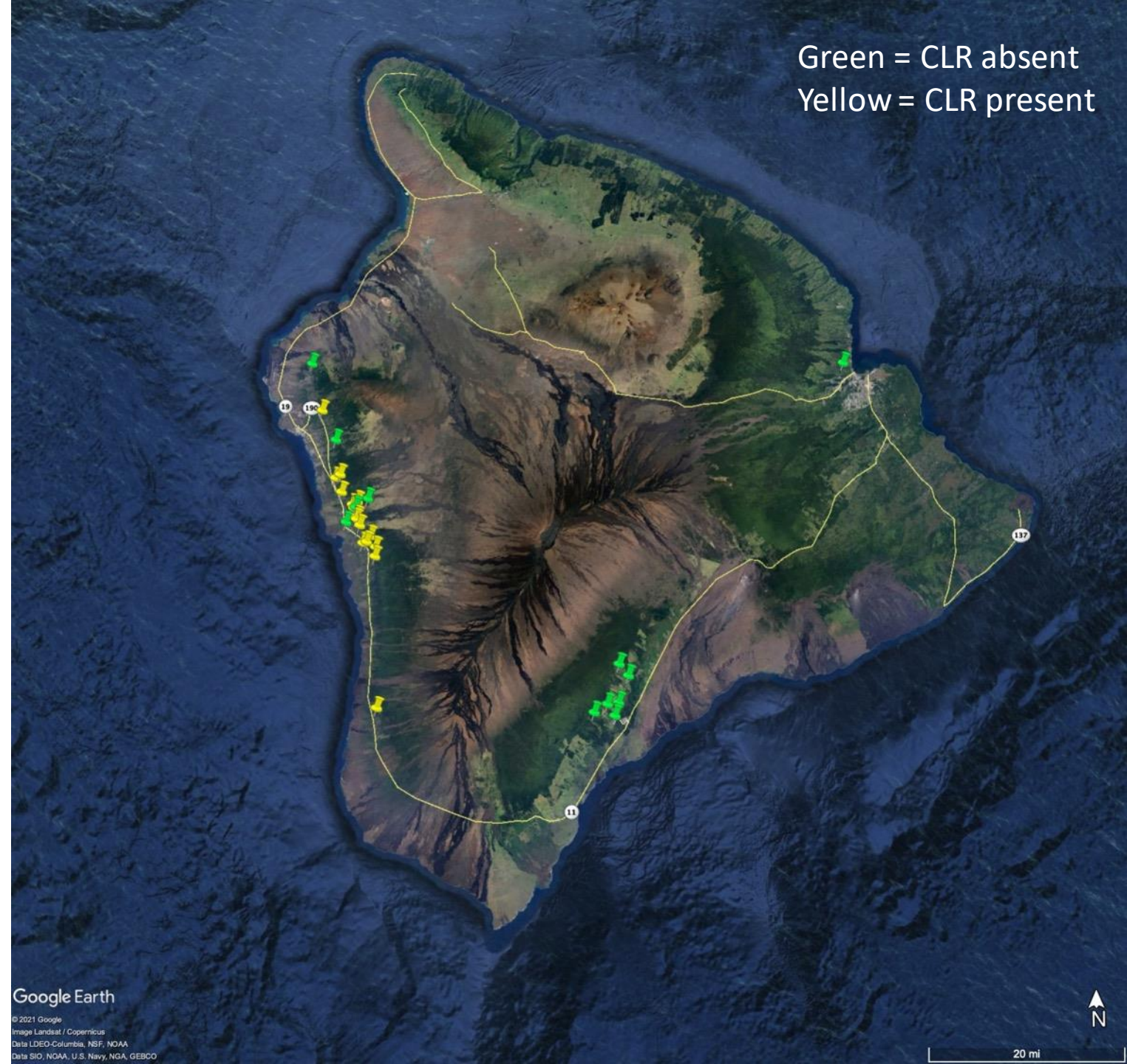
CLR on Hawaii Island

Kona:

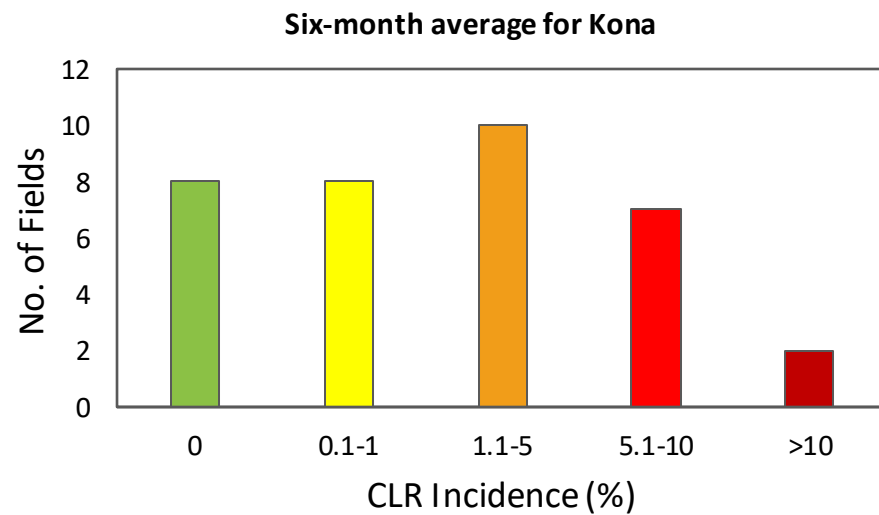
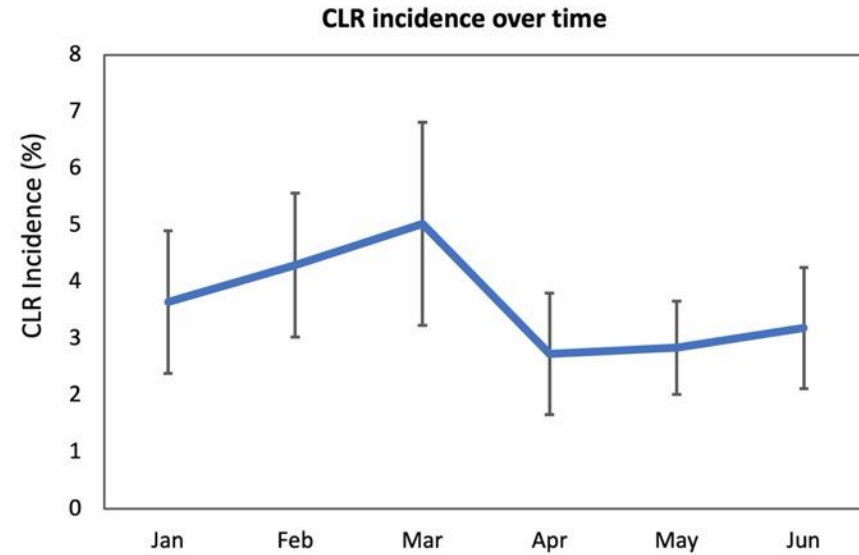
- Jan 2021: 64% positive
- Mar 2021: 80% positive
- Jun 2021: 87% positive

Ka'u & Hilo:

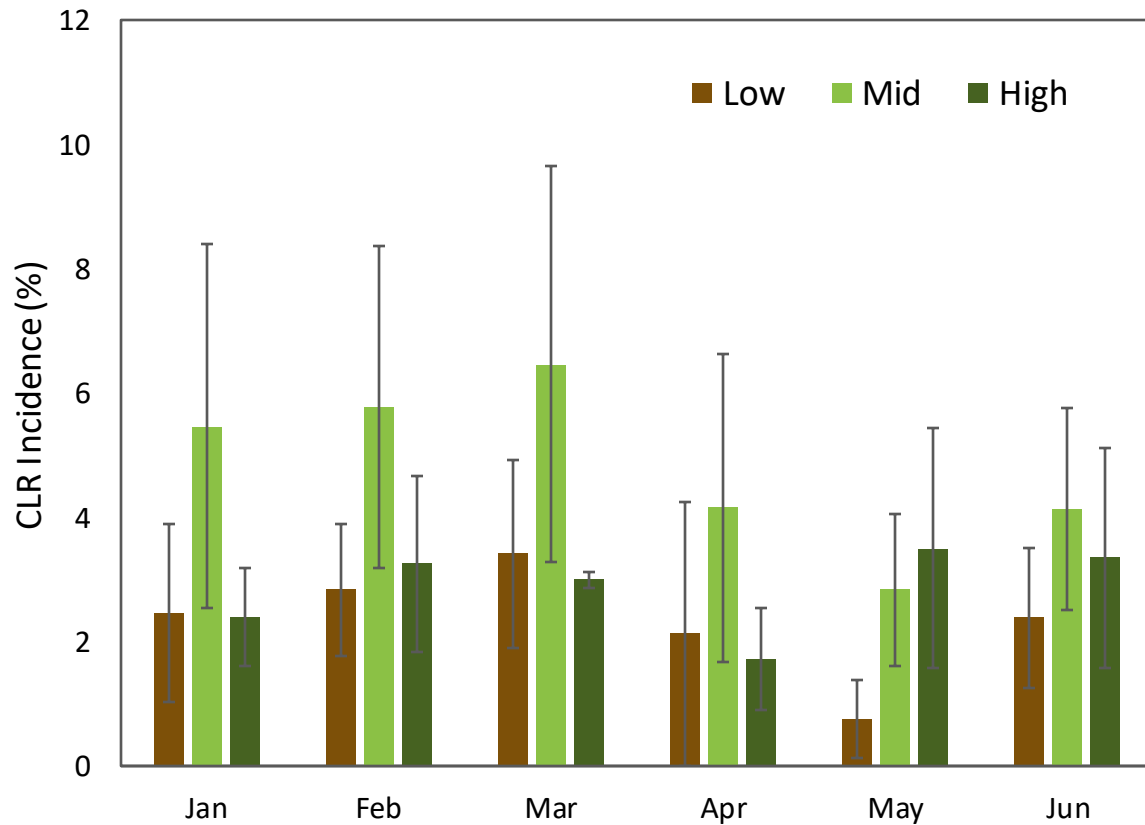
- Surveys only recently begun
- All fields surveyed are negative



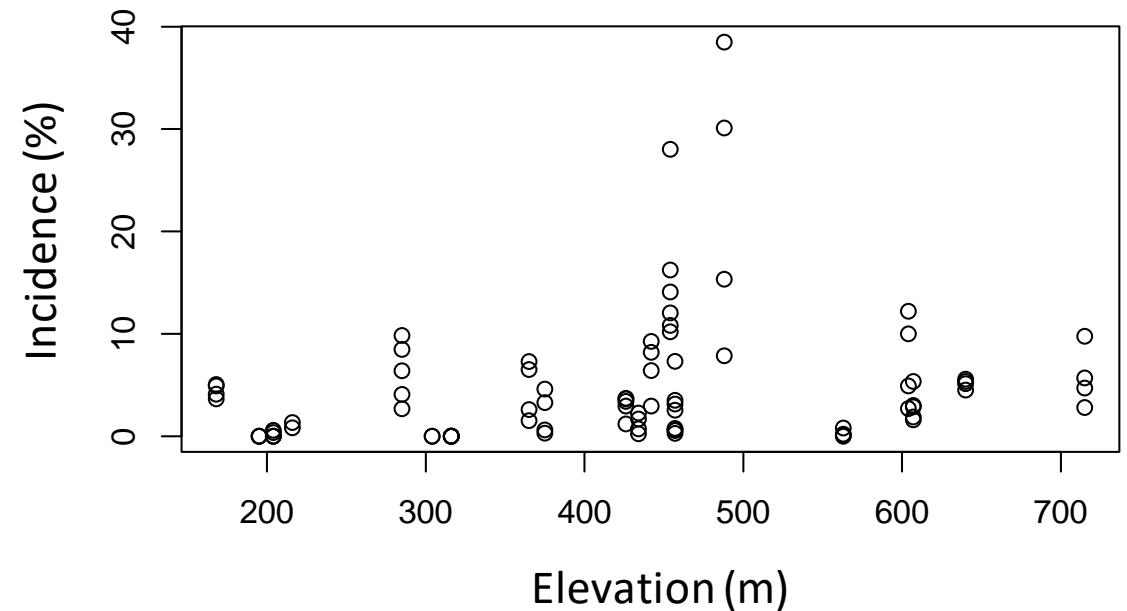
CLR incidence in Kona



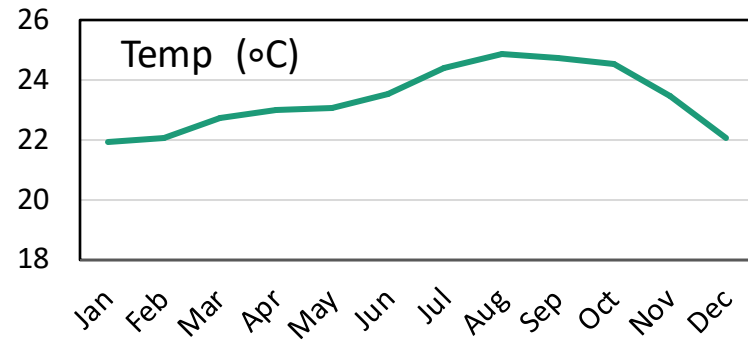
CLR incidence and microclimate



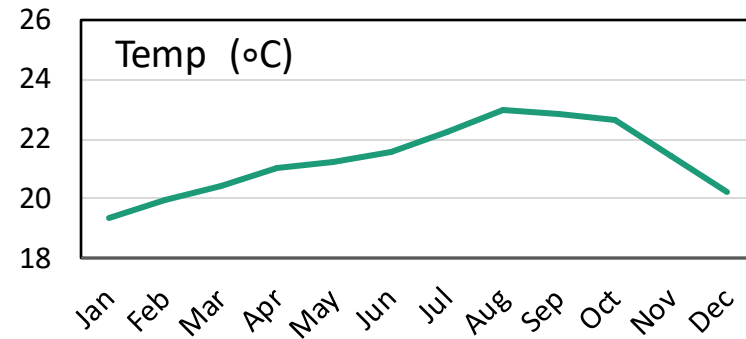
- No relationship between CLR incidence and rainfall or RH
- Weak but significant negative correlation b/t incidence and temp ($R = -0.24$, $p = 0.03$)
 - As temp increases, CLR decreases
- Strong negative correlation b/t elevation and temp ($R = -0.81$, $p < 0.001$)



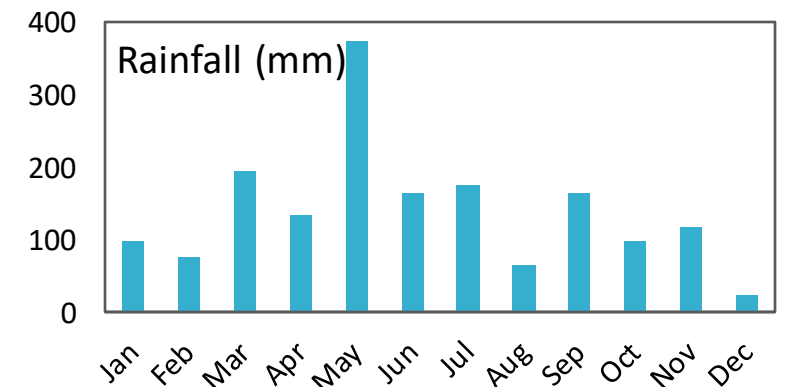
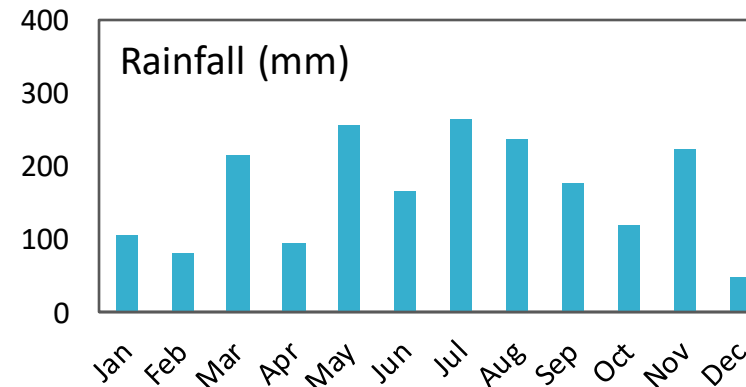
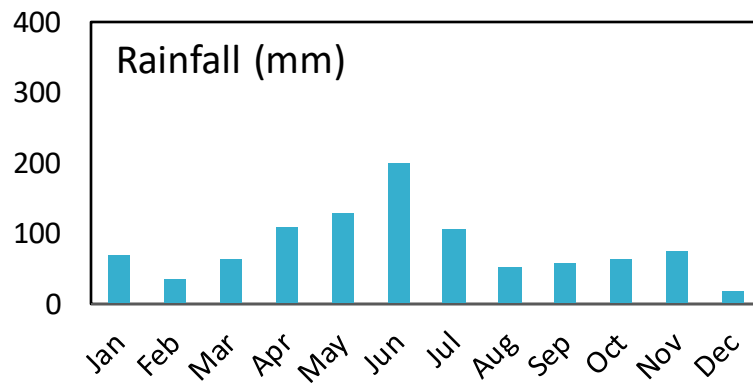
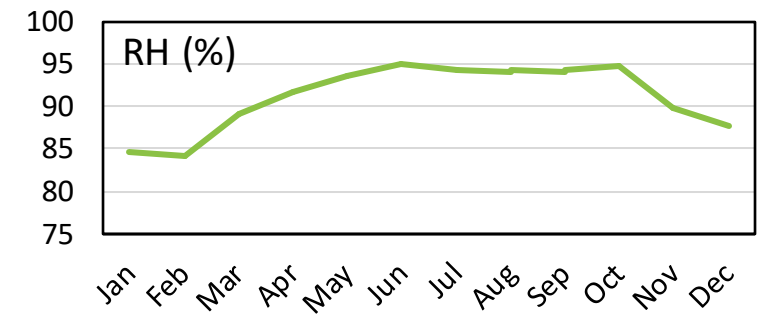
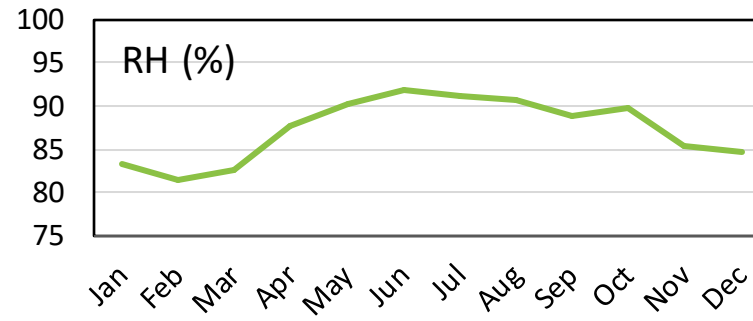
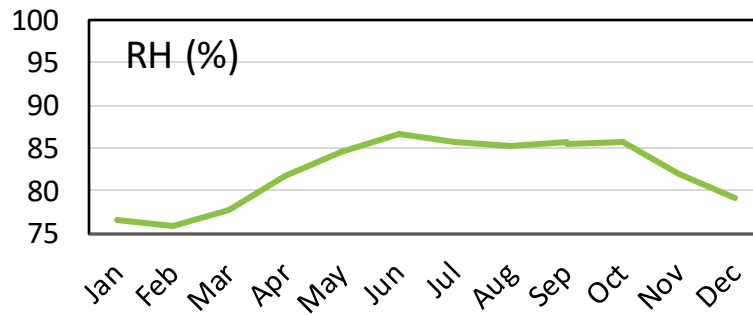
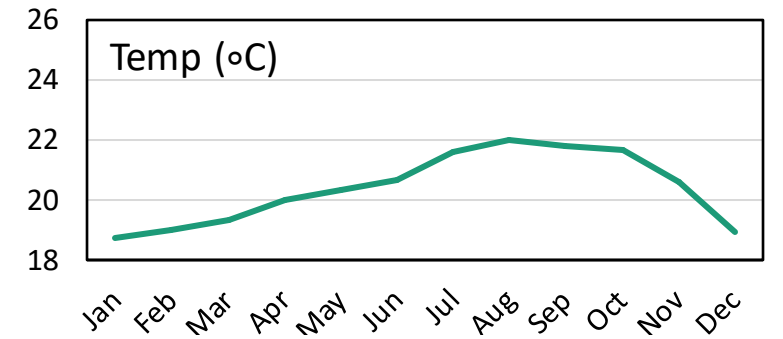
Low: 200 m



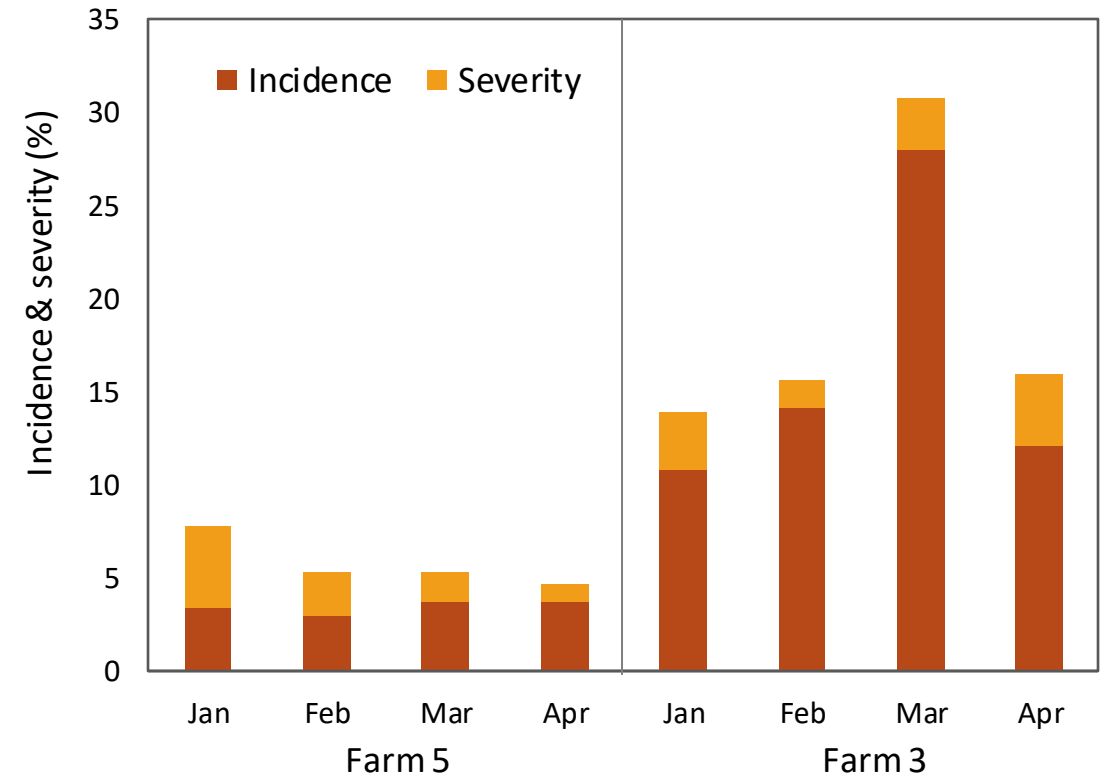
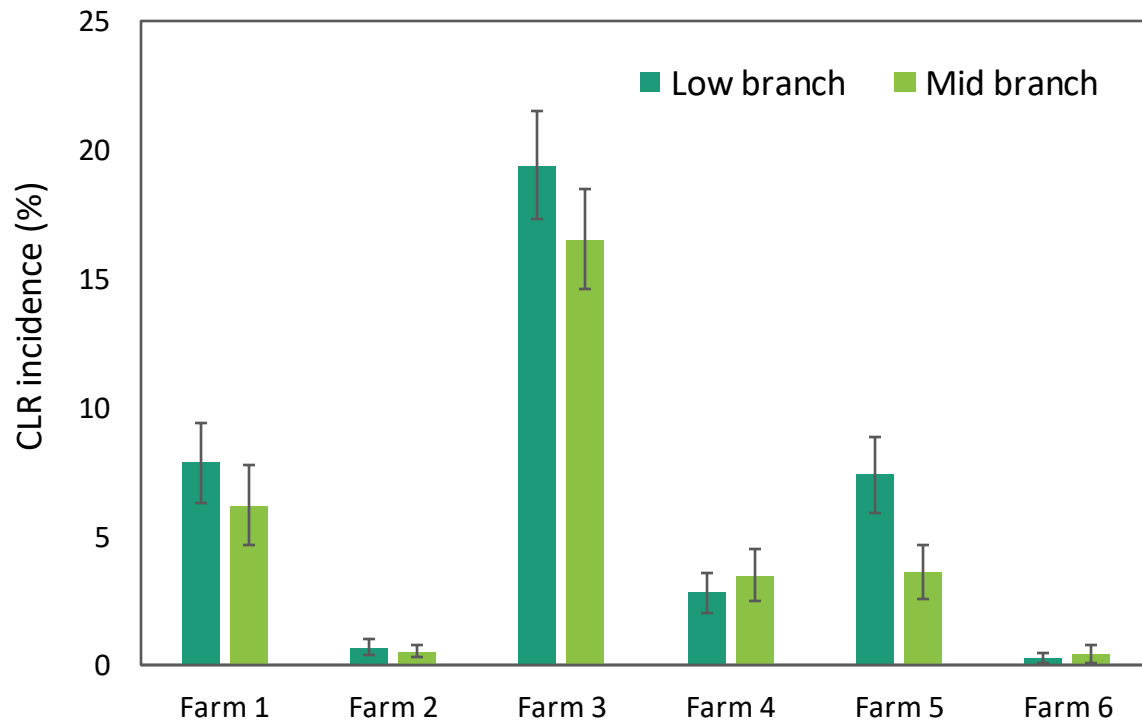
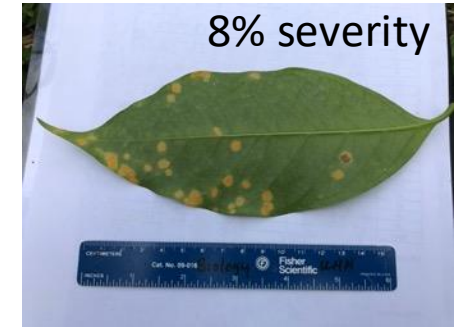
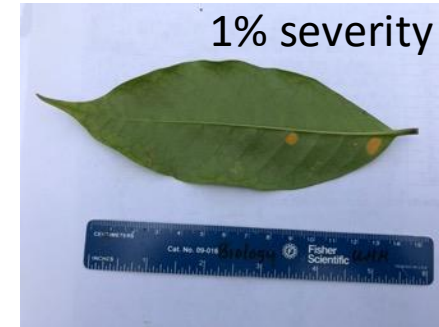
Mid: 450 m



High: 600 m

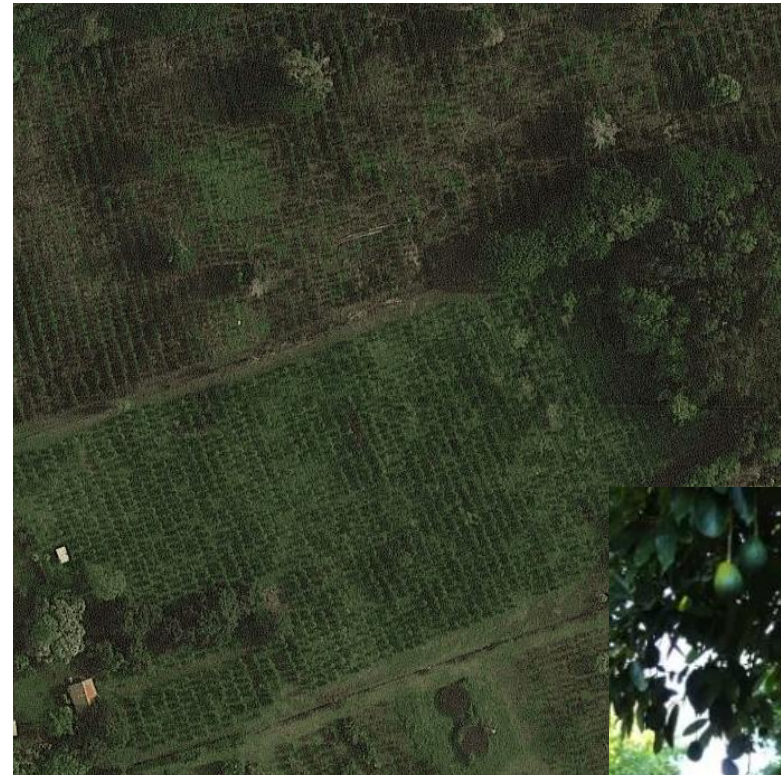


Where is it and how severe is the infection?



Shade and CLR

- CLR hotspots observed to cluster under dense shade trees and along borders
- Weak positive correlation b/t canopy cover and incidence
- 1-30% shade in open farms
- 31-100% shade under mixed fruit and ornamental trees



Management practices for CLR

- Pruning
 - All farms conducted end-of season pruning
- Fertilization
 - Most applied 1-2x
- Weed control
 - All conducted manual or herbicide control
- Shade management
 - One farm pruned large fruit trees
- Fungicide applications
 - All but one used copper-based or hydrogen dioxide-based preventatives (1-3x)
 - A few farms recently sprayed one application of systemic



Feral & unmanaged coffee



Acknowledgements

- MAHALO to the growers for allowing us to access your farms in these uncertain times!!!!
- Field and lab assistance: Austin Bloch & Colby Maeda
- The Hawaii coffee industry representatives, producers, field workers, researchers and grower associations – together we can manage CLR!