Logic Model, page 1

Situation

-CLF outbreaks caused enormous economic damage in last decade
- coffee grower workforce is in an increasingly precarious position
- further outbreaks are likely
- chemical controls and resistance breeding may be insufficient to control epidemics in the long term
-biocontrols like WHF show promise but development of commercial strains is so far unsuccessful.

CLF = coffee leaf rust (*Hemileia vastatrix*)

WHF = white halo fungus (*Lecanicillium lecanii*)

Inputs

- scientific tools applied:
-agroecological principals
-mycrobial ecological principles
-open source analytical tools
-technological skill share ('omics tools)
-outreach to communities
-skill sharing and education (mutually! we have a lot to learn from the growers)

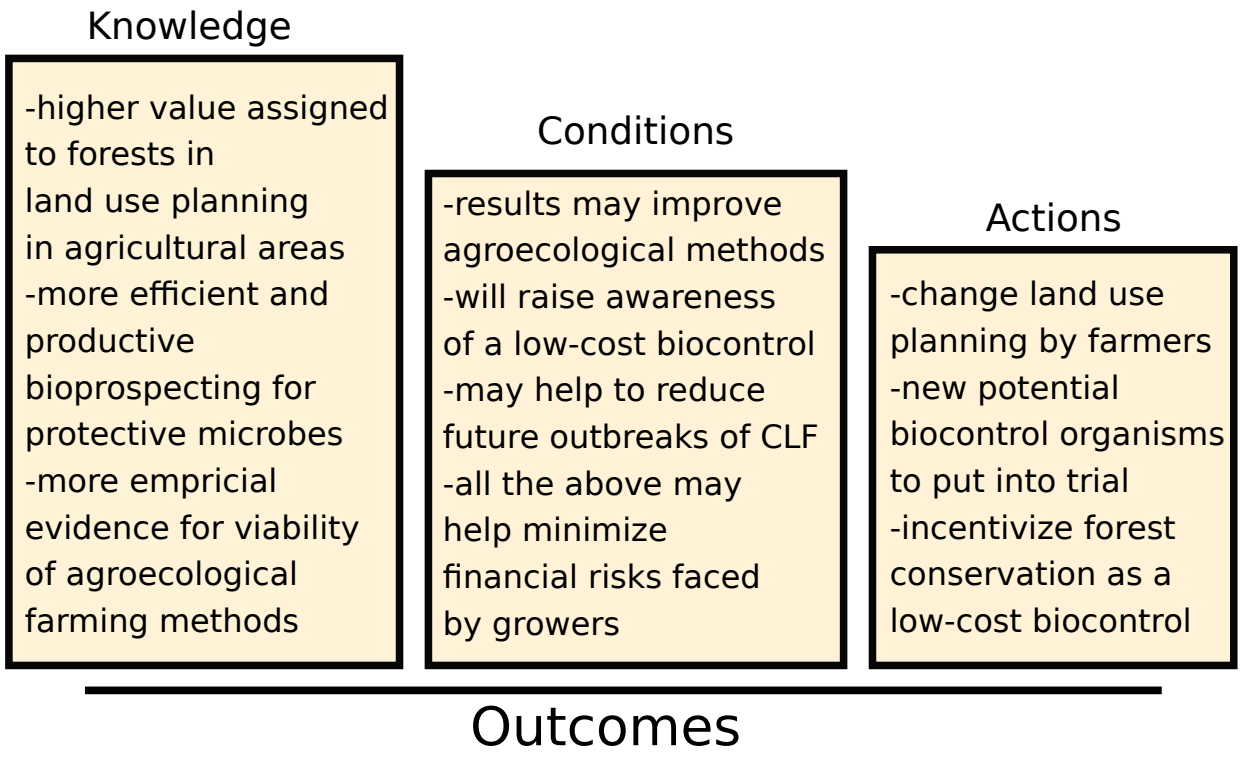
Outputs

-Fungal ITS sequence library
-tools for plant metatranscriptome analysis
-fungal culture library of possible antagonists to CLF
-methods for direct PCR detection of WHF
-scientific publications
-relationships with growers and scientists
-students trained in mycological techniques
-practical understanding of forest stands in coffee agriculture
-additional knowledge for prevention of future CLF outbreaks

Activities

-train undergraduate researchers
-develop dialogue with growers
-search for disease patterns with point patterns
-develop new method for analyzing microbiome gene expression
-DNA, RNA, and culture surveys of the coffee mycobiome

Logic Model, page 2



External factors

-rust severity on the landscape
-climate
-desire to collaborate by growers and students in Puerto Rico

Assumptions

--*Lecanicillium lecanii* is present and can be detected with PCR methods
-At least some antagonistic fungi detected with PCR methods will also be present in culture library.