

Not shade, but economic pressures as important drivers of coffee rust epidemics in Nicaragua

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Introduction

Coffee rust (*Hemileia vastatrix*) epidemics of an intensity never seen before have hit Central America from 2012 (Avelino *et al.*, 2015).

This study aimed at identifying management factors that hampered coffee rust development in Nicaragua and at learning about how producers understood these epidemics.

Methods

Twenty nine pairs of coffee plots (one plot severely hit and another one only slightly hit in the same location) from the municipalities of Jinotega, Tuma-La Dalia and San Ramón were characterized for their management, socio-economic aspects, and coffee rust intensity and impact, through field measurements and interviews (survey approach). Farmers' perception on factors that affected coffee rust was also documented (open questions).

Analyses included:

1. A mental model approach to capture the way farmers understood coffee rust management.
2. Multivariate analyses for survey data including: (i) typologies of rust impact, agronomic management (excluding fertilizer applications), fertilization intensity, socio-economic level (ii) simple correspondence analysis to highlight the relationships between typologies, that were previously tested (Fisher's exact test).

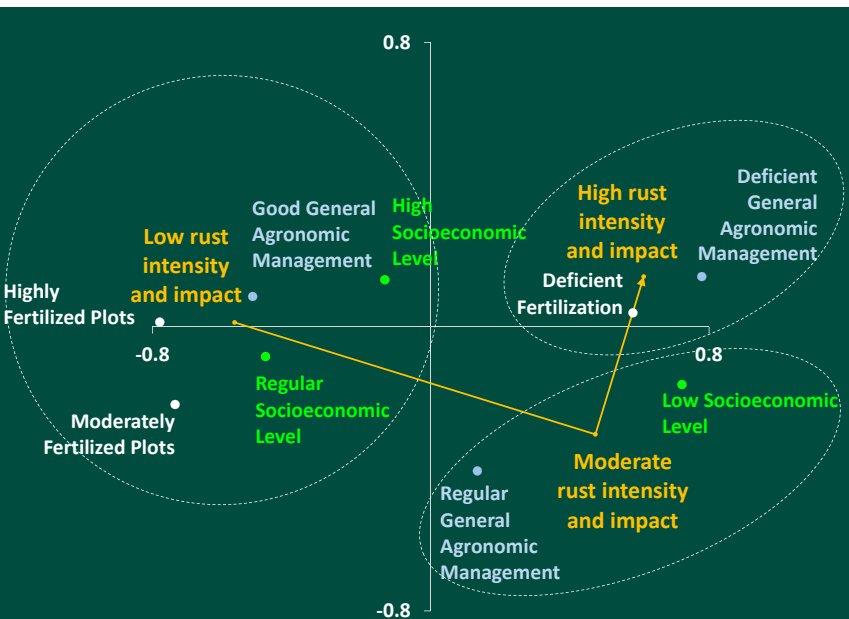


Fig. 1. Simple correspondence analysis highlighting the relationships between agronomic management, particularly fertilization, farmer socio-economic level, and rust intensity and impact, according to field measurements and variables informed by farmers

Nicaraguan coffee farmers know how to fight rust, but strong socio-economic constraints do not let them fight the disease

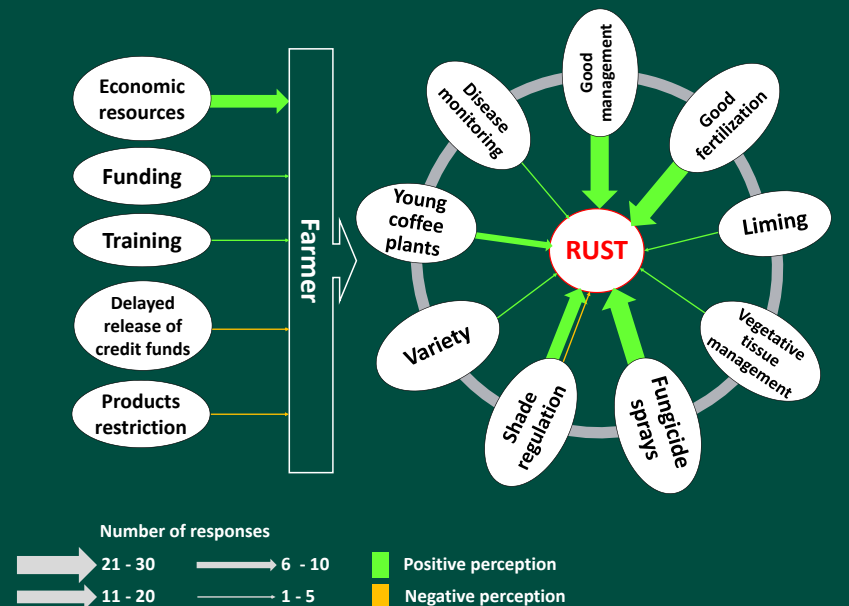


Fig. 2. Factors that favored or hampered coffee rust in 2012 according to farmers (mental model)

Results

From Figure 1:

1. Negative relationships were found between rust and management quality, particularly amounts of fertilizers, and farmer socio-economic level.
2. Plots with reduced impacts were preventatively sprayed with fungicides, and monitored for rust detection. Coffee trees and shade were more frequently pruned.
3. Plots slightly impacted by rust were owned by farmers with higher education level. They received trainings and technical advices. They also had higher incomes.

From Figure 2:

1. Farmers were aware of and agreed about the practices needed for a good coffee rust management.
2. The only controversy was about shade, but this controversy is also found in the scientific literature.
3. Farmers argued economic constraints for applying adequate coffee rust management.

Discussion

The main drivers of coffee rust epidemics were meteorological (Avelino *et al.*, 2015). However, in these propitious weather conditions for coffee rust, some producers avoided intense epidemics and losses.

Although producers knew how to fight rust, they did not implement the required management to control this disease, mainly due to economic difficulties. Low coffee prices are accused !

To our knowledge, this is the first time that socioeconomic barriers to coffee rust management are highlighted.

References

Avelino *et al.* 2015. Food Security 7: 303-21

To know more

Villarreyna Acuña RA. 2014. Análisis de las condiciones de manejo que propiciaron el impacto de la roya (*Hemileia vastatrix*) en la zona cafetalera de los municipios de Jinotega, el Tuma-La Dalia y San Ramón, Nicaragua. Master thesis. CATIE.

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