

Data synthesis of multiple on-farm trials to generate regional variety recommendations: The case of common bean in Central America

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Background

Common bean (*Phaseolus vulgaris* L.) is a main food crop in Central America. Several improved varieties have been developed and released by different plant breeding programs in the region but many of these varieties are not used widely by farmers.

Data Synthesis of existing on-farm trial data generated by farmers with the decentralized 'tricot' methodology can help to predict the suitability of varieties to areas within the region where trials were not conducted.

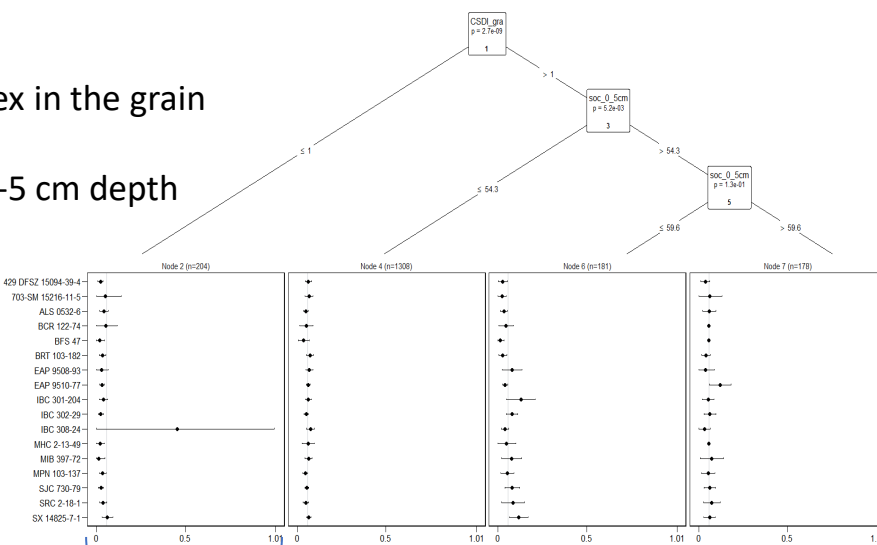
Application

Data synthesis was applied to aggregate and analyze data from 14 tricot trials established by 6 organizations, using climate and soil properties as model covariates to assess environmental adaptation of landraces, experimental lines and released varieties.

Model splitting variables:

- Cold Spell Duration Index in the grain filling stage (CSDI_gra)
- Soil organic carbon at 0-5 cm depth

The model calculates the probability of each genotype to be ranked first



The use of the ClimMob digital platform for all trials enforced data standardization, which enabled data synthesis.

The aggregated dataset provided new insights in environmental adaptation that could not have been obtained from the trials individually.

The results showed that the method was able to predict farmers' overall appreciation of varieties in unsampled areas.