Rethinking maize productivity considering the heterogeneity of maize farm households from Central and Southern Mexico

Carolina Camacho Villa

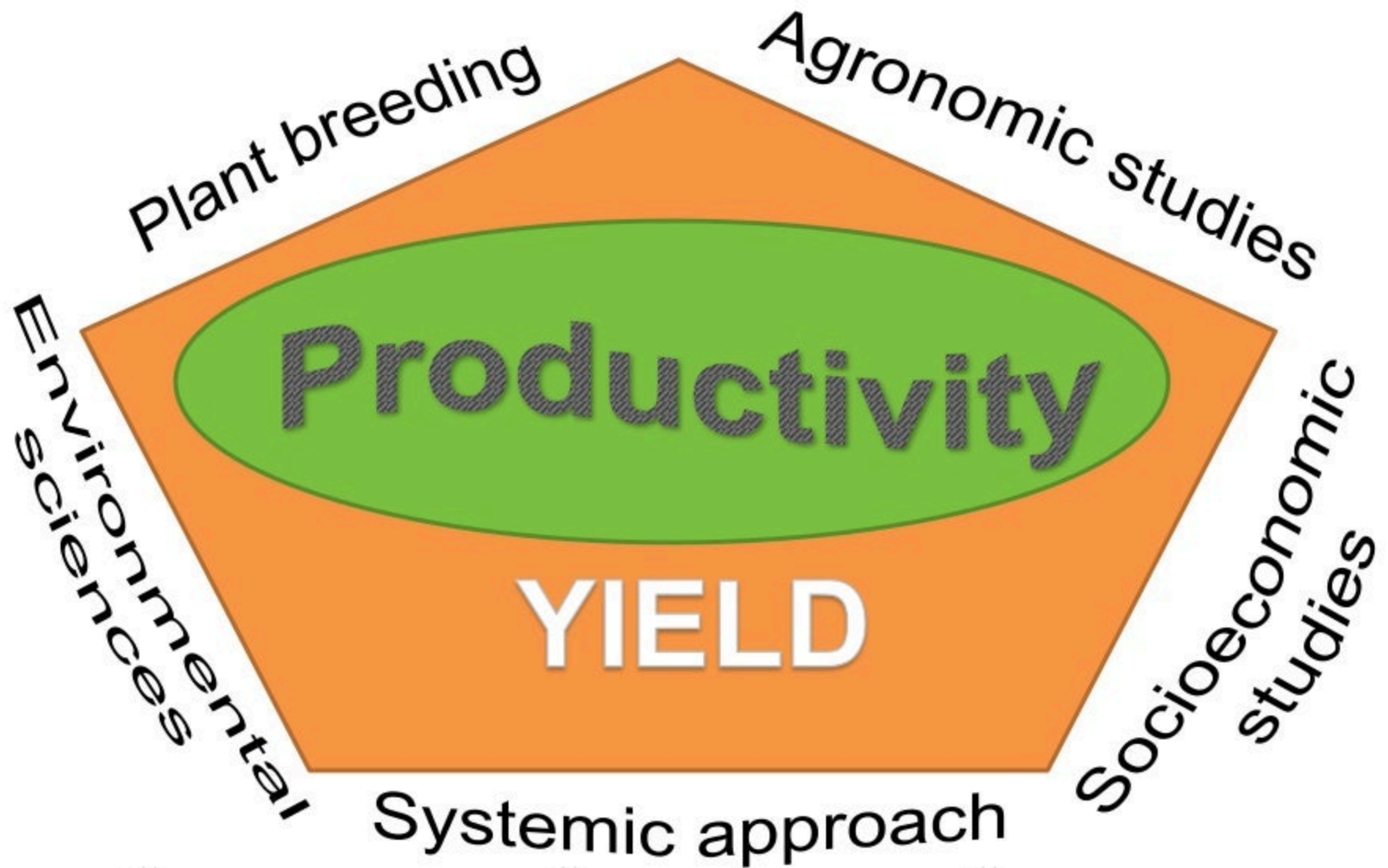Associate Scientist

Socioeconomics Program, CIMMYT

Contents

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Justification: Productivity

Approach and methods
Different farm households means different productivity indicators

Structural components
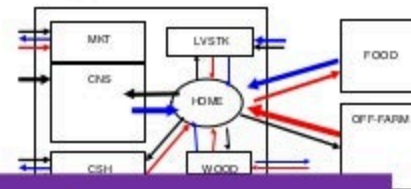
Social components

Production-consumption scheme

Type 1

Type 3
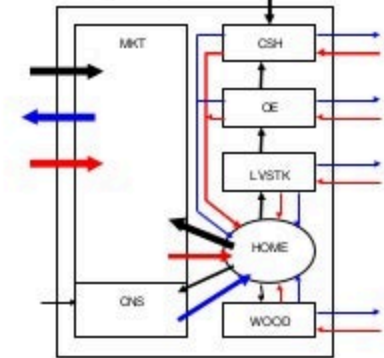
Type 4

Different decision making processes

Principal component analysis (Alvarez et al., 2014; Camacho et al., in review)
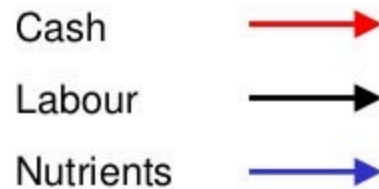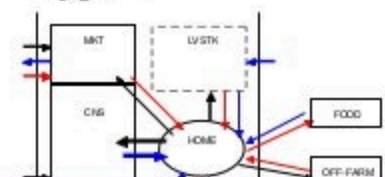
Regression tree (Banerjee et al., 2014) and decisión trees CARTs (Cairney et al. 2014)

Cash

Labour

Nutrients

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Data

- Sample from the list of farmers who benefit from the Proagro Productivo Program (program with the bigger coverage in Mexico that looks to increase productivity)

- Data from 3,391 farm households (FHH) from 11 states of central and southern Mexico collected using a questionnaire with 343 variables

- Questionnaire covers aspects about farm households assets (structural component), the way they use them (functional component), their social configuration (social component) and maize production-consumption schemes

Results: Multivariate analysis by PCA
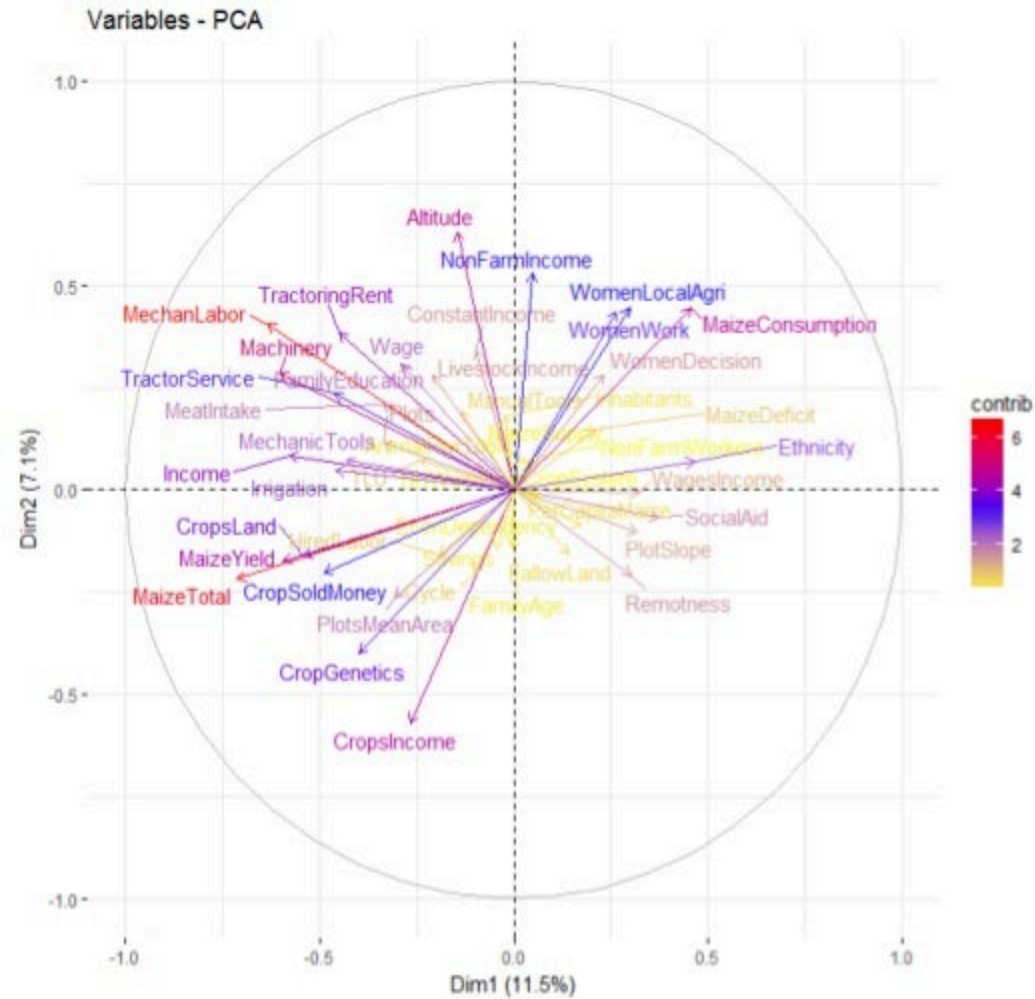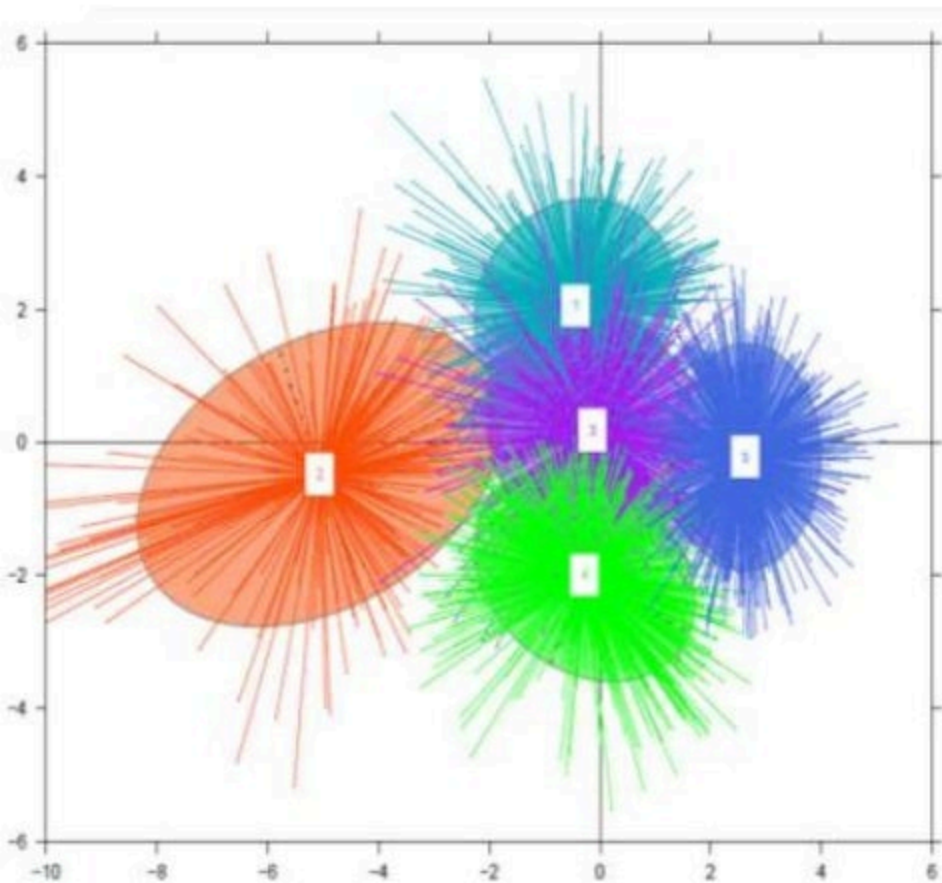
Results:Farm households types

| Crop-livestock farm households with diversified incomes [CL] n= 836 (25%)	Commercial mechanized farm households [CM] n= 275 (8%)	Semi-commercial farm household belonging to older families [SO] n= 714 (21%)	Low-mechanized agricultural farm households in lowlands [LL] n= 777 (23%)	Feminized farm households in indigenous areas [FS] n=789 (23%)

Farm Types
- T 1 CL
- T 2 CM
- T 3 SO
- T 4 LL
- T 5 FS

Maize yield by farm type
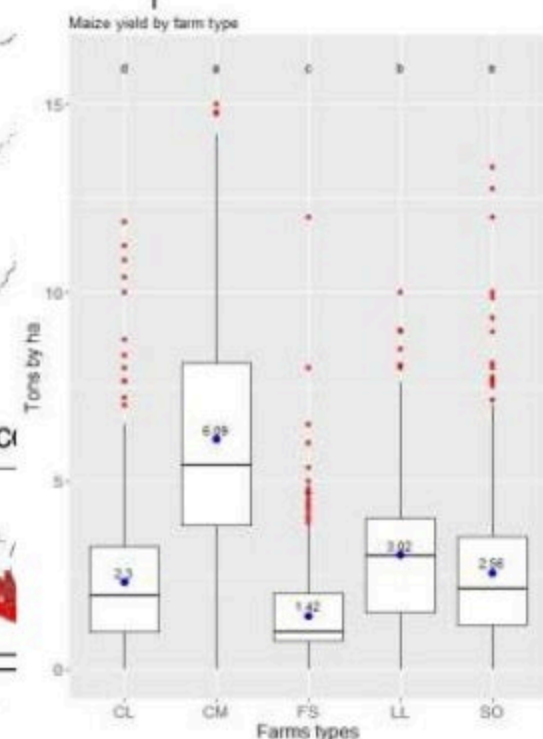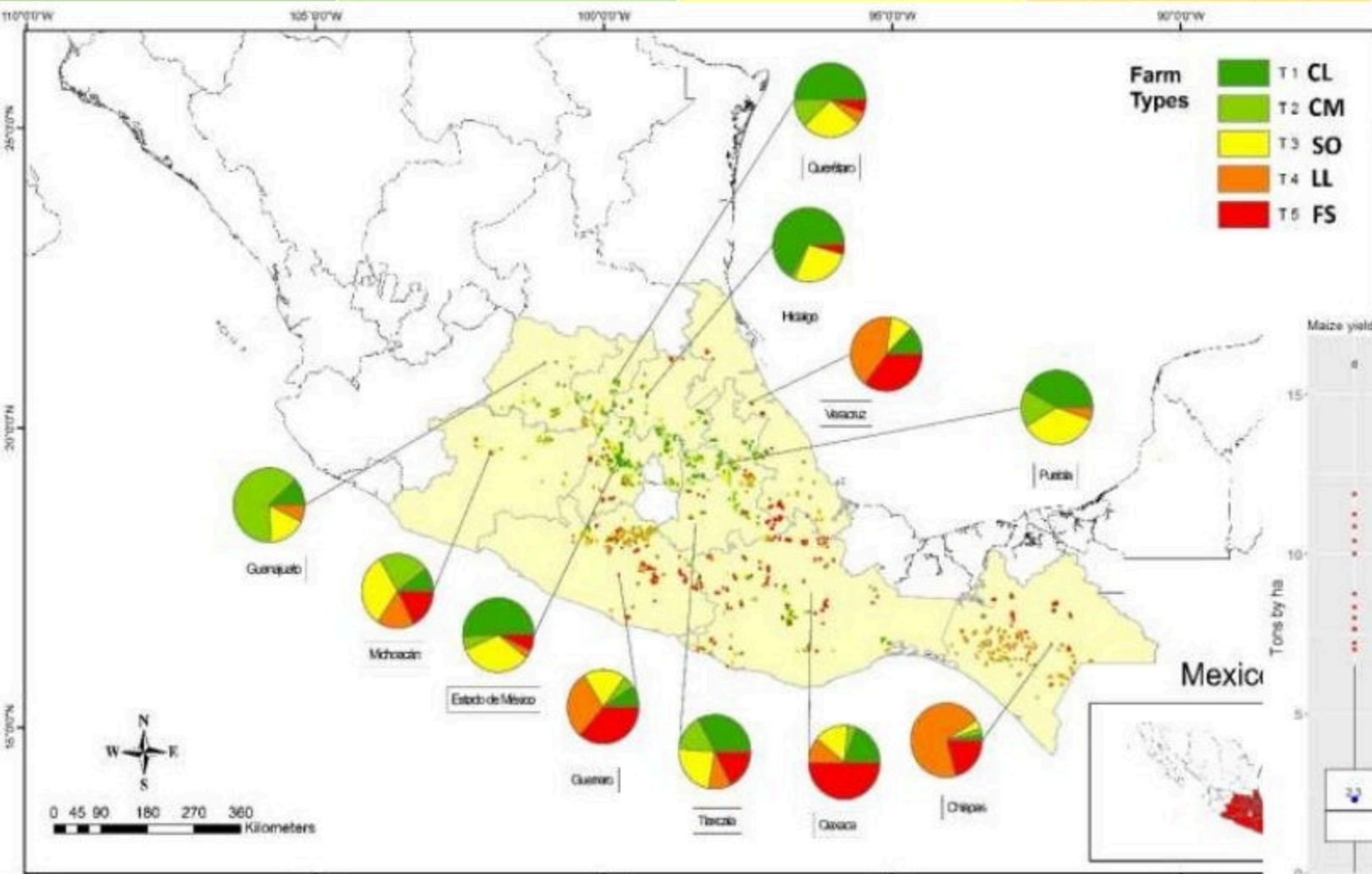
Results: Random forest and conditional interference regression trees
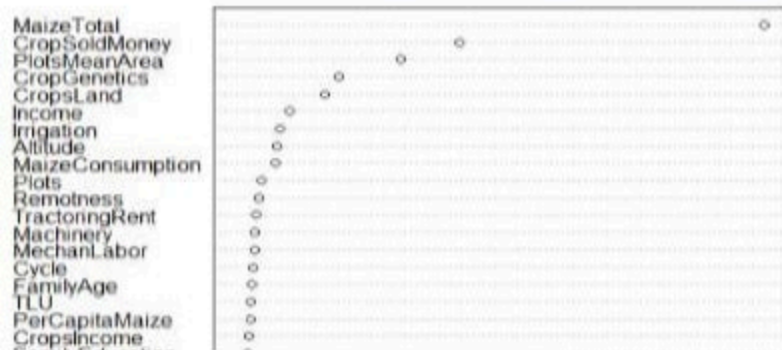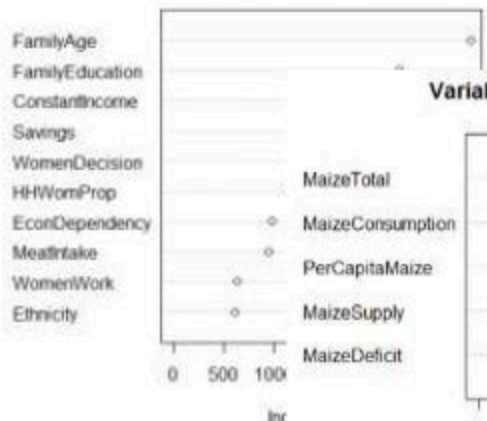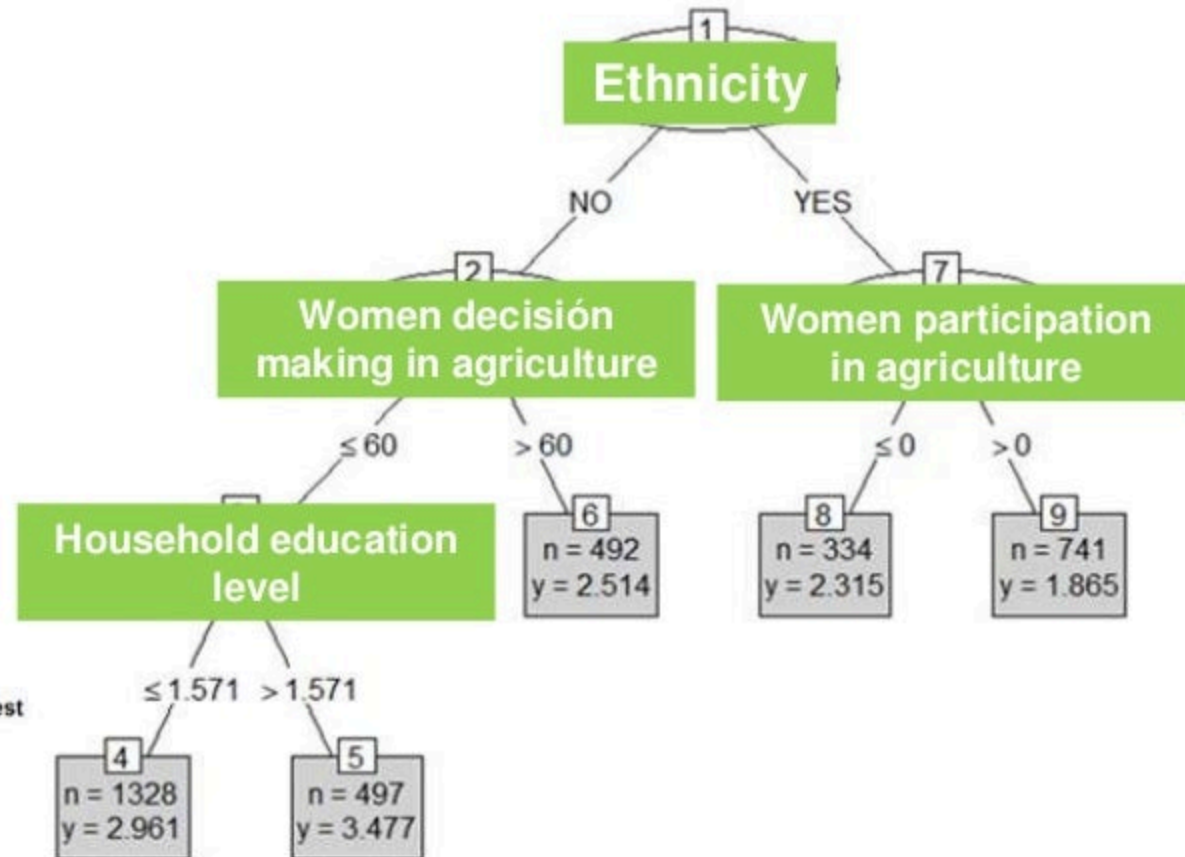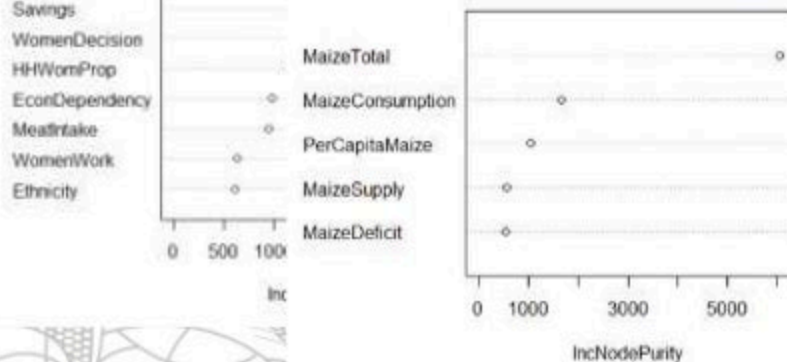
Main findings

- Each household types has different access to assets such as land, agricultural infrastructure and machinery) and to inputs

- Farm households types use diverse strategies to generate incomes combining on, off and non-farm activities

- Households differences on social configurations (related to ethnicity, gender and age) explain differences on assets and livelihood strategies

- A specific combination of variables from each component (structural, functional and social) define each type and determine yield results

- Each type presents different constraining inputs (land *versus* labor) and outputs (grain, fodder, speciality markets) to achieve higher maize productivy

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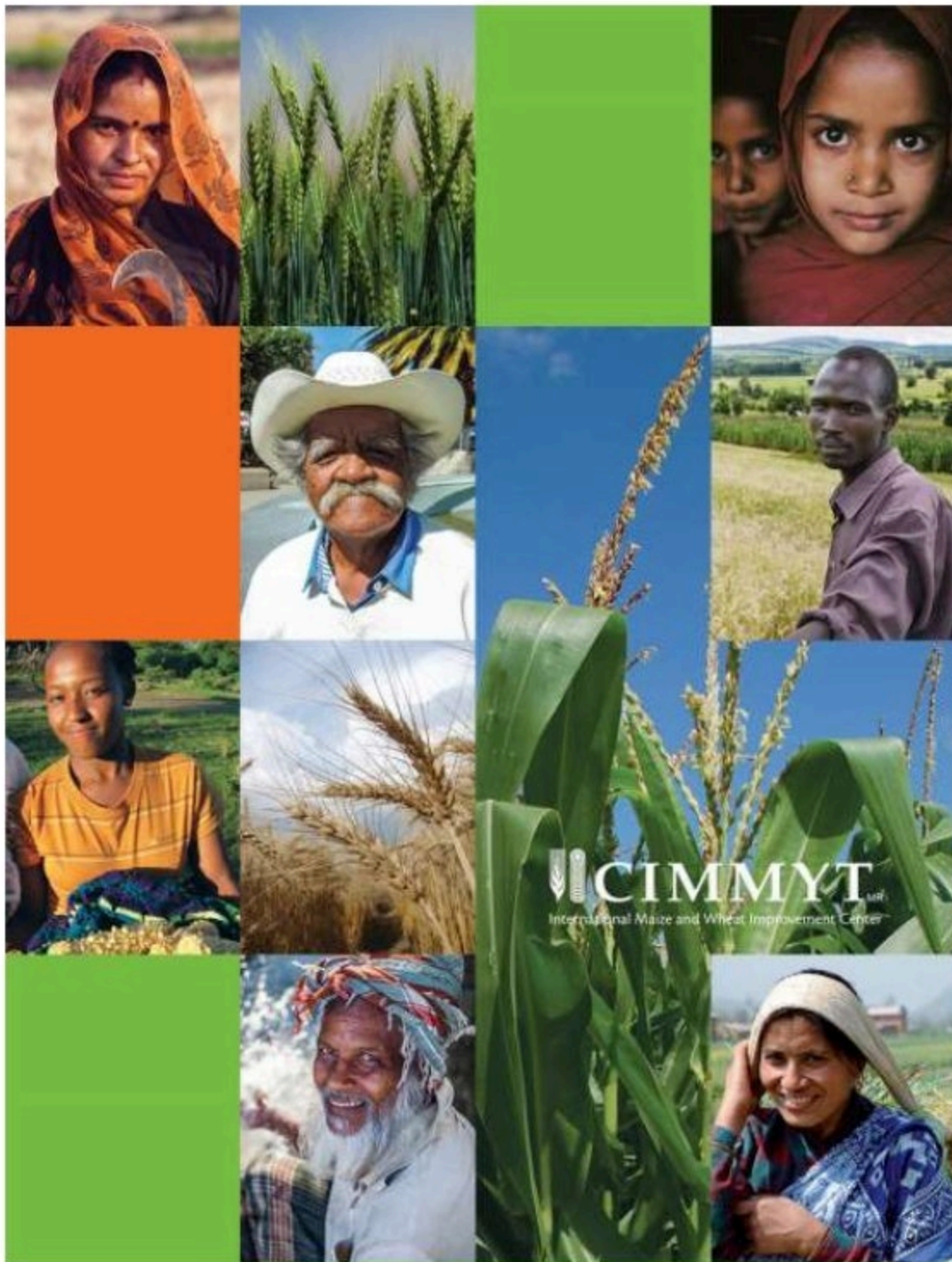
Thank you for your interest!

Carolina Camacho
c.camacho@cgiar.org