Modeling Diversity Within an Agricultural Community in Peru

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Cañete

4,800 small farm households

Cañete Small Farmers

Background

- Cañete small farmers live below international standards of:
  - Nutrition
  - Health
  - Housing
  - Services

- 33,600 on small farms
- 7,000 laborers
- Highly visible agricultural zone

Methodology

Data Collection

Sondeo (n=22)

Survey (n=60)

Data Analysis

Microsoft® Excel 97 SR-1

Microsoft Visual Basic

Geographically Randomized Sample

HOUSEHOLD INTERVIEWED

Linear Programming
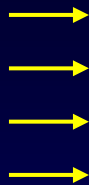## Matrix and its Components

Activities
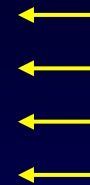
(e.g., maize, cotton, livestock)
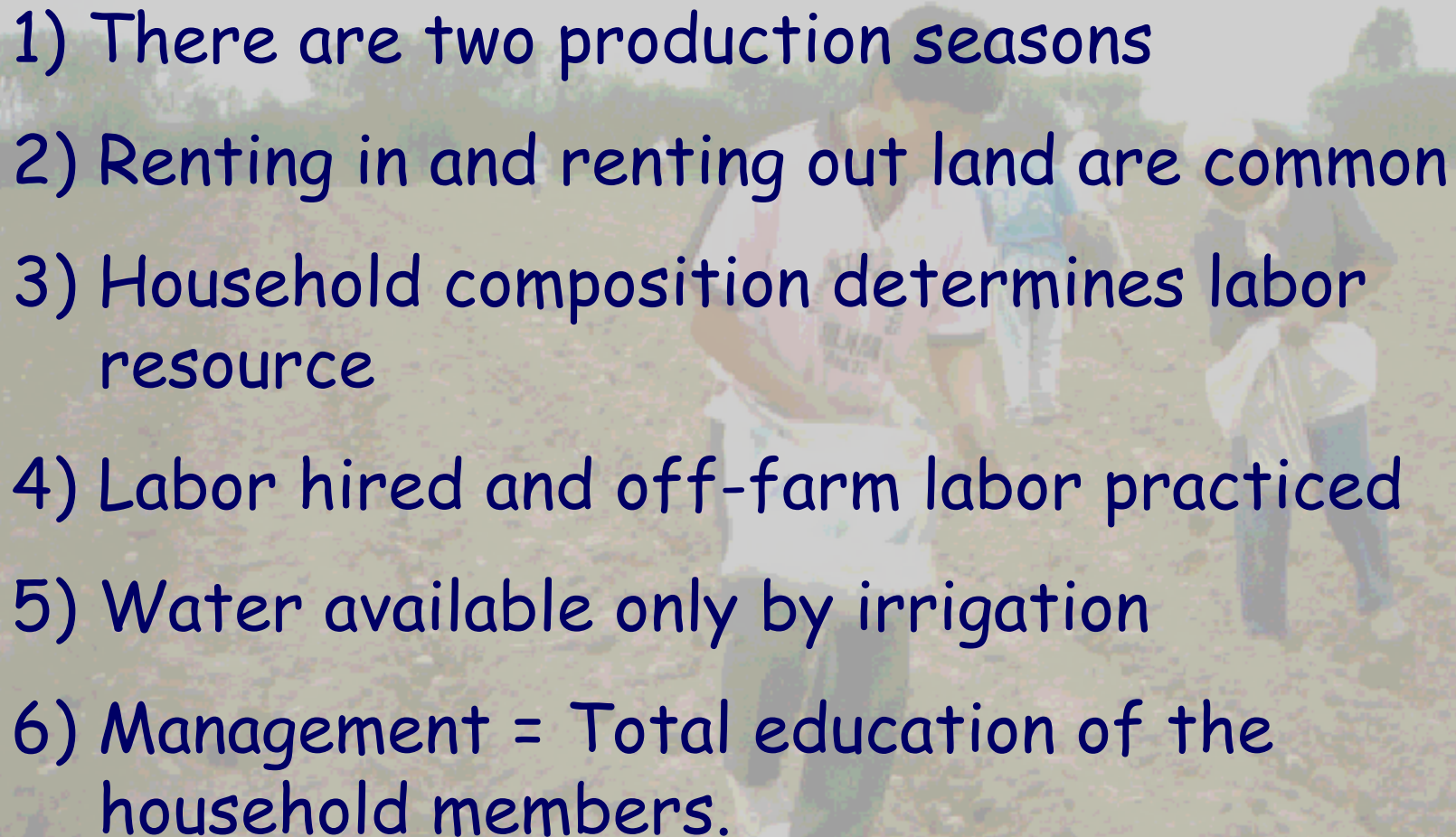
Resources

(e.g., land, labor)

Constraints

(e.g., food consumption, available cash)

End year cash

Diversity Incorporated in Linear Program

1) There are two production seasons

2) Renting in and renting out land are common

3) Household composition determines labor resource

4) Labor hired and off-farm labor practiced

5) Water available only by irrigation

6) Management = Total education of the household members.

Diversity Incorporated in Linear Program

7) Credit available for cotton, maize and sweet potato, and for asparagus and grapes

8) Traditional activities require less management than new enterprises

9) Crop resource requirements, commodity prices, and yields vary seasonally and annually

10) Resource availability, family consumption, and household requirements estimated on an individual basis

Model Results

- The Cañete model was validated by comparing with the survey data

- The linear program model adequately simulated the population sampled: Cañete's small farmers

- The model can be used with confidence to project production, income and consumption in different scenarios with any household in the Cañete small farmers' community.

Grape and Asparagus Analysis

- Grapes and asparagus are currently recommended crops for small farmers

- Six-year simulations demonstrated that:

- No small farmer would be able to raise grapes

- Only a portion of small farmers would be able to raise asparagus (require > 1 ha)

Asparagus Analysis

No Asparagus		Yes Asparagus	Average
0	< 1ha	> 1ha	0.84 ha
14	21	25	none
23.33%	35.00%	41.67%	none

Asparagus Analysis

- **Household Characteristics and Potential for Asparagus Production**

- Children in household

- Adults in household

- Farm Size

- Education