Irrigated Family Farming as a Livelihood Potential for Rural Populations in Semi-Arid Northeast Brazil

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Basic problem

Since the 1980s, reservoirs built to enable hydropower generation provide the basic infrastructure to implement larger public irrigation schemes in Brazil's semi-arid Northeast. In this region, irrigated family farming seen as a suitable tool to increase the rural population's resilience against severe droughts and to provide them an adequate income source, and therewith reduce the rural exodus.

Especially in smaller irrigation schemes, which were implemented to compensate resettled people for flooded land, many smallholders still cannot generate sufficient farm income to provide an adequate livelihood to sustain a family.

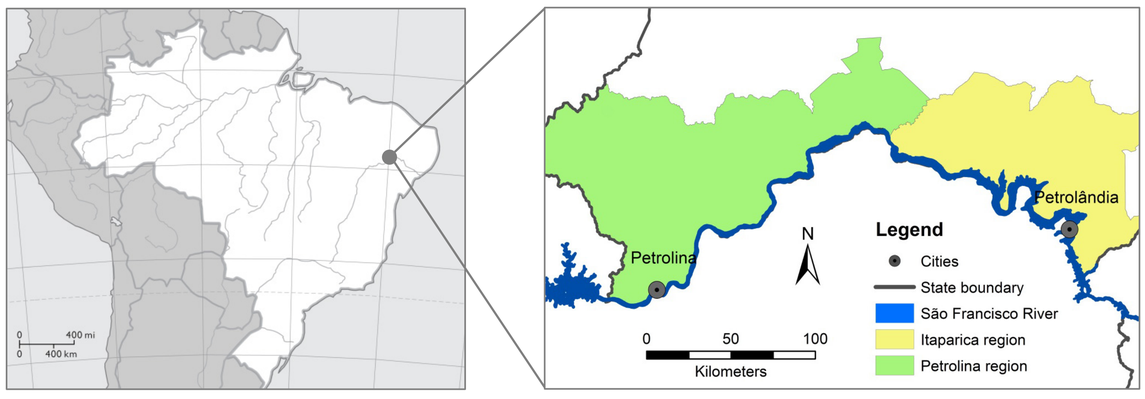

Figure 1: The sudy area in the Itaparica and Petrolina micro-regions at the lower middle São Francisco

Objectives

- Identify socio-economic determinants affecting farm income
- Assess vulnerability of irrigated family farming
- Analyze potentials of irrigated family farming to provide adequate livelihood for the rural population

Methods

- 60 expert interviews
- 192 farm household interviews
- Content analysis
- Cost-benefit analysis
- Analysis of variance (ANOVA)
- Linear Programming (LP) farm optimization modelto identify optimal resource allocation

Main findings

- Mean farm income ≈ 10,000 R$ per year with a mean lot size of 4 ha (1 R$ ≈ 0.3 €)
- However, mean farm income of ≈ 30,000 R$ possible
- Highest gross margins with
  a) Annual cash crop production (Cucurbitaceae, passion fruit)
  b) High risk crops (guava, tomato)
  c) Capital and knowledge intensive perennials (grape, mango)
- High vulnerability to droughts
- Strong effects of price volatility
- Strong effect of social status on farm income

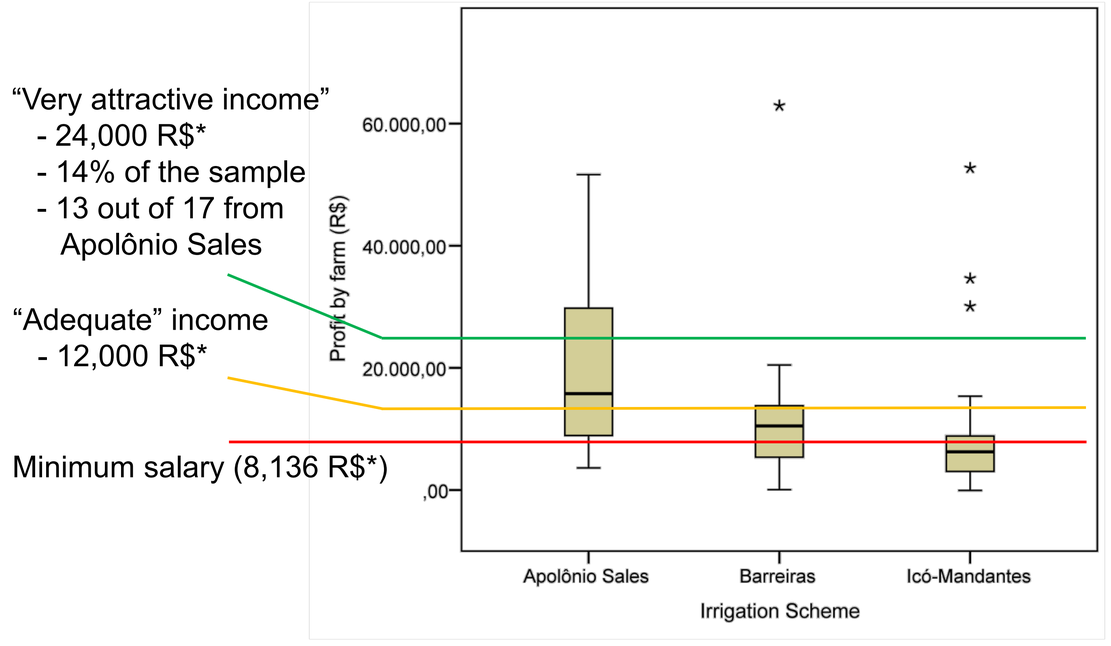

Figure 2: Distribution of farm income (R$/farm) divided by three irrigation schemes in the Itaparica region

Discussion

- High potential income of irrigated agriculture
- High vulnerability to water scarcity
- Main constraints in the socio-economic sector:
  - Insufficient infrastructure
  - Insufficient commercialization possibilities
  - Social and economic status of farm household

Recommendations

- Resumption of agricultural extension
- Promotion of human capital
- Improvements of necessary infrastructure
- Promotion of water saving technologies

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With financial support from the

Federal Ministry for Economic Cooperation and Development

Federal Ministry of Education and Research

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