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How Farmers' Preferences for Crop Attributes Affect High Value Crop Adoption?

Suprehatin, Wendy J. Umberger, Dale Yi and Randy Stringer

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The University of Adelaide

Global Food Studies

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Background

- Agri-food market transformation in Indonesia
  - The relative important of grains and other staple crops in consumption expenditure is **declining**, but high-value agricultural commodities is **increasing** (BPS, 2012)
- Previous research demonstrates potential benefits for farmers resulting from the adoption of high value crops (e.g. Sahara *et al.*, 2013)
  - However, the participation rate of adoption of high value crops among Indonesian farmers remains low (World Bank, 2007)

Background

The studies on technology adoption by farmers emphasize the importance of observable variables such as:

- Human capital (e.g. education, age)
- Land capital (e.g. farm size, tenure)
- Financial capital
- Social capital
- Location
- Program interventions
- Association membership and access to information

Sources: Abebaw and Haile, 2013 ; Doss, 2006; Feder, *et al.*, 1985; Matuschke, *et al.*, 2007; Noltze, *et al.*, 2012; Teklewold, *et al.*, 2013

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Research Gap

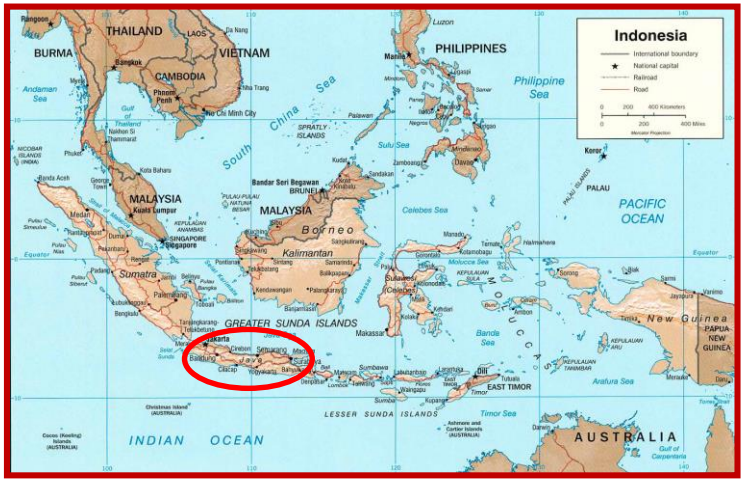
The studies on crop and/or variety adoption by farmers pay limited attention to the unobserved heterogeneity in preferences for specific crop attributes

Research Objectives

- to examine the relative importance of crop attributes to farmers when deciding to adopt a new crop
- to examine whether heterogeneity in the preferences for crop attributes among farmers exist
- to analyse the effect of farmers' preferences for crop attributes on their actual adoption behaviour

Research Methods

- Location
  - Java, Indonesia
- Sample/Data
  - 960 farmers in 6 districts were interviewed with structured questionnaire and by 18 trained enumerators
  - February – March 2013
- Sampling Method
  - Systematic Random Sampling Technique
- Data Analysis
  - Best-Worst Scaling
  - Latent Class Cluster
  - Conditional Logit Model



Best-Worst Scaling Tasks

- **Crop attributes:**
  1. High expected profit
  2. Stable and consistent price
  3. Stable and consistent yield
  4. Good quality seeds
  5. Less labour
  6. Less water
  7. Low start-up costs
  8. Success of neighbours
  9. Government subsidies
  10. Cash opportunities
  11. Training and assistance

- **11 Best-Worst Cards**

Question A

Most important (tick one box)	Of the following, which characteristics are the Most and Least important to you…	**Least** important (tick one box)
☐	1. High expected profit	☐
☐	4. Good quality seeds	☐
☐	5. Less labour is required	☐
☐	9. Gov. provides subsidies	☐
☐	3. Stable and consistent yield	☐

Crop Attribute Importance

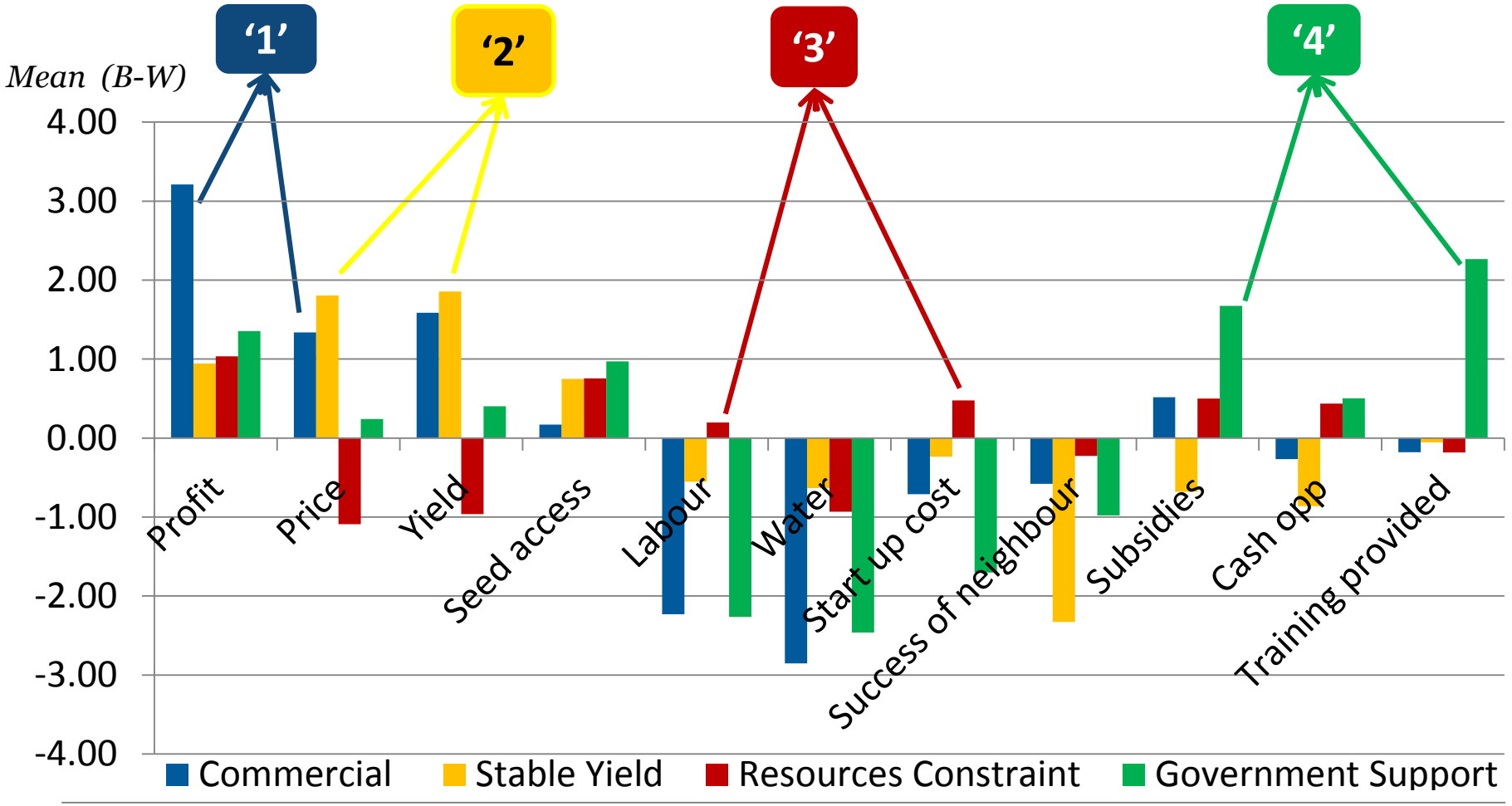
Crop Attributes	Ranking*
High expected profit	1
Stable and consistent yield	2
Good quality seeds	3
Government subsidies	4
Stable and consistent price	5
Training and assistance	6
Cash opportunities	7
Low start-up costs	8
Success of neighbours	9
Less labour	10
Less water	11

based on Standardized Interval Scale

The **MOST** important

The **LEAST** important

Heterogeneity of Crop Attribute Importance: Latent Class Cluster



Characteristics of Clusters

'Government Support'
(n=318 or 33%)

- Younger
- Higher level education
- Smaller farm size

'Resources Constraint'
(n=168 or 18%)

- Older & Lower level education
- Located in high-land
- Distant from market

'Commercial'
(n=280 or 29%)

- Larger farm size
- Rent more land

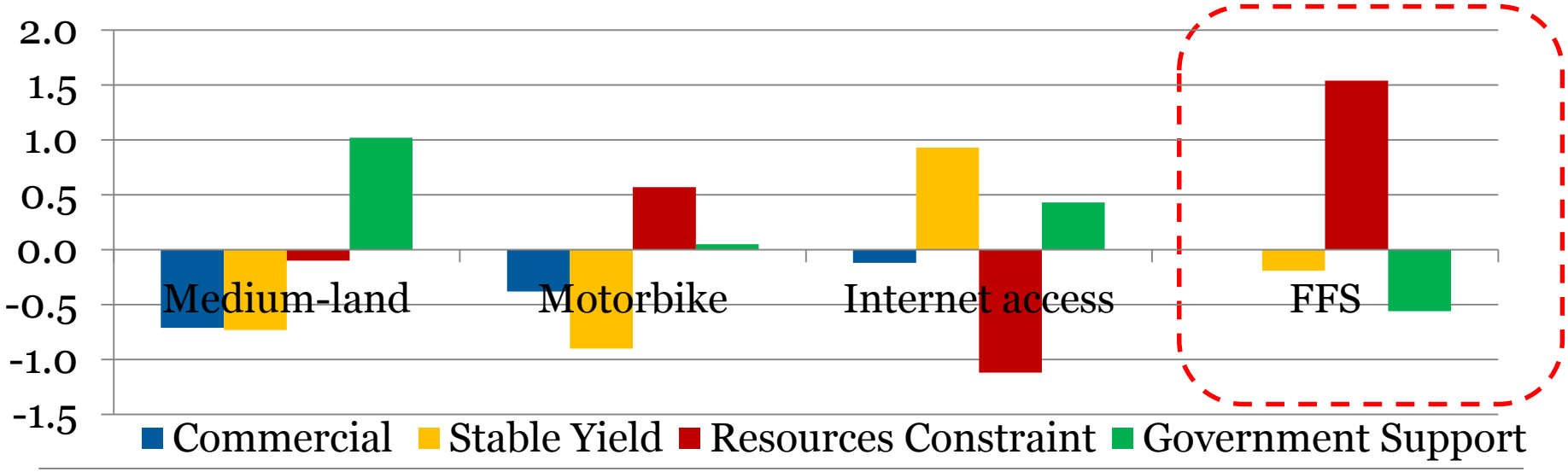
'Stable Yield'
(n=194 or 20%)

- More agricultural assets
- Close to market
- Higher horticultural income

Results for Conditional Logit Model

- Dependent variable: 1=the household have adopted a new crop and/or variety of horticultural crops, 0=otherwise
- Independent variables: human capital, land capital, financial capital, location, agricultural programs involvement, association membership and access to information
- To some extent, each group of farmers responds in **a different way** in their adoption decision

Logit coefficient



Take Home Messages

Farmers' preferences for crop attributes can affect high value crop adoption:

- Farmer Field School can be an effective program for farmers, specifically for resources constrained farmers, to adopt high value crops
- It also allows more targeted policy and development programs by designing incentives and information on specific cropping attributes that are most likely to encourage farmers to adopt high value crops

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