Adoption of High Value Horticultural Crops in Indonesia: Determinants and Impacts

By

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Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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North Terrace Campus, December 2016

Suprehatin
Abstract

Indonesia, like many developing countries in Southeast Asia, is experiencing an agri-food transformation with rapidly growing demand for high value agricultural products, including horticultural products such as fruits and vegetables. Therefore, there may be opportunities for policy makers to support smallholder farmers to expand their adoption of horticultural crops for their own benefit and for the benefit of Indonesia as a whole. At the same time, however, the Indonesian government needs to maintain intensive support for smallholder farmers to produce adequate supplies of vital staple food crops, such as rice, maize and soybeans, in order to achieve national food self-sufficiency.

This study investigated the opportunities and challenges of expanding horticultural crop production in Indonesia, particularly to improve the participation of Indonesian smallholder farmers in horticultural value chains. The main objectives of this study were two-fold: (1) to examine Indonesian farmer preferences for crop attributes which influence horticultural crop adoption decisions, and (2) to examine how and in what ways small farm household diversification into horticultural production significantly affects farm household livelihoods, namely food supply and income. Four phases of analysis were conducted using unique data from a 2013 survey of 960 Indonesian farmers on Java Island, which has the largest production zone for both horticultural crops and staple food crops in Indonesia.

The first analysis examined the current status of horticultural crop adoption in Indonesia and highlighted the characteristics of farmers who adopted and those who did not adopt a new horticultural crop with respect to the farm household, farm and institutional characteristics. Results showed that horticultural crop adopters were motivated mainly by higher profit, higher yield and greater income opportunities. This study also found that current low rates of horticultural crop adoption are associated with a variety of factors, such
as lower levels of education among farmers, resource constraints, lack of information on horticultural crop production and low participation in farmer groups.

The second analysis focused on Indonesian farmer preferences for specific crop attributes when considering adopting a new crop. This study addresses farmer heterogeneity in preferences for crop attributes at the aggregate as well as group (segment) level. Best-worst scaling analysis showed that the three most important crop attributes for Indonesian farmers at the aggregate level are related to the perceived relative advantage and risks of the new crop, and access to inputs required to grow the crop, such as high quality seeds. Latent class (LC) cluster analysis identified four distinct clusters of farmer segments each with unique socio-demographic characteristics and preferences for crop attributes.

The third analysis examined determinant factors in horticultural crop adoption, particularly the effects of farmer preferences for specific crop attributes on the decision to adopt horticultural crops. After controlling for other factors, multinomial endogenous treatment regressions showed that preference cluster effect varied across models. Product-preference cluster had no significant effect on adoption when measured as a binary variable, that is, to adopt or not adopt. The product-preference cluster had a significant effect on the intensity of adoption and timing of adoption. The effects of farmer crop preference clusters, however, differed across the models.

The fourth analysis explored the impact of farmer adoption of horticultural crops on farm household food supply and income. This novel analysis addressed the trade-offs between horticultural crop diversification and staple food crops. Simultaneous equation regressions showed evidence that horticultural crop diversification decreases the value of non-horticultural crop production and wage income, particularly in lowland areas of Indonesia, but the net effect was positive. While the net effect on total value of food production was higher in highland areas, this study found the income effect to be small.
# Table of Contents

Acknowledgements..............................................................................................................................................i
Declaration.................................................................................................................................................................. iii
Abstract....................................................................................................................................................................iv
Table of Contents...................................................................................................................................................... vi
List of Tables ........................................................................................................................................................... ix
List of Figures ............................................................................................................................................................x
1 Chapter One: Introduction ........................................................................................................................................1
  1.1 Background and Motivations .............................................................................................................................. 1
  1.2 Research Objectives .......................................................................................................................................... 7
  1.3 Structure of the Thesis ..................................................................................................................................... 7
2 Chapter Two: Literature Review ..............................................................................................................................10
  2.1 Introduction ...................................................................................................................................................... 10
  2.2 Adoption of Agricultural Technology by Farmers in Developing Countries ..................................................10
    2.2.1 Different Types of Agricultural Technologies ........................................................................................... 11
    2.2.2 Defining Adoption .................................................................................................................................... 13
  2.3 Determinant Factors of Agricultural Technology Adoption ...........................................................................14
    2.3.1 Technology Attributes ............................................................................................................................... 15
    2.3.2 Farmer and Farm Household Characteristics .......................................................................................... 17
    2.3.3 Farm Characteristics ................................................................................................................................ 19
    2.3.4 Institutional Factors ................................................................................................................................ 20
  2.4 Impacts of Agricultural Technology Adoption on Farmers ...........................................................................22
  2.5 Summary ...................................................................................................................................................... 26
3 Chapter Three: Methodology ..................................................................................................................................28
  3.1 Introduction ...................................................................................................................................................... 28
  3.2 Questionnaire Development ..............................................................................................................................28
  3.3 Training of Enumerators ..................................................................................................................................31
  3.4 Sample Selection ............................................................................................................................................ 32
  3.5 Data Collection and Management .....................................................................................................................36
  3.6 Data Analysis ..................................................................................................................................................36
3.7 Summary and Conclusions........................................................................................................37

4 Chapter Four: Farmer Adoption of High Value Horticultural Crops in Indonesia:
Descriptive Statistics................................................................................................................39
4.1 Introduction................................................................................................................................39
4.2 Data and Methods ..................................................................................................................39
4.2.1 Defining Adopters of New Horticultural crops ..............................................................40
4.3 Discussion and Comparison of Adopters versus Non-Adopters ........................................41
4.3.1 Current Practices of New Horticultural Crop Adoption in Indonesia .........................41
4.3.1.1 The Rate of Adoption of New Horticultural Crops ..................................................41
4.3.1.2 Motivation of New Horticultural Crop Adoption ....................................................44
4.3.1.3 Land Use Changes when Adopting New Horticultural Crops ...............................46
4.3.2 Characteristics of Adopters and Non-adopters of New Horticultural Crops .............47
4.3.2.1 Household Characteristics .......................................................................................48
4.3.2.2 Farm Characteristics ...............................................................................................51
4.3.2.3 Institutional Factors ................................................................................................55
4.3.2.4 Income Activities ......................................................................................................56
4.4 Summary and Conclusions ..................................................................................................58

5 Chapter Five: Farmer Preferences for Technology Attributes: An Application of Best-
Worst Scaling ...............................................................................................................................60
5.1 Introduction ..........................................................................................................................60
5.2 Data and Methods ................................................................................................................62
5.2.1 Data from the Indonesian Farmer Survey ....................................................................62
5.2.2 Best-Worst Scaling .......................................................................................................63
5.2.3 Modelling Heterogeneity in Preferences for Crop Attributes ....................................67
5.3 Results and Discussion ........................................................................................................69
5.3.1 Crop Attribute Importance ............................................................................................69
5.3.2 Farmer Heterogeneity for Crop Preferences .................................................................72
5.3.2.1 Relative Importance of Crop Attributes Across Four Farmer Clusters ...............73
5.3.2.2 Characterising Four Farmer Clusters .....................................................................76
5.3.2.3 Adoption Behaviours of Four Farmer Clusters .......................................................79
5.4 Summary and Conclusions ................................................................................................80

6 Chapter Six: Effect of Farmer Preferences for Crop Attributes on Horticultural Crop
Adoption ..........................................................................................................................................82
6.1 Introduction ..........................................................................................................................82
6.2 Data and Methods ........................................................................................................83
  6.2.1 Data from the Indonesian Farmer Survey..............................................................83
  6.2.2 Theoretical Models .................................................................................................84
  6.2.3 Empirical Models .................................................................................................86
  6.2.4 Empirical Specification .........................................................................................87
  6.2.5 Multinomial Endogenous Treatment Model.........................................................92
6.3 Results and Discussion ..............................................................................................94
  6.3.1 The Effect of Preference Cluster on Adoption ....................................................94
  6.3.2 Effect of Other Characteristics on Adoption .......................................................99
  6.3.3 Identifying Conditions .........................................................................................99
6.4 Summary and Conclusions .......................................................................................100

7 Chapter Seven: Impact of Horticultural Crop Diversification on Farm Household Food
Supply and Income ........................................................................................................103
  7.1 Introduction .............................................................................................................103
  7.2 Data and Methods .....................................................................................................105
    7.2.1 Farm Household Survey .....................................................................................105
    7.2.2 Theoretical Models ............................................................................................106
    7.2.3 Empirical Models ...............................................................................................107
    7.2.4 Estimation Strategy ............................................................................................108
  7.3 Results and Discussion .............................................................................................112
    7.3.1 Descriptive Results ............................................................................................112
    7.3.2 Value of Food Production Effects .......................................................................114
    7.3.3 Income Effects ....................................................................................................115
    7.3.4 Identifying Conditions .......................................................................................118
  7.4 Conclusions .............................................................................................................119

8 Chapter Eight: Summary, Conclusions and Implications ..........................................122
  8.1 Summary and Conclusions .......................................................................................122
  8.2 Policy implications ....................................................................................................126

References ......................................................................................................................131
Appendices ....................................................................................................................143
List of Tables

Table 3.1. Distribution of selected respondents.................................................................35
Table 4.1. Number of new horticultural crops adopted by adopting farmers (n = 101)......44
Table 4.2. Land use changes when adopting new horticultural crops at the farm plot level47
Table 4.3. Comparison of household (and farmer) characteristics for adopters and non-adopters of new horticultural crops..........................................................................................50
Table 4.4. Comparison of farm characteristics for adopters and non-adopters of new horticultural crops ...............................................................................................................................54
Table 4.5. Comparison of institutional characteristics and income sources for adopters and non-adopters of new horticultural crops ..........................................................................................55
Table 4.6. Comparison of income sources for adopters and non-adopters of new horticultural crops ...............................................................................................................................57
Table 5.1. Crop attributes and descriptions used in the BW questionnaire......................65
Table 5.2. Relative importance of the 11 crop attributes by BW scaling .........................71
Table 5.3. Summary of LC cluster analysis .............................................................................72
Table 5.4. Maximum likelihood parameter estimates of the four-cluster model .........73
Table 5.5. Mean BW indicators for each crop attribute by LC cluster .........................74
Table 5.6. Characteristics of LC clusters ................................................................................78
Table 5.7. Adoption behaviour across the four clusters..............................................79
Table 6.1. Summary statistics for dependent and independent variables (n=960) .........89
Table 6.2. Multinomial endogenous treatment results .................................................98
Table 7.1. Summary statistics for dependent and independent variables .....................113
Table 7.2. Effects of horticultural crop diversification on the value of food supply ......115
Table 7.3. Effects of horticultural crop diversification on agricultural income .........117
List of Figures

Figure 4.1. Dynamics of Indonesian farmer participation in horticultural crop production (2007-2012) .......................................................... 43

Figure 4.2. Main reasons motivating Indonesian farmers to adopt new horticultural crops (number of farmers’ response, n = 101) ........................................ 46

Figure 5.1. Example of a BW scaling task .................................................................................................................. 66

Figure 5.2. Summary of individual BW scores for each attribute (n = 960) ............................... 75