

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

By

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Declaration

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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.

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