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Adoption of Improved Quinoa Varieties among Smallholder Farmers in the Peruvian Andes

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Abstract

Production of quinoa has boomed tremendously in the Andes since the early 2010s. It is widely promoted as a highly nutritious food and is rapidly converting from a common staple and subsistence crop into a high-value cash crop. Quinoa production and trade entail large opportunities for Andean smallholders, such as upwards income mobility and improved food security. However, crop productivity does not reach its full potential due to quinoa's susceptibility to mildew, a plant disease that represents the largest constraint to high productivity in the Andes region. Developing mildew-tolerant varieties is thus a key priority of researchers and policy makers. In order to increase adoption rates of improved varieties among smallholders, it is crucial to take into account their specific requirements and needs *ex-ante*, before new varieties are developed and introduced. In this paper, we study farmers' preferences and willingness to pay for improved quinoa varieties in the Junin region in Peru. We use data from a choice experiment among 458 Andean smallholders and estimate generalised multinomial logit models to control for preference and scale heterogeneity. We find that farmers generally prefer improved varieties over traditional varieties, with mildew-resistance as most important crop trait. Farmers who are more experienced or who are a member of a quinoa production association are less likely to adopt an improved variety, while farmers who purchase seed from other producers are more likely to buy improved seed. Farmers who have encountered mildew before are even more willing to pay for a mildew-resistant variety, illustrating the severeness of the disease. Varieties that are characterised by larger grain sizes, higher yield levels, and a reduced maturation period are more likely to be adopted, while farmers are indifferent between medium and zero levels of saponin. A high level of saponin, on the other hand, is associated with a bitter taste and drastically decreases farmers' willingness to pay for mildew-resistant quinoa varieties.

Keywords: Choice experiment, generalised multinomial logit, Peru, quinoa, scale and taste heterogeneity

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