Farmers’ Opinion on Seed Potato Management Attributes in Ethiopia: A Conjoint Analysis


ABSTRACT

A low adoption of recommended seed potato (Solanum tuberosum L.) technologies in Ethiopia could be due to a lack of alternative seed potato production methods compatible with farmers’ economic and agro-ecological conditions. A conjoint analysis (a technique used to measure relative contribution of product attributes) was conducted to elicit farmers’ opinions on management attributes that they believed to affect yield and quality of potato. The study involved interviewing 324 farmers who grew seed potato in Jeldu and Welmera districts. The results showed that management attributes, such as storage method, hoeing combined with hill size, fertilizer rate (FR) and fungicide application (FA) frequency had larger effect on seed yield and quality than seed source, seed size, sprouting method, tillage frequency, and planting date. In both districts, using diffused light storage (DLS); hoeing twice, combined with big hills; and using recommended FR, combined with two FAs had significant positive effects on yield and quality of seed potato. In both districts, if all farmers switched to the best management attribute levels, potential increases in seed yield would be about two times the actual seed yield produced in 2010. The results suggest that it is possible to design better methods to produce seed potato compared with methods that farmers currently use. Extension personnel could use these results to recommend to farmers those management attributes that are the most important to improve yield and quality of seed potato in Ethiopia.

IN ETHIOPIA, SEVERAL research efforts have been made to develop new potato technologies since the inception of potato research in 1975. Potato production technologies include improved potato varieties and new pre- and postharvest management practices. Potato technology development aims to attain high-yielding, disease tolerant varieties and improved agronomic and postharvest management practices (Gebremedhin et al., 2008). As a result, several improved varieties with improved management practices have been developed and released to farmers. However, the majority of smallholder farmers are still producing their own potato varieties with relatively poor quality (Mulatu et al., 2005; Gildemacher et al., 2009a; Hirpa et al., 2010; CIP, 2011).

Currently in Ethiopia, new potato varieties are released with one standard recommendation for production, although there are several alternative options. The recommended production method can produce high yields but it is adopted only by a few farmers due to its incompatibility with the diverse local environmental conditions that vary in agro-ecology, soil type, managerial capability, objectives of potato production, and availability and access to inputs and product markets. These different local environmental conditions require different production methods to achieve the “optimum” yield and quality of a product in a given situation (Mamo et al., 2003; Reece and Sumberg, 2003; Scharf et al., 2005; Jack, 2011; Yu et al., 2011; Gao et al., 2012). To increase a number of adopters of the released potato varieties, it is important to identify alternative seed potato production methods that suit the local conditions of farmers. To develop production methods that are likely to be adopted by farmers, it is also essential to study the importance of seed potato management attributes with respect to seed yield and quality from a farmers’ point of view.

The objective of this study was, therefore, to elicit farmers’ opinions on the importance of seed potato management attributes with respect to their perceived effects on potato seed yield and quality and to quantify these effects. This knowledge could be used to develop alternative seed potato production methods more specific to local farm characteristics.

METHODOLOGY

The study entailed two main steps. First, a so-called Delphi study was conducted to identify and prioritize, among experts and farmers, seed potato management attributes (e.g., sprouting method, fertilizer rates) affecting yield and seed quality. Then, a two-part survey was performed (i) by conducting face-to-face interviews among farmers to collect specific demographic and management data, and (ii) by using a so-called conjoint task to elicit farmers’ opinions on effects of selected management attributes on seed yield and quality.

Abbreviations: DLS, diffused light storage; ETB, Ethiopian Birr; FA, fungicide application; FR, fertilizer rate.