
Appendix A Impacting pathway of variables

<i>Variables</i>	<i>Impacting pathway</i>	<i>Direction</i>
<i>Perceived perception</i>		
Perceived knowledge of orchard diseases and pests	Farmers' adoption of advanced technologies is regarded as an interaction between farmers' knowledge and the local farming culture. Farmers who have good knowledge about pests and diseases in their orchards, are more likely to adopt precision pesticide technologies (Higgins, Bryant et al. 2017).	+
<i>Farm management practice</i>		
Farm size	Based on the economies of scale, production factors would be allocated more effectively with the moderate expansion of production scales, which will bring lower average cost of products as well as more economic benefits (Chen, Wachenheim et al. 2020).	+
Labor force	In the new economics of labor migration, labor migration results in the transformation of technologies from labor-intensive to labor-saving technologies in production to maintain output (Zhang, Long et al. 2020). In agricultural production, agricultural families with less labor force are more likely to invest in labor-saving technologies (Diirro, Fisher et al. 2021).	-
Cooperative	Cooperatives aim to provide and inform farmers about new technologies available along with their costs, benefits, and risks for agricultural practices (Kolade and Harpham 2014).	+
Plot	A greater number of apple planting plots would increase the difficulty in applying advanced technologies (Orea, Perez et al. 2015).	-
Insurance	<i>Insurance.</i> Agricultural insurance can protect farmers from risks, which may reduce farmers' risk perceptions including those associated with adopting new technologies (Giné and Yang 2009).	+
Access to digital information	It represents a new way of obtaining agricultural information through advanced information media, which expands farmers' access to information channels, and increases the efficiency of acquiring information (Bukchin and Kerret 2020). Orchard farmers with high agricultural informatization have more access to the Internet for searching agricultural technologies (Voss, Jansen et al. 2021).	+
<i>External characteristics</i>		
Technical training	Agricultural training is a potentially effective method to adoption of new technologies (Nakano, Tsusaka et al. 2018).	+
Financial service	When farmers choose to adopt new types of technology, they need to invest additional money and increase the cost of agricultural production. However, government subsidies can compensate for possible losses and encourage farmers to adopt	+

	new technologies (Li, Dingyi et al. 2021).	
Environmental regulation	Environmental regulation may restrain extensification production, and encourage farmers to protect environment and save resources (Perino and Requate 2012).	+
<i>Personal characteristics</i>		
Gender	In rural China, males are normally the heads of households, taking responsibility to making agricultural decisions (Voss, Jansen et al. 2021).	+
Age	Compared with older farmers, younger farmers adapt faster to the innovative production factors (Liu, Ruiz-Menjivar et al. 2019).	-
Education	Higher levels of education are associated with individuals having greater ability to adapt to new innovations	+
Farming experience	Farmers who have more farming experience are more likely to rely on, and prefer, traditional agricultural practices (Yang, Zhu et al. 2020).	-
