

Table S1. Description and summary statistics for all variables at baseline used in the study.

Variables	Description	Mean	SD
Growers' age (year)	Ages of orchard manager	54.3	9.2
Education level (year)	Primary education is 6; Secondary education is 9; High school education is 12	8.1	3.3
Cultivated area (ha)	The area of apples planted	0.2	0.1
Tree age (years)	Growing years since planted	13.7	6.5
Chemical N use (kg N ha ⁻¹)	The amount of chemical N use per unit area	920.1	485.6
Chemical P use (kg P ha ⁻¹)	The amount of chemical P use per unit area	293.4	103.4
Proportion of reflective transfer film used (%)	1=YES; 0=NO	0.4	0.5
Proportion of herbicide used (%)	1=YES; 0=NO	0.4	0.5
Apple yield (t ha ⁻¹)	Total apple production per unit of area	46.6	15.4
Total cost ($\times 10^3$ CNY)	All cost in apple production	22.7	5.4
Economic benefit ($\times 10^3$ CNY)	Profit of apple production	89.8	44.6
Observation		99.0	