

**Supplementary 1:** Reference list for individual studies reviewed, in the order they are described in Table 3.

---

1. Abu-Madi MO. (2009) Farm-level perspectives regarding irrigation water prices in the Tulkarm district, Palestine. *Agricultural water management* 96: 1344-1350
2. Alcon F, Tapsuwan S, Brouwer R, et al. (2014) Adoption of irrigation water policies to guarantee water supply: A choice experiment. *Environmental Science & Policy* 44: 226-236.
3. Aydogdu MH and Bilgic A. (2016) An evaluation of farmers' willingness to pay for efficient irrigation for sustainable usage of resources: the GAP-Harran Plain case, Turkey. *Journal of Integrative Environmental Sciences* 13: 175-186.
4. Bakopoulou S, Polyzos S and Kungolos A. (2010) Investigation of farmers' willingness to pay for using recycled water for irrigation in Thessaly region, Greece. *Desalination* 250: 329-334.
5. Bell AR, Shah M and Ward PS. (2014) Reimagining cost recovery in Pakistan's irrigation system through willingness-to-pay estimates for irrigation water from a discrete choice experiment. *Water resources research* 50: 6679-6695.
6. Bhaduri A and Kloos J. (2013) Getting the water prices right using an incentive-based approach: an application of a choice experiment in khorezm, uzbekistan. *The European Journal of Development Research* 25: 680-694.
7. Bozorg-Haddad O, Malmir M, Mohammad-Azari S, et al. (2016) Estimation of farmers' willingness to pay for water in the agricultural sector. *Agricultural water management* 177: 284-290.
8. Chandrasekaran K, Devarajulu S and Kuppannan P. (2009) Farmers' willingness to pay for irrigation water: a case of tank irrigation systems in South India. *Water* 1: 5-18.
9. El Chami D, El Moujabber M and Scardigno A. (2008) The Contingent Valuation Method for the economic assessment of Groundwater: a Lebanese case study. *New Medit* 7: 19-24.
10. Giannoccaro G, Castillo M and Berbel J. (2015) An assessment of farmers' willingness to participate in water trading in southern Spain. *Water Policy* 17: 520-537.
11. Harun R, Muresan IC, Arion FH, et al. (2015) Analysis of factors that influence the willingness to pay for irrigation water in the Kurdistan regional government, Iraq. *Sustainability* 7: 9574-9586.
12. Hite D, Hudson D and Intarapapong W. (2002) Willingness to pay for water quality improvements: The case of precision application technology. *Journal of Agricultural and Resource Economics*: 433-449.
13. Jamali Jaghdani T and Brümmer B. (2016) Determinants of willingness to pay for groundwater: insights from informal water markets in Rafsanjan, Iran. *International Journal of Water Resources Development* 32: 944-960.
14. Kassahun HT, Nicholson CF, Jacobsen JB, et al. (2016) Accounting for user expectations in the valuation of reliable irrigation water access in the Ethiopian highlands. *Agricultural water management* 168: 45-55.
15. Mesa-Jurado MA, Martin-Ortega J, Ruto E, et al. (2012) The economic value of guaranteed water supply for irrigation under scarcity conditions. *Agricultural water management* 113: 10-18
16. Ndunda EN and Mungatana ED. (2013) Evaluating the welfare effects of improved wastewater treatment using a discrete choice experiment. *Journal of environmental management* 123: 49-57
17. Saldías C, Speelman S, Van Huylbroeck G, et al. (2016) Understanding farmers' preferences for wastewater reuse frameworks in agricultural irrigation: lessons from a choice experiment in the Western Cape, South Africa. *Water SA* 42: 26-37.
18. Salman AZ and Al-Karablieh E. (2004) Measuring the willingness of farmers to pay for groundwater in the highland areas of Jordan. *Agricultural water management* 68: 61-76.
19. Shultz S and Soliz B. (2007) Stakeholder willingness to pay for watershed restoration in rural Bolivia. *JAWRA Journal of the American Water Resources Association* 43: 947-956.

20. Speelman S, Frija A, Buysse J, et al. (2011) The importance of irrigation water rights: lessons from South Africa and Tunisia. *Water Policy* 13: 663-676.
21. Storm H, Heckelei T and Heidecke C. (2011) Estimating irrigation water demand in the Moroccan Drâa Valley using contingent valuation. *Journal of environmental management* 92: 2803-2809.
22. Tang Z, Nan Z and Liu J. (2013) The willingness to pay for irrigation water: A case study in Northwest China. *Global Nest Journal* 15: 76-84.
23. Tesfaye A and Brouwer R. (2016) Exploring the scope for transboundary collaboration in the Blue Nile river basin: downstream willingness to pay for upstream land use changes to improve irrigation water supply. *Environment and Development Economics* 21: 180-204.
24. Yedra H, Mesa-Jurado MA, López-Morales CA, et al. (2016) Economic valuation of irrigation water in south-eastern Mexico. *International Journal of Water Resources Development* 32: 931-943.
25. Yokwe S. (2009) Water productivity in smallholder irrigation schemes in South Africa. *Agricultural water management* 96: 1223-1228.
26. Tang Z. (2010) Value the irrigation water: a case study in northwest China. *Advanced Materials Research*. Trans Tech Publ, 2385-2388.
27. Aydogdu M and Yenigun K. (2016) Willingness To Pay For Sustainable Water Usage In Harran Plain-GAP Region, Turkey. *Appl. Ecol. Environ. Res* 14: 147-160.
28. Alcon F, Tapsuwan S, Brouwer R, et al. (2019) Modelling farmer choices for water security measures in the Litani river basin in Lebanon. *Science of the Total Environment* 647: 37-46.
29. Azzi M, Calatrava J and Bedrani S. (2018) Farmers' willingness to pay for surface water in the West Mitidja irrigated perimeter, northern Algeria. *Spanish journal of agricultural research* 16: 0101.
30. Knapp T, Kovacs K, Huang Q, et al. (2018) Willingness to pay for irrigation water when groundwater is scarce. *Agricultural water management* 195: 133-141.
31. Barrowclough M, Stehouwer R, Alwang J, et al. (2016) Conservation agriculture on steep slopes in the Andes: promise and obstacles. *Journal of Soil and Water Conservation* 71: 91-102.
32. Akter S, Krupnik TJ, Rossi F, et al. (2016) The influence of gender and product design on farmers' preferences for weather-indexed crop insurance. *Global Environmental Change* 38: 217-229.
33. Atreya K. (2007) Farmers' willingness to pay for community integrated pest management training in Nepal. *Agriculture and Human Values* 24: 399.
34. Bogale A. (2015) Weather-indexed insurance: an elusive or achievable adaptation strategy to climate variability and change for smallholder farmers in Ethiopia. *Climate and Development* 7: 246-256
35. Buckley C, Hynes S and Mechan S. (2012) Supply of an ecosystem service—Farmers' willingness to adopt riparian buffer zones in agricultural catchments. *Environmental Science & Policy* 24: 101-109.
36. Chellappan S and Sudha R. (2015) Investment, adoption, attitude and extent of participation of farmers in soil conservation projects in the Western Ghats of India: Revised topic. *International Journal of Social Economics* 42: 251-275.
37. Conner D, Miller J, Zia A, et al. (2016) Conjoint analysis of farmers' response to conservation incentives. *Sustainability* 8: 684.
38. Cooper JC and Signorello G. (2008) Farmer premiums for the voluntary adoption of conservation plans. *Journal of Environmental Planning and Management* 51: 1-14.
39. Cuyno L, Norton GW and Rola A. (2001) Economic analysis of environmental benefits of integrated pest management: a Philippine case study. *Agricultural Economics* 25: 227-233
40. Dahlin J, Halbherr V, Kurz P, et al. (2016) Marketing Green Fertilizers: Insights into Consumer Preferences. *Sustainability* 8: 1169.

41. Danso G, Fialor S and Drechsel P. (2002) Farmers' perception and willingness to pay for urban waste compost in Ghana. *WIT Transactions on Ecology and the Environment* 56.
42. Dupraz P, Vermersch D, De Frahan BH, et al. (2003) The environmental supply of farm households: A flexible willingness to accept model. *Environmental and resource economics* 25: 171-189.
43. Garming H and Waibel H. (2009) Pesticides and farmer health in Nicaragua: a willingness-to-pay approach to evaluation. *The European Journal of Health Economics* 10: 125-133.
44. Ghorbani M and Kulshreshtha S. (2013) An Environmental and Economic Perspective on Integrated Weed Management in Iran. *Weed Technology* 27: 352-361.
45. Gulati A and Rai SC. (2015) Farmers' willingness-to-pay towards soil and water conservation measures in agro-ecosystems of Chotanagpur Plateau, India. *Water and Environment Journal* 29: 523-532
46. Hill RV, Hoddinott J and Kumar N. (2013) Adoption of weather-index insurance: learning from willingness to pay among a panel of households in rural Ethiopia. *Agricultural Economics* 44: 385-398.
47. Kaczan D and Swallow BM. (2013) Designing a payments for ecosystem services (PES) program to reduce deforestation in Tanzania: An assessment of payment approaches. *Ecological Economics* 95: 20-30.
48. Kenkel PL and Norris PE. (1995) Agricultural producers' willingness to pay for real-time mesoscale weather information. *Journal of Agricultural and Resource Economics*: 356-372.
49. Larue B, West GE, Tamini LD, et al. (2014) Willingness to pay for BMP-induced water quality benefits and deviations around expected water quality outcomes. *Canadian Water Resources Journal/Revue canadienne des ressources hydriques* 39: 437-448.
50. Mahadevan R and Asafu-Adjaye J. (2015) Exploring the potential for green revolution: a choice experiment on maize farmers in Northern Ghana. *African Journal of Agricultural and Resource Economics Volume* 10: 207-221.
51. McIntosh C, Sarris A and Papadopoulos F. (2013) Productivity, credit, risk, and the demand for weather index insurance in smallholder agriculture in Ethiopia. *Agricultural Economics* 44: 399-417.
52. Mulatu DW, van der Veen A and van Oel PR. (2014) Farm households' preferences for collective and individual actions to improve water-related ecosystem services: The Lake Naivasha basin, Kenya. *Ecosystem services* 7: 22-33.
53. Scaringelli MA, Giannoccaro G, Prospero M, et al. (2016) Adoption of biodegradable mulching films in agriculture: is there a negative prejudice towards materials derived from organic wastes? *Italian Journal of Agronomy* 11: 92-99.
54. Villanueva AJ, Gómez-Limón JA, Arriaza M, et al. (2015) The design of agri-environmental schemes: Farmers' preferences in southern Spain. *Land Use Policy* 46: 142-154.
55. Akter S, Krupnik TJ and Khanam F. (2017) Climate change skepticism and index versus standard crop insurance demand in coastal Bangladesh. *Regional Environmental Change* 17: 2455-2466.
56. Ayedun B, Okpachu G, Manyong V, et al. (2017) An assessment of willingness to pay by maize and groundnut farmers for aflatoxin biocontrol product in northern Nigeria. *Journal of food protection* 80: 1451-1460
57. Danso G, Otoo M, Ekere W, et al. (2017) Market feasibility of faecal sludge and municipal solid waste-based compost as measured by farmers' willingness-to-pay for product attributes: Evidence from kampala, uganda. *Resources* 6: 31.
58. Houessionon P, Fonta W, Bossa A, et al. (2017) Economic Valuation of Ecosystem Services from Small-Scale Agricultural Management Interventions in Burkina Faso: A Discrete Choice Experiment Approach. *Sustainability* 9: 1672.

59. Huenchuleo C and de Kartzow A. (2018) Economic valuation of ecosystem services in the Aconcagua River watershed of Chile. *TECNOLOGIA Y CIENCIAS DEL AGUA* 9: 58-85.
60. Khanal U, Wilson C, Lee B, et al. (2018) Smallholder farmers' participation in climate change adaptation programmes: understanding preferences in Nepal. *Climate policy* 18: 916-927.
61. Kpadé CP, Mensah ER, Fok M, et al. (2017) Cotton farmers' willingness to pay for pest management services in northern Benin. *Agricultural Economics* 48: 105-114.
62. Lalika MC, Meire P, Ngaga YM, et al. (2017) Willingness to pay for watershed conservation: are we applying the right paradigm? *Ecohydrology & Hydrobiology* 17: 33-45.
63. Scaringelli MA, Giannoccaro G, Prosperi M, et al. (2017) Are farmers willing to pay for bio-plastic products? The case of mulching films from urban waste. *New medit: Mediterranean journal of economics, agriculture and environment= Revue méditerranéenne d'économie, agriculture et environment* 16: 56-63.
64. Shittu AM, Kehinde MO, Ogunnaike MG, et al. (2018) Effects of Land Tenure and Property Rights on Farm Households' Willingness to Accept Incentives to Invest in Measures to Combat Land Degradation in Nigeria. *Agricultural and Resource Economics Review* 47: 357-387.
65. Tur-Cardona J, Bonnicksen O, Speelman S, et al. (2018) Farmers' reasons to accept bio-based fertilizers: A choice experiment in seven different European countries. *Journal of cleaner production* 197: 406-416
66. Asrat S, Yesuf M, Carlsson F, et al. (2010) Farmers' preferences for crop variety traits: Lessons for on-farm conservation and technology adoption. *Ecological Economics* 69: 2394-2401.
67. Dalton TJ. (2004) A household hedonic model of rice traits: economic values from farmers in West Africa. *Agricultural Economics* 31: 149-159
68. De Groote H, Wangare L and Kanampiu F. (2007) Evaluating the use of herbicide-coated imidazolinone-resistant (IR) maize seeds to control Striga in farmers' fields in Kenya. *Crop Protection* 26: 1496-1506.
69. Krishna VV and Qaim M. (2007) Estimating the adoption of Bt eggplant in India: who benefits from public-private partnership? *Food policy* 32: 523-543
70. Marra MC, Rejesus RM, Roberts RK, et al. (2010) Estimating the demand and willingness-to-pay for cotton yield monitors. *Precision Agriculture* 11: 215-238.
71. Matuschke I, Mishra RR and Qaim M. (2007) Adoption and impact of hybrid wheat in India. *World Development* 35: 1422-1435.
72. Qaim M and De Janvry A. (2003) Genetically modified crops, corporate pricing strategies, and farmers' adoption: the case of Bt cotton in Argentina. *American journal of agricultural economics* 85: 814-828
73. Acheampong P, Pinamang, Owusu V and Nurah G. (2018) How does Farmer Preference matter in Crop variety Adoption? The case of Improved Cassava varieties' Adoption in Ghana. *Open Agriculture*. 466
74. Chinedu O, Sanou E, Tur-Cardona J, et al. (2018) Farmers' valuation of transgenic biofortified sorghum for nutritional improvement in Burkina Faso: A latent class approach. *Food policy* 79: 132-140
75. Gamboa C, Van den Broeck G and Maertens M. (2018) Smallholders' Preferences for Improved Quinoa Varieties in the Peruvian Andes. *Sustainability* 10: 3735.
76. Sánchez BI, Kallas Z and Gil Roig JM. (2017) Farmer preference for improved corn seeds in Chiapas, Mexico: A choice experiment approach. *Spanish journal of agricultural research* 15
77. Schreiner J and Latacz-Lohmann U. (2015) Farmers' valuation of incentives to produce genetically modified organism-free milk: Insights from a discrete choice experiment in Germany. *Journal of dairy science* 98: 7498-7509

78. Zander K, Drucker A and Holm-Müller K. (2009) Costing the conservation of animal genetic resources: The case of Borana cattle in Ethiopia and Kenya. *Journal of arid environments* 73: 550-556.
79. Hailu G, Cao Y and Yu X. (2017) Risk Attitudes, Social Interactions, and the Willingness to Pay for Genotyping in Dairy Production. *Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie* 65: 317-341
80. Omondi IA, Zander KK, Bauer S, et al. (2016) Understanding farmers' preferences for artificial insemination services provided through dairy hubs. *animal* 11: 677-686.

**Table S1.** Additional references that investigated the effect of the determinants of farmers' WTP, presented in Table 4.

<b>Determinants</b>	<b>References</b>
Education	Aydogdu and Yenigun 2016; Bakopoulou et al. 2010; Bhaduri and Kloos 2013; El Chami et al. 2008; Harun et al. 2015; Hite et al. 2002; Mesa-Jurado et al. 2012; Ndunda and Mungatana 2013; Storm et al. 2011; Atreya, 2007; Ayedun et al., 2017; Bogale, 2015; Gulati and Rai, 2015; Hill et al., 2013; Huenchuleo and de Kartzow, 2018; Kpadé et al., 2017; McIntosh et al., 2013; Scaringelli et al., 2017; Krishna and Qaim, 2007; Narjes and Lippert, 2016; Qaim and De Janvry, 2003; Schreiner and Latacz-Lohmann, 2015
Age	Alcon et al., 2019; Aydogdu and Yenigun, 2016; Harun et al., 2015; Mesa-Jurado et al., 2012; Ndunda and Mungatana, 2013; Storm et al., 2011; Schreiner and Latacz-Lohmann, 2015; Zander et al., 2009
Gender	Bakopoulou et al., 2010; Hite et al., 2002; Ndunda and Mungatana, 2013; Atreya, 2007; Hill et al., 2013; Mahadevan and Asafu-Adjaye, 2015
Household or farmer income	Alcon et al., 2019; Bakopoulou et al., 2010; Mesa-Jurado et al., 2012; Omondi et al., 2016; Tang, 2010; Tang et al., 2013; Atreya, 2007; Buckley et al., 2012; Chellappan and Sudha, 2015; Garming and Waibel, 2009; Ghorbani and Kulshreshtha, 2013; Gulati and Rai, 2015; Huenchuleo and de Kartzow, 2018; Lalika et al., 2017; Mulatu et al., 2014; Krishna and Qaim, 2007
Family size and labour	Mesa-Jurado et al., 2012; Tang, 2010; Tang et al., 2013; Chellappan and Sudha, 2015; Danso et al., 2017; Lalika et al., 2017; Krishna and Qaim, 2007
Farming experience	Gulati and Rai, 2015; Larue et al., 2014; Hailu et al., 2017; Marra et al., 2010; Omondi et al., 2016
Land endowment and cultivated area	Azzi et al., 2018; Bakopoulou et al., 2010; El Chami et al., 2008; Jamali Jaghdani and Brümmer, 2016; Yedra et al., 2016; Cuyuno et al., 2001; Ghorbani and Kulshreshtha, 2013; Huenchuleo and de Kartzow, 2018; Kenkel and Norris, 1995; Kpadé et al., 2017; McIntosh et al., 2013; Mulatu et al., 2014; Shittu et al., 2018; Villanueva et al., 2015; Narjes and Lippert, 2016; Qaim and De Janvry, 2003
Yield increase (amount of production)	Yedra et al., 2016; Dupraz et al., 2003; Ghorbani and Kulshreshtha, 2013; Gulati and Rai, 2015; McIntosh et al., 2013; Acheampong Patricia et al., 2018; Chinedu et al., 2018; Sánchez et al., 2017; Zander et al., 2009
Irrigated area	Chandrasekaran et al., 2009; Yedra et al., 2016
Water supply type (ground or surface)	Jamali Jaghdani and Brümmer, 2016; Storm et al., 2011; Tang et al., 2013
Water quality	El Chami et al., 2008; Jamali Jaghdani and Brümmer, 2016; Ndunda and Mungatana, 2013; Saldías et al., 2016
Production season (dry/wet)	Bozorg-Haddad et al., 2016; Chandrasekaran et al., 2009; Giannoccaro et al., 2015; Storm et al., 2011
Amount and frequency of water	Alcon et al., 2019; Salman and Al-Karablieh, 2004; Tesfaye and Brouwer, 2016

Previous weather shocks	Barrowclough and Alwang, 2018; Garming and Waibel, 2009; Kenkel and Norris, 1995; McIntosh et al., 2013
Cost/price of technology/innovation	Alcon et al., 2019; Aydogdu and Yenigun, 2016; Bhaduri and Kloos, 2013; Bozorg-Haddad et al., 2016; Salman and Al-Karablieh, 2004; Speelman et al., 2011; Storm et al., 2011; Tesfaye and Brouwer, 2016; Dahlin et al., 2016; Danso et al., 2002; Hill et al., 2013; Houessionon et al., 2017; Lalika et al., 2017; Larue et al., 2014; De Groote et al., 2007; Gamboa et al., 2018; Krishna and Qaim, 2007; Marra et al., 2010; Matuschke et al., 2007; Omondi et al., 2016; Qaim and De Janvry, 2003; Sánchez et al., 2017
Improvement in production or consumption features	Acheampong Patricia et al., 2018; Dalton, 2004; De Groote et al., 2007; Gamboa et al., 2018
Ease of use (previous experience) and usefulness of the innovation	Conner et al., 2016; Danso et al., 2002; Gulati and Rai, 2015; Mulatu et al., 2014; Scaringelli et al., 2017; Narjes and Lippert, 2016; Aydogdu and Yenigun, 2016
Type of irrigation e.g. gravity irrigation	Aydogdu, 2016; Aydogdu and Yenigun, 2016; Aydogdu and Bilgic, 2016; Bozorg-Haddad et al., 2016; Tesfaye and Brouwer, 2016
Attitude	Giannoccaro et al., 2015; Jamali Jaghdani and Brümmer, 2016; Tang, 2010; Tesfaye and Brouwer, 2016; Narjes and Lippert, 2016; Schreiner and Latacz-Lohmann, 2015
Satisfaction	Mesa-Jurado et al., 2012; Shultz and Soliz, 2007; Speelman et al., 2011
Risk awareness and aversion	Ndunda and Mungatana, 2013; Bogale, 2015; Cooper and Signorello, 2008; Hill et al., 2013; Khanal et al., 2018; Kpadé et al., 2017; McIntosh et al., 2013; Dupraz et al., 2003; Garming and Waibel, 2009; Ghorbani and Kulshreshtha, 2013; Khanal et al., 2018; Zander et al., 2009
Trust in service providers or of the technology	Buckley et al., 2012; Tur-Cardona et al., 2018)
Access to information and extension	Ayedun et al., 2017; Cuyno et al., 2001; Dahlin et al., 2016; Kenkel and Norris, 1995; Matuschke et al., 2007; Qaim and De Janvry, 2003
Access to credit & remittance	Ayedun et al., 2017; Bogale, 2015;
Incentives	Conner et al., 2016; Kaczan and Swallow, 2013; Shittu et al., 2018;