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Appendix 3: Model parameters for the agent-based model of farmer adoption of conservation practices

Name	Parameter description	Value
<i>percentBus</i>	percentage of business-oriented farmers	0.1
<i>percentSuppl</i>	percentage of supplementary farmers	0.2
<i>percentTrad</i>	percentage of traditional farmers	0.7
<i>initialAdopted0</i>	percentage of farmers that adopted none of the practices	0.8
<i>initialAdopted1</i>	percentage of farmers that adopted non-structural practices	0.0
<i>initialAdopted2</i>	percentage of farmers that adopted structural practices	0.1
<i>initialAdopted3</i>	percentage of farmers that enrolled in land retirement programs	0.0
<i>initialAdopted4</i>	percentage of farmers that adopted nutrient management plan	0.1
<i>initialAdopted5</i>	percentage of farmers that adopted non-structural and structural practices	0.0
<i>initialAdopted6</i>	percentage of farmers that adopted non-structural practices and nutrient management plan	0.0
<i>initialAdopted7</i>	percentage of farmers that adopted structural practices and nutrient management plan	0.0
<i>ownerInterference</i>	percentage of non-operator owners initially giving decisions	0.0
<i>ownerMaxInterference</i>	percentage of non-operator owners giving decisions at the end of the simulation	0.8
<i>farmerAgeToLeave</i>	age at which traditional farmers consider leaving business	65
<i>farmerProbToLeave</i>	probability that traditional farmers leave business	0.8
<i>farmerProbNonoperator</i>	probability that traditional farmers leaving the business become non-operator owners	0.6
<i>farmerProbAbsentee</i>	probability that traditional farmers leaving the business become absentee landowners.	0.6
<i>ciLevel</i>	level of crop revenue insurance coverage	0.8

<i>simpleCiPlusMinusBus</i>	level of business farmers' uncertainty about their price expectation	0.3
<i>simpleCiPlusMinusTrad</i>	level of traditional farmers' uncertainty about their price expectation	0.4
<i>simpleCiPlusMinusSupp</i>	level of supplementary farmers' uncertainty about their price expectation	0.3

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Table 3-1: Initial model parameters

Farmer type	Name	Parameter description	Value (without crop revenue insurance)	Value (with crop revenue insurance)
Traditional	b ₁	weight of agricultural profit on decision algorithm	0.34	0.30
	b ₂	weight of farmer profile on decision algorithm	0.40	0.52
	b ₃	weight of social network on decision algorithm	0.09	0.05
	b ₄	weight of spatial network on decision algorithm	0.17	0.13
Supplementary	b ₁	weight of agricultural profit on decision algorithm	0.27	0.23
	b ₂	weight of farmer profile on decision algorithm	0.46	0.58
	b ₃	weight of social network on decision algorithm	0.17	0.13
	b ₄	weight of spatial network on decision algorithm	0.10	0.06
Business-oriented	b ₁	weight of agricultural profit on decision algorithm	0.49	0.45
	b ₂	weight of farmer profile on decision algorithm	0.19	0.31
	b ₃	weight of social network on decision algorithm	0.24	0.20
	b ₄	weight of spatial network on decision algorithm	0.08	0.04
Absentee landowners	b ₁	weight of agricultural profit on decision algorithm	0.09	0.05
	b ₂	weight of farmer profile on decision algorithm	0.61	0.69
	b ₃	weight of social network on decision algorithm	0.30	0.26

	b ₄	weight of spatial network on decision algorithm	0.00	0.00
Investor	b ₁	weight of agricultural profit on decision algorithm	0.08	0.04
	b ₂	weight of farmer profile on decision algorithm	0.45	0.57
	b ₃	weight of social network on decision algorithm	0.29	0.25
	b ₄	weight of spatial network on decision algorithm	0.18	0.14
Traditional	Fprofile ₀	farmer attributes for adopting none of the practices	0.90	1.00
	Fprofile ₁	farmer attributes for adopting non-structural practices	0.68	0.96
	Fprofile ₂	farmer attributes for adopting structural practices	0.00	0.02
	Fprofile ₃	farmer attributes for adopting land retirement programs	1.00	0.00
	Fprofile ₄	farmer attributes for adopting nutrient management plans	0.43	0.35
	Fprofile ₅	farmer attributes for adopting both non-structural and structural practices	0.10	0.10
	Fprofile ₆	farmer attributes for adopting both non-structural practices and nutrient management plans	0.51	0.42
	Fprofile ₇	farmer attributes for adopting both structural practices and nutrient management plans	0.08	0.07
Supplementary	Fprofile ₀	farmer attributes for adopting none of the practices	0.36	0.48
	Fprofile ₁	farmer attributes for adopting non-structural practices	0.49	1.00
	Fprofile ₂	farmer attributes for adopting structural practices	0.06	0.08
	Fprofile ₃	farmer attributes for adopting land retirement programs	1.00	0.00
	Fprofile ₄	farmer attributes for adopting nutrient management plans	0.17	0.77
	Fprofile ₅	farmer attributes for adopting both non-structural and structural practices	0.22	0.06

	Fprofile ₆	farmer attributes for adopting both non-structural practices and nutrient management plans	0.17	0.82
	Fprofile ₇	farmer attributes for adopting both structural practices and nutrient management plans	0.17	0.09
Business-oriented	Fprofile ₀	farmer attributes for adopting none of the practices	0.28	0.50
	Fprofile ₁	farmer attributes for adopting non-structural practices	0.74	0.65
	Fprofile ₂	farmer attributes for adopting structural practices	0.20	0.03
	Fprofile ₃	farmer attributes for adopting land retirement programs	0.00	0.00
	Fprofile ₄	farmer attributes for adopting nutrient management plans	0.43	1.00
	Fprofile ₅	farmer attributes for adopting both non-structural and structural practices	0.36	0.08
	Fprofile ₆	farmer attributes for adopting both non-structural practices and nutrient management plans	1.00	0.66
	Fprofile ₇	farmer attributes for adopting both structural practices and nutrient management plans	0.28	0.08
Absentee landowner	Fprofile ₀	farmer attributes for adopting none of the practices	0.00	0.38
	Fprofile ₁	farmer attributes for adopting non-structural practices	1.00	0.74
	Fprofile ₂	farmer attributes for adopting structural practices	0.60	0.02
	Fprofile ₃	farmer attributes for adopting land retirement programs	0.17	0.00
	Fprofile ₄	farmer attributes for adopting nutrient management plans	0.12	0.49
	Fprofile ₅	farmer attributes for adopting both non-structural and structural practices	0.72	0.03
	Fprofile ₆	farmer attributes for adopting both non-structural practices and nutrient management plans	0.31	1.00

	Fprofile ₇	farmer attributes for adopting both structural practices and nutrient management plans	0.62	0.02
Investor	Fprofile ₀	farmer attributes for adopting none of the practices	0.00	0.38
	Fprofile ₁	farmer attributes for adopting non-structural practices	1.00	0.74
	Fprofile ₂	farmer attributes for adopting structural practices	0.37	0.02
	Fprofile ₃	farmer attributes for adopting land retirement programs	0.48	0.00
	Fprofile ₄	farmer attributes for adopting nutrient management plans	0.13	0.49
	Fprofile ₅	farmer attributes for adopting both non-structural and structural practices	0.55	0.03
	Fprofile ₆	farmer attributes for adopting both non-structural practices and nutrient management plans	0.30	1.00
	Fprofile ₇	farmer attributes for adopting both structural practices and nutrient management plans	0.55	0.02

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Table 3-2: Model parameters comparison for crop revenue insurance scenario.