Adoption of land use options as adaptation to climate variability in northern Benin, West Africa

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BACKGROUND

× Land use decisions play an important role in farm management and livelihoods (Kokoye et al., 2013).

× Supporting farmers' practices related to land use management might be a relevant policy intervention.

× What are the driving forces of land use strategies implemented by farmers as a means of adapting to climate variability?

STUDY ZONE

Northern Benin
4 Agro-ecological zones
4 Municipalities
8 villages
336 respondents
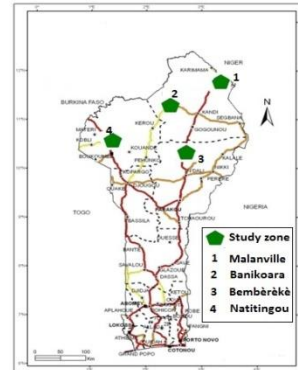
METHODS

$$y_i = \beta_0 + \sum_j \beta_j z_{ij} + u_i \qquad [1]$$

$$y_{ki} = \begin{cases} 1 \ if \ \beta_{k0} + \sum_j \beta_{kj} z_{ij} + u_{ki} > 0, implying \ that \ the \ farmer \ i \ adopts \\ 0 \ otherwise \end{cases} \qquad [2]$$

Y_k = Land use management strategy k
z = socio-economic and demographic characteristics
β are parameters to be estimated

Estimation method: Multivariate Probit (MVP) model

RESULTS

Photo A
Traditional drainage channel (2012)

Photo B
Sand bags (2012)

Variables	Crops association/rotation	Land re-allocation	Soil erosion control	Change of site
	Coefficient	Coefficient	Coefficient	Coefficient
Gender	-0.07	0.01	0.44	0.19
Experience	0.24**	0.13	-0.01	0.45**
Organisation membership	0.05	-0.49*	-0.19	-0.37
Contact with extension	0.82***	-0.48**	-0.18	-0.19
Access to credit	-0.59***	0.07	0.15	-0.74*
Side activity	0.51***	0.22	-0.05	0.02
Household size	-0.18	-0.01	0.22*	-0.37*
Farm size	0.10	-0.01	0.17	0.01
Available land	-0.03	0.27***	-0.01	0.30**
Land ownership	-0.01	-0.07	0.20	0.34
Constant	-0.63	-1.48**	-0.91**	-2.49***

Number of observations = 332; Wald chi2 (40) = 120.03; Log likelihood = -542.29; Prob> chi2 = 0.0000

NB: *, **, *** significant at 10% (p < 0.10), 5% (p < 0.05), and 1% (p < 0.01), respectively.

LESSONS

× 89% of the farmers adopt at least one of these options.

× Socio-economic and demographic characteristics differently determine whether or not farmers adopt one adaptation strategy related to land use management.

× Available land plays an important role in land use strategies as it determines the land re-allocation and change of site.

ACKNOWLEDGEMENTS

REFERENCE
Kokoye SEH, Tovignan DS, Yabi, JA, Yegbemey RN, 2013. Econometric modeling of Farm household land allocation in the Municipality of Banikoara in northern Benin. *Land use policy* 34: 72-79.

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DAAD Deutscher Akademischer Austauschdienst German Academic Exchange Service