Adoption and Continued Use of Contour Cultivation in the Highlands of Southwest China

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INTRODUCTION

- About 40% of China's arable land suffers from erosion. China's government has invested large amounts of money in developing and extending a range of conservation practices to farmers without much success.
- Soil erosion is particularly serious in Yunnan province with its mountainous topography, the heavy rainfall in the monsoon season, and loosely structured soil.

Contour cultivation is the farming practice of plowing across a slope following its elevation contour lines. It is better than the traditional downslope cultivation. The rows formed can slow water run-off during rainstorms. Contour cultivation alleviates soil erosion and allows more time for water to settle into the soil. Contour cultivation can be easily adopted by farmers. The major cost of contour cultivation is labor (294 man days /ha versus 272 man days / ha under traditional downslope cultivation on experimental plots).

RESEARCH QUESTIONS

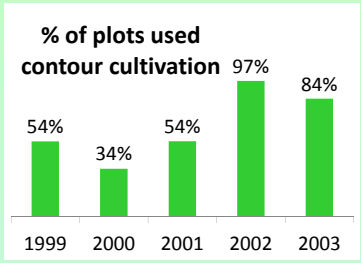
- Why do some farmers use contour cultivation while others don't?
- What factors affect adoption and continued use of contour cultivation?

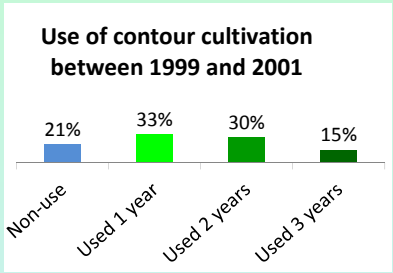
DATA

- Household characteristics were collected during interviews with farmers in Kelang village in 1999 and 2001 using survey questionnaires.
- The survey team recorded the characteristics of the plots the survey respondents have in the Wang Jia catchment (e.g., soil fertility, slope, cultivation).
- The survey team also recorded the cultivation method (e.g., contour cultivation or down slope planting) of the plots that grew maize for 1999, 2000 and 2001.
- In 2002 and 2003, the survey team provided monetary incentives for farmers to use contour cultivation.

ESTIMATION

	Dependent variable (s)	RHS
Multivariate probit	Used contour cultivation in 1999; Used in 2000, Used in 2001	Plot: Size, Soil fertility, slope , own (versus rental) Household: Labor per unit of land, Share of migrations, Share of agricultural income, Asset per capita, Age, Gender, Education, Willingness to adopt
Multinomial logit	1=did not use contour cultivation in any year during 1999-2001; 2=used in 1 out of 3 years; 3=used in 2 years; 3=used in all three years	
Poisson regression	# of years that used contour cultivation	
Logit	=1 if adopted 2 or 3 years	





RESULTS AND DISCUSSION

- Households with larger plots, more labor per unit of land, male and younger decision maker are more likely to use contour cultivation.
- Households with smaller share of migrants and relying more heavily on agricultural income are more likely to consistently use contour cultivation over years and on own plots (versus rented plots).
- Household asset has a nonlinear effect: probability of use and continued use increases with asset level, then decreases.

CONCLUSIONS

- Even with easy to adopt conservation practices such as contour cultivation, we do not observe high rates of adoption without subsidy or monetary incentives. Government policy
- The trends in agriculture sector (increasing off-farm employment, aging and more female on farm) are worrisome for soil conservation.
- If farmers were provided with more secure property rights, we would see more soil conservation practices.

CONTACT INFORMATION

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