Storage and Resilience in Small-Scale Agriculture in Semi-Arid Environments

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This paper uses archaeological, ethnographic, and contemporary economic data on small-scale farmers to make the case that household and community scale storage are important strategies for maintaining the resilience of household income (food and cash) to perturbations in crop production and market forces.

Archaeological and ethnographic information from the American Southwest establishes the centuries-long importance of household-level storage of corn in mitigating shortfalls in food production due to marked inter-annual variation in precipitation and stream flow. Pueblo farmers addressed the problem of variation in annual rainfall in part through the development of multi-year storage capacity. Southwestern archaeological data document growth in the size of storage rooms at the expense of living area in times of severe drought. In addition, both historic data and simulation of Pueblo household storage behavior have demonstrated that storage technology could be used successfully to cope with inter-annual variation in crop production. Household-level storage would not be sufficient in all years, however. Simulation of restricted inter-household food sharing at the community scale has documented that this flow of food provides an important complement to household storage and significantly improves household survival rates.

Similarly, in semi-arid parts of India, before the advent of green revolution technologies in the early 1970s, storage at the household and community level was very important. With the spread of new technologies, however, attention shifted to increasing production at the household level, and the state has now become the institution on which households rely in times of drought. In order to provide incentives for increasing production and to assure farmers of a guaranteed return, the government offers to buy major food grains after harvest at a pre-announced procurement price. In response, farmers sell their produce right after harvest and rely on the government for relief payments during times of drought. Thus, storage as an option for smoothing consumption has been shifted from the household and community level to the central government level.

Recent studies have directed attention to the large percentage of grain that is lost in Indian government storage facilities due to poor management. Widespread corruption problems with the public distribution system for food and the disbursement of drought relief payments have also been widely documented. With the recent food crisis and the growing realization that options for increasing production are limited, attention is now beginning to be directed to how storage could be encouraged at the household and community scale. In this paper we examine how storage practices typical of centuries of small-scale farming could help reduce the economic vulnerability of contemporary small-scale farmers and village communities, empower them
under climate uncertainty, and provide a wider portfolio at the local and national levels for managing risk.