

Title On-farm grain storage losses: Potential gains from improved storage facility and management practices in Afghanistan

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Abstract

Improving grain storage is a key element in improving food security policies which seeks to stimulate production, facilitate distribution, and ease crisis management. In this study we develop a conceptual model to investigate farm household storage management in Afghanistan. Our representative household approach makes explicit assumptions about family needs for food security in the current and future periods by considering monthly food consumption as well as reserve holding for seed in the next season's crop.

With limited farm level data we make a number of assumptions about status quo storage practice in the representative household, identifying the potential gains in food security that can be made with reasonable management interventions. We develop a framework to estimate the amount of grain a representative farm household must annually place in storage to meet household consumption and planting needs accounting for storage loss over the course of the 12 month storage period. The twelve-period model allows us to link farm storage to a model of insect population growth to consider the economic impact of a representative pest type and the cost and returns of management practices which reduce losses associated with this pest.

The model is used to estimate the grain savings and impact on household food security attributable to a specific management practice that reduces insect population. The model in this study provides a solid framework for future directions concerning potential gains from improved storage facility and management practices. One of the most important finding from the sensitivity of the model is that increasing mortality rate is the most efficient way to reduce storage losses due to insects.