Title: Safe and Secure: Impact of Safe Storage Technology on Food Security in India

An estimated one-third of all food produced is lost or wasted after harvest (FAO 2011; World Bank 2011). If we could decrease postharvest loss by 50%, that would be the equivalent of saving more than 550 million acres of agricultural land, greater than the total amount of arable land in the US and Canada and greater than the total global expansion in agricultural land since 1960. One of the ways to reduce food losses in developing countries is by providing safe storage technology to farmers who do not have access to commercial storage facilities. We posit that providing safe storage technology to smallholder farmers has the potential to address all four dimensions of food security i.e. availability, access, utilization and stability.

To test this hypothesis, we look at high-frequency panel data collected during a randomized control trial from 4000 farmers in 80 villages in the state of Bihar in India. Half of the sample was randomly selected to receive hermetically sealed storage bags in an auction design in 2016. We then followed up with them to understand the pattern of bag use and the impact of having access to improved storage over a period of time. We also collected grain samples from farmers and tested them for aflatoxin to look at the impact on food safety measures.

We find that having access to safe storage technology increased the availability of food in terms of both quality and quantity by reducing the amount of postharvest grain losses and minimizing fungi and rodent damage. We also find that as compared to the control group, farmers who had access to hermetically sealed bags stored their grains for two additional months, sold a portion of their grains at a time when prices were higher and on average received better overall prices for the same variety of grains, thereby adding to their household income. Additionally, farmers also reported higher germination rates for seeds stored in hermetic bags for the next season. We also found that while 37% of the grains from traditional bags tested positive for aflatoxin, the number for hermetic bags was only 4%.