

# Hand-Operated Seed Cleaner to Reduce Labor, Improve Post-Harvest Legume Quality, and Increase Income for Ugandan Women Farmers



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Photo credits: Jennifer Steffen, Linda Naeve, Margaret Smith, Michael Nabugere



# Hand-operated Seed Cleaner at Tonnet AgroEngineering, Kampala, Uganda





Design adjustments to the hand – operated seed cleaner, August, 2013. Iowa State University graduate engineer, Stacy Macallister, working with Tonnet AgroEngineering staff.







The hand crank simultaneously drives the squirrel-cage fan (behind perforated screen) and the agitator shaft in the grain hopper.

Shroud added to cover the drive belt to improve safety



Upgraded handle to increase comfort of operation





The scalping screen above the seed hopper is sized to retain soybean pods and stem pieces while allowing soybeans to pass through.

Cleaning dry beans without the scalping screen. Screen perforations are too small to allow dry beans to pass through to the seed hopper.





The output funnel was modified with a screened bottom to allow soil particles to fall through, and with greater slope to keep the cleaned grain moving to the catch tub or bag. The funnel slides out for cleaning, but is secured to the machine with a chain.



Fins on the agitator shaft in the grain hopper damaged by a rock. Outreach education stressed the need for using the seed cleaner in a system in which crops are dried and threshed on tarpaulins.



Farmers cleaning seed. Three people, on average, are needed to operate the seed cleaner.



Farmers pick up from tarpaulins the small amounts of grain that pass through the seed cleaner.





# Large-seeded food legume species

## Before and After

cleaning with the hand-operated seed cleaner



Dry beans



Soybeans



Large-seeded food grain species  
Before and After  
cleaning with the hand-operated seed cleaner



Rice



Maize  
(corn)





Chaff being blown from the seed cleaner



Chaff remaining after cleaning dry beans. The total cleanout averaged 15 percent, by weight, of the original grain mass.





After machine cleaning, farmers pick out the few remaining contaminants left in the grain mass----- shriveled seeds, small dirt clods similar in density to the seeds, and any plant stem fragments.



Farmers received training in farm business recordkeeping and templates for use in creating their farm records.





Farmer, Kateme Samali, well satisfied with her clean soybeans.



Mats crafted for sale



With time saved using the seed cleaner, farmers were able to increase the size of their fields, spend more time working in their fields, and make crafts and do baking for sale.



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