



Farmers mixing legume grain with wood ash to prevent bruchid infestation

Research to Impacts Map: Ecological Pest and Disease

Bruchids Uganda Project 2013-2019

P&D are particularly challenging for legumes

African grain legumes such as cowpea, chickpea, and pigeon pea, are vulnerable to **high levels of storage loss** from a group of beetles known as bruchids. The metabolic activity of **bruchids** can also favor the growth of **mycotoxin** producing fungi in the product. Significant amounts of aflatoxin B1 and B2 ranging from 0.23 - 329.2 ppb were detected in dried common beans in the project area. The amounts considered safe for human consumption are 2-15 ppb.



Farmers learn and use AE principles to increase innovation

Through a series of learning cycles, **farmers (n=579) improved their knowledge on bruchid management principles** such as exclusion of air, inhibition of egg deposition onto bean grains, physical barrier of adult insects, and avoidance of bruchids infestation.



More farmers participating in research process

5, non-chemical, **indigenous options** for bruchids management that were identified by farmers were evaluated with **FRN** farmers organized into 59 research groups in 4 districts. Each group was comprised of about 10 households.

Assess cost-effectiveness, farmer appeal

Generally grains where **non-chemical** bruchids management options were used had **lower damage compared to the control** (farmers' methods). Airtight-based innovations were preferred though they were perceived as more expensive. The order of preference among other options was wood ash, cow dung ash, and burnt brick dust. Wood ash is readily availability with limited competing uses unlike cow dung. Brick dust was the least preferred because of the labour involved in processing it.



Identify management options

Burnt brick dust and cow-dung ash significantly reduced **aflatoxin B1** and B2 concentrations within the grains compared to untreated grains. Aflatoxin B2 concentration was significantly reduced with wood ash, airtight storage conditions and vegetable oil treatments.



Increased use of contextually appropriate options by farmers

2019: An evaluation conducted in 3 districts (n=478 households) showed that:

- **FRN participants** increased use of local options piloted by the project from 58% in 2015 to 78% in 2019. Compared to **non-FRN** respondents who went from 42% (n=146) to 50% (n=169).
- **Synthetic pesticide** use in stored legumes went from 49% (236) to 39% (181).
- **Women**, who are responsible for food preparation, were the main users of piloted innovations.

East and Southern Africa Community of Practice



Project Partners

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