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“Molds Attack Rice - But We Don't Know What To Do”.
A Qualitative Study Of Farming Families' Perceptions Of Food Safety In Banke, Nepal

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INTRODUCTION – AFLATOXINS

- Aflatoxins, a type of mycotoxin, are produced by *Aspergillus* fungi
- Known carcinogens
- Evidence linking to liver growth
- Most of the evidence from Africa
- Research is needed:
 - Asian context, especially human health
 - Fungal control technologies and storage/drying techniques



OBJECTIVES

1. To understand and characterize knowledge and practices of farming families relating to **food safety**, particularly **mold** and **aflatoxin** exposure, and their detrimental effects on health.
2. Use findings to develop and design quantitative measures and instruments for the Aflatoxin Birth Cohort (same study area).

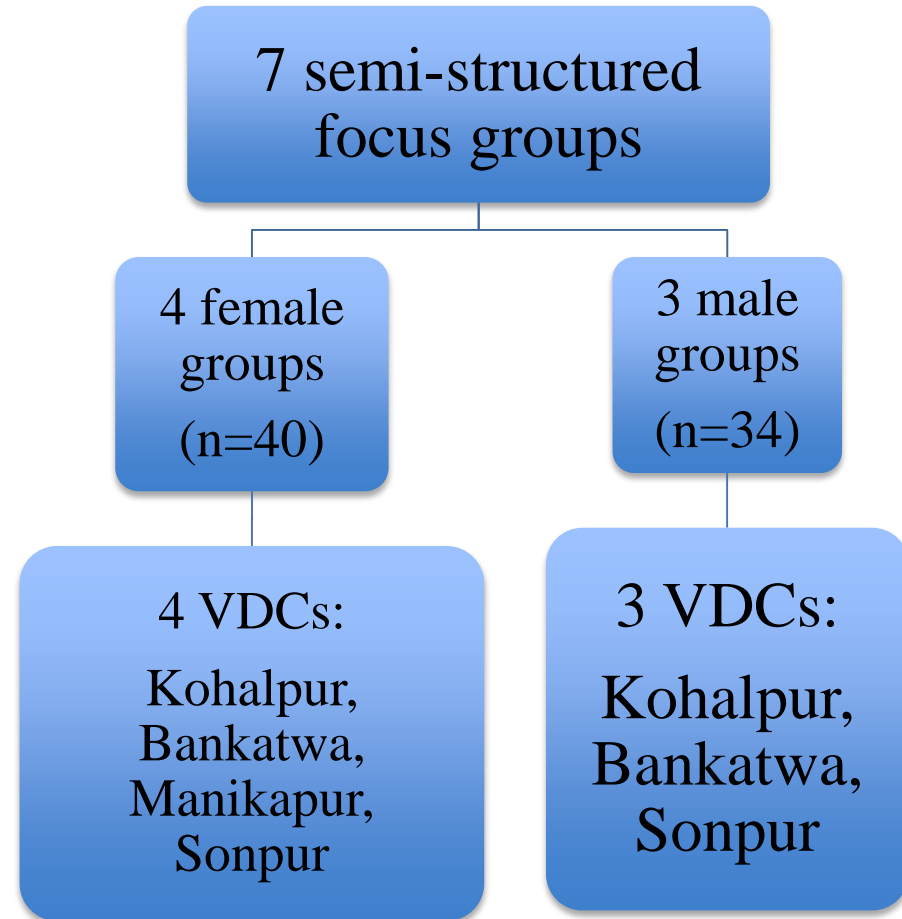


Yellow-green powdery growth of *Aspergillus flavus* on a corn rootworm-damaged ear. By Alison Robertson (Iowa State University, 2005)



MATERIALS AND METHODS

- Nepal Health Research Council/Tufts IRB approved
- Women and men
- Ages 18 and older
- All participants either were farmers or had some training in farming





DATA COLLECTION

- Each focus group lasted 1-1.5 hours
- All focus groups were conducted by a trained facilitator and a note-taker
- Languages:
 - Nepali
 - Awadhi
 - Tharu



Women's Focus Group



Men's Focus Group





ANALYSIS

- Each interview was:
 - Audio-taped
 - Transcribed
 - Translated into English
- NVivo software
- Inductive and deductive methods were used to code and identify themes in the study transcripts





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RESULTS



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MAJOR FOOD SAFETY PROBLEMS EXTRACTED

- **Pests and diseases**
- Overuse of pesticides
- **Molds**
- Unpredictable weather
- **Lack of knowledge on proper farming techniques**
- **Lack of agricultural inputs and infrastructure (irrigation, storage facilities)**





Pests and diseases

Despite proper care, the crops get attacked by pests. Medicines should be used for that.

- Female participant, Manikapur

While he [the farmer] is working with one land, the other [land] gets affected by diseases and pests. The diseases are so intense that the whole field is destroyed within 3 days.

- Male participant, Sonpur





Molds

We don't know about the medicines for molds so we don't do anything. We put water, but don't know what to spray for molds.

- Female participant, Bankatwa

We keep ashes in the Vakari before storage in order to prevent molds and we dry the crops too.

- Female participant, Manikapur





Molds

I had stored rice grains in a metal drum and the all of it was wasted because of molds.

- Female participant, Kohalpur

If few molds are there, we use our methods for making them better for eating. We give remaining ones to livestock or produce alcohol. And, if the foods are severely damaged, we throw them away.

- Female participant, Manikapur





Molds

They [molds] affect crops here in Terai, both during the summer and winter. We store rice in tin drums in summer which causes condensation and don't let the crops dry properly. Dampening in rainy seasons also causes molds.

- Female participant, Manikapur





AFLATOXIN

No

I haven't heard about it.

- Male participant,
Bankatwa

No

*No, we haven't heard
about it.*

- Male participant,
Kohalpur

No





SHOWN IMAGES OF ASPERGILLUS FUNGI

*It is seen in vessels
where crops are stored.*

- Female participant,
Bankatwa

*Maize is more affected
by molds. Sometimes
there is rainfall while
harvesting maize and
when we store them
without drying, molds
appear.*

- Female participant,
Kohalpur





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FACTORS AFFECTING FOOD SAFETY

- Lack of knowledge
- Lack of inputs and infrastructure



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Lack of knowledge

We do farming and plant seeds according to old thinking. It depends on God's wish... We cannot understand science and technologies.

- Male participant, Bankatwa

They [pesticides] harm us and the effects increase from generation to generation. The coming generations will become more unhealthy and weak... The main reason for this is lack of knowledge and our unsafe behavior.

- Male participant, Sonpur



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Lack of agricultural infrastructure



We produce [rice] paddies in large quantities and there's lack of storage.

- Male participant, Sonpur



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Lack of agricultural inputs

Once I bought corn seed for planting. The packet was nice from outside but when I opened it, there was green mold inside. Still I planted the same seeds.
- Male participant, Kohalpur





LESSONS LEARNED

- Participants identified and employed a mixture of effective and ineffective food safety mitigation strategies.
- Pests and high moisture levels during storage were common complaints; this can lead to *Aspergillus* infestation.
- Considerations should be given to low cost storage technologies.
- Closer examination of access and availability to quality inputs (e.g. seed)





LESSON LEARNED

- Rice, potatoes, maize, wheat, peanuts and chilies were perceived as crops particularly susceptible to fungal infestations.
- None of the participants had heard of aflatoxins.
- The findings from this qualitative study helped design and refine the study tools for our ongoing Aflatoxin Birth Cohort Study (n=1670) questionnaires.



Aflatoxin Birth Cohort Study participants





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- USAID



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