Multi-State University Collaboration Opportunities

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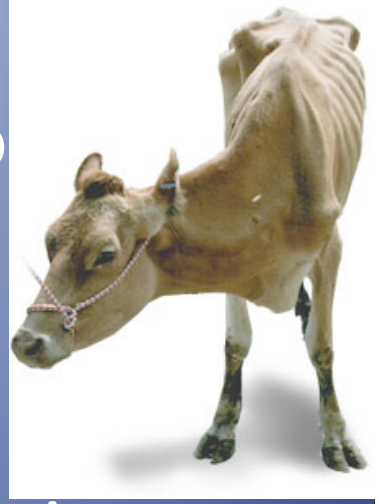
There is progress, but more can be done

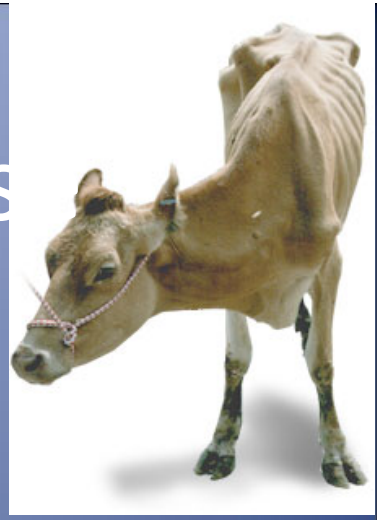
- Let the “issue” be the “driver”
- Invest in base capacity
- Identify the expertise, regardless of location
- Design the program to be compelling ($$ and time) to the expertise
- Assure accountability, but “stay out of the way”

What is Johne's Disease?



- JD is a chronic infectious disease of dairy cattle and other animal species caused by *Mycobacterium paratuberculosis*
  - Infected cows exhibit chronic diarrhea, weight loss, decreased milk production - and ultimately die as a result of infection
  - JD is present worldwide
    - infection rates in many countries approach 50% - increasing incidence
  - Annual economic losses exceed $1 billion

More about Johne's diseas



- No treatment, no good vaccines, current diagnostic tests are not very good, methods of control are unclear, the bacterium is shed in milk and survives pasteurization, possible link with Crohn's disease in humans
- In 2004 the USDA-CSREES funded ($4.4m) the creation JDIP, a multi-state Coordinated Agricultural Project for Johne's disease research, JDIP was renewed in 2008 ($4.8m) with Penn State as the lead institution

What is JDIP?

A multistate consortium whose mission is to promote animal biosecurity through development and support of projects that enhance knowledge, promote education, develop real-world solutions and mitigate losses from Johne's Disease.

More about JDIP

- Consortium of > 150 scientists from > 30 academic institutes, government agencies, and industry
  - Expanding membership
  - Establishing strong international collaborations
    - A similar European program was established in June of 2006
  - Strong links with industry

The Missing Bees

- Colony Collapse Disorder
  - First noted in the winter of 2006-2007
  - Uncharacteristic loss of adult honey bees from the hive
  - Many possible causes
    - Pesticide exposure
    - Nutritional stress
    - Diseases

APHIS

ZedX, Inc.

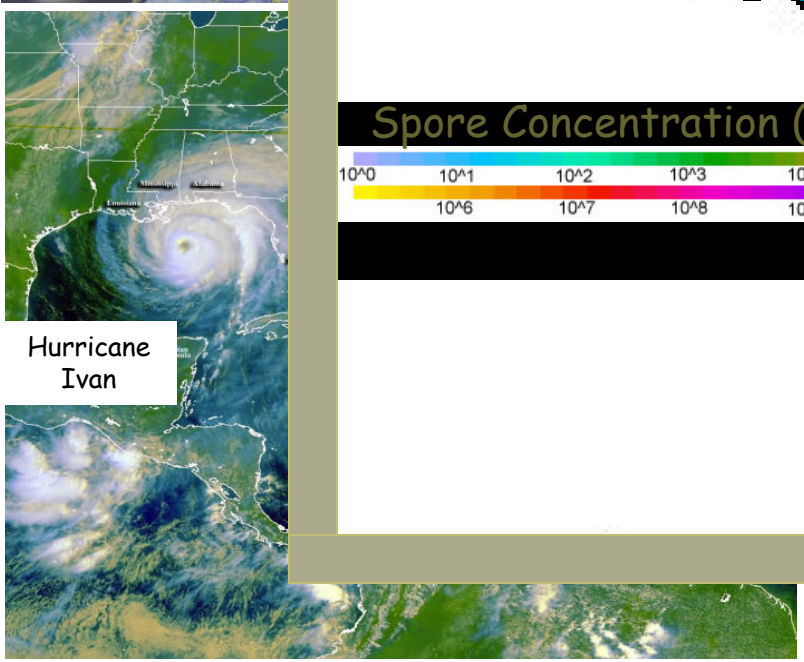
Aerobiological Risk Analysis for Soybean Rust

A project funded by APHIS to examine the risk of the aerial incursion of soybean rust into North America.

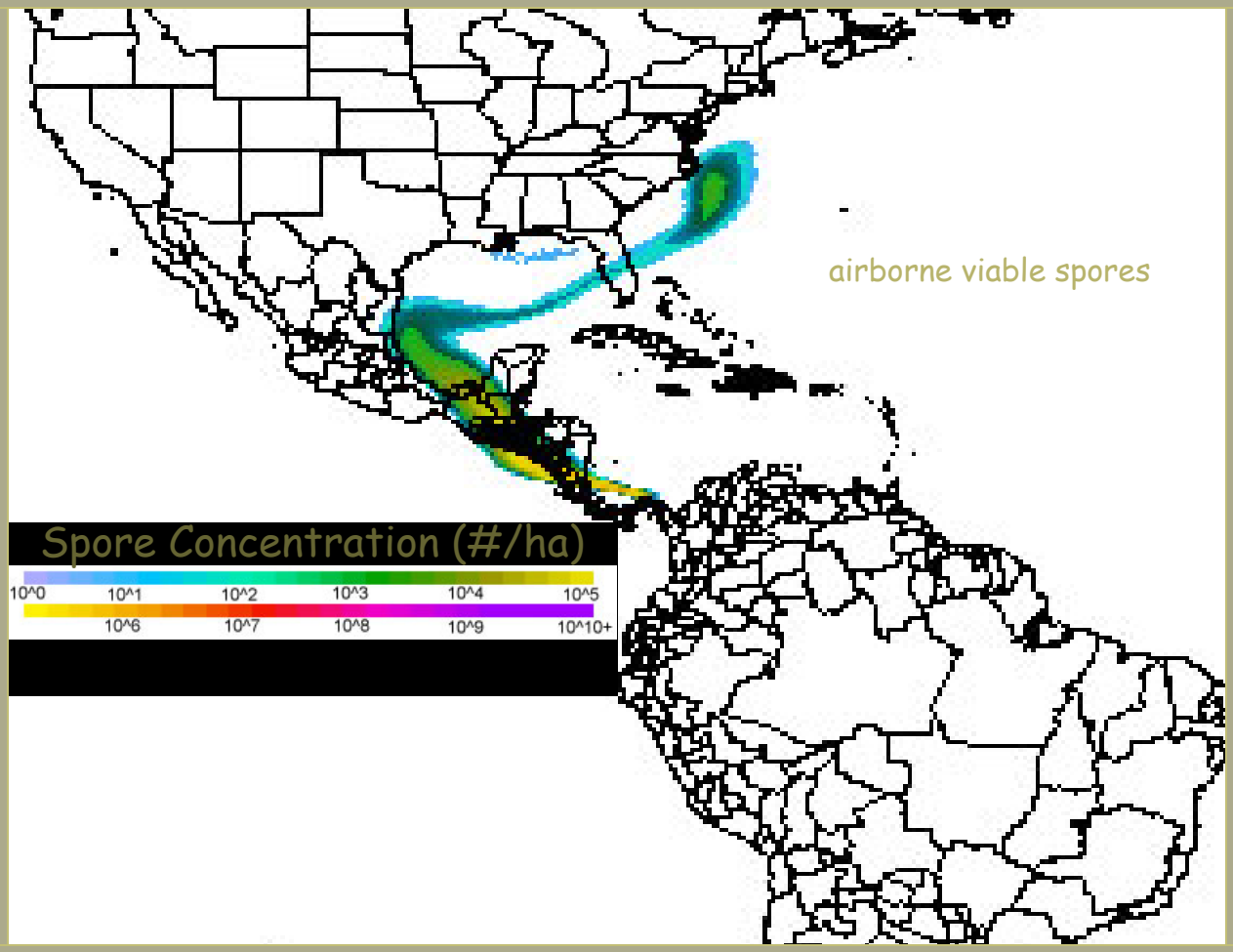
PENNSTATE

ILLINOIS

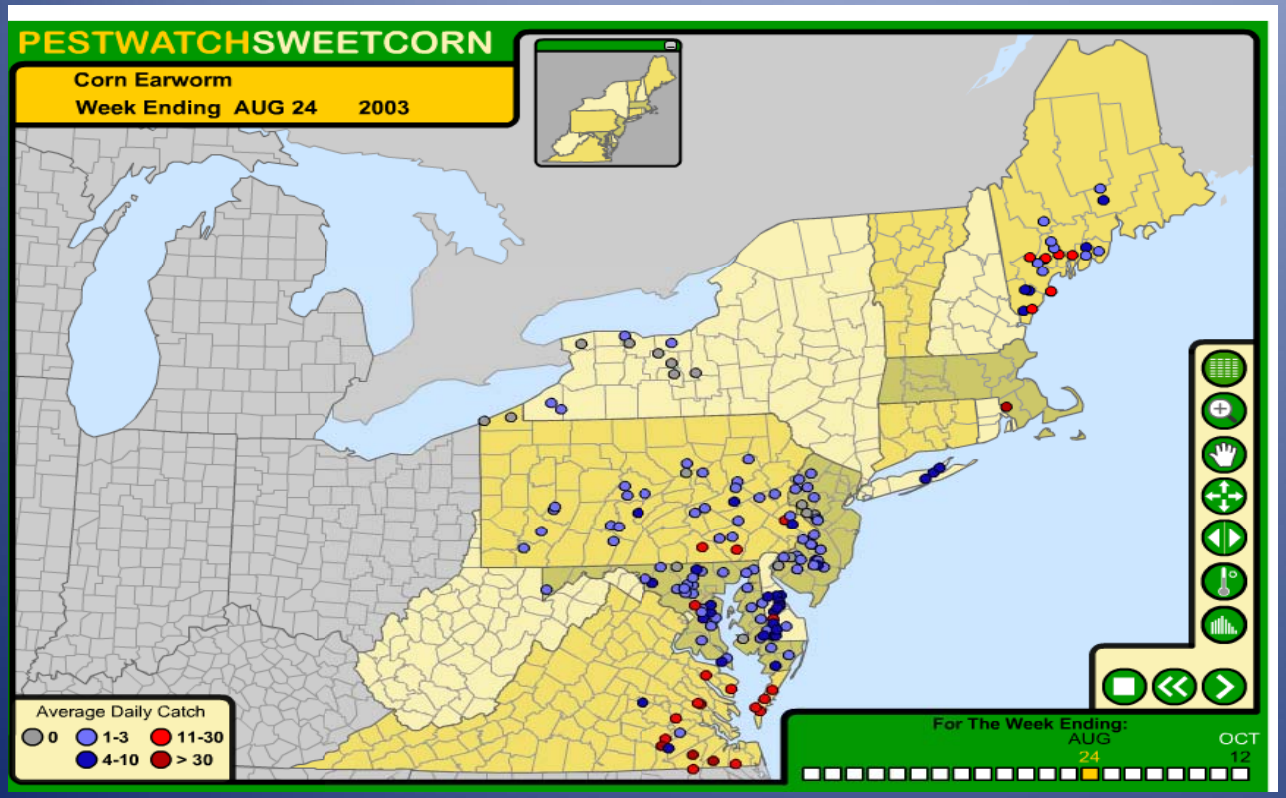
NC STATE UNIVERSITY



Hurricane Ivan

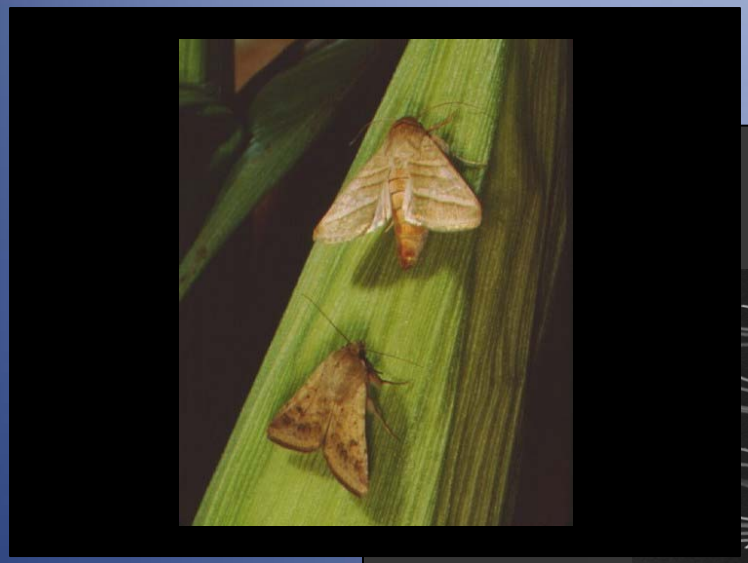


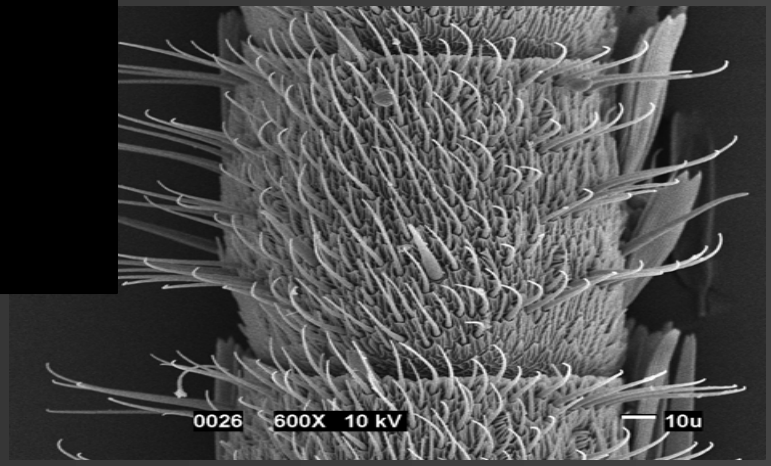
Biosensors: Learning from Nature



Using simple atmospheric models to track corn pests

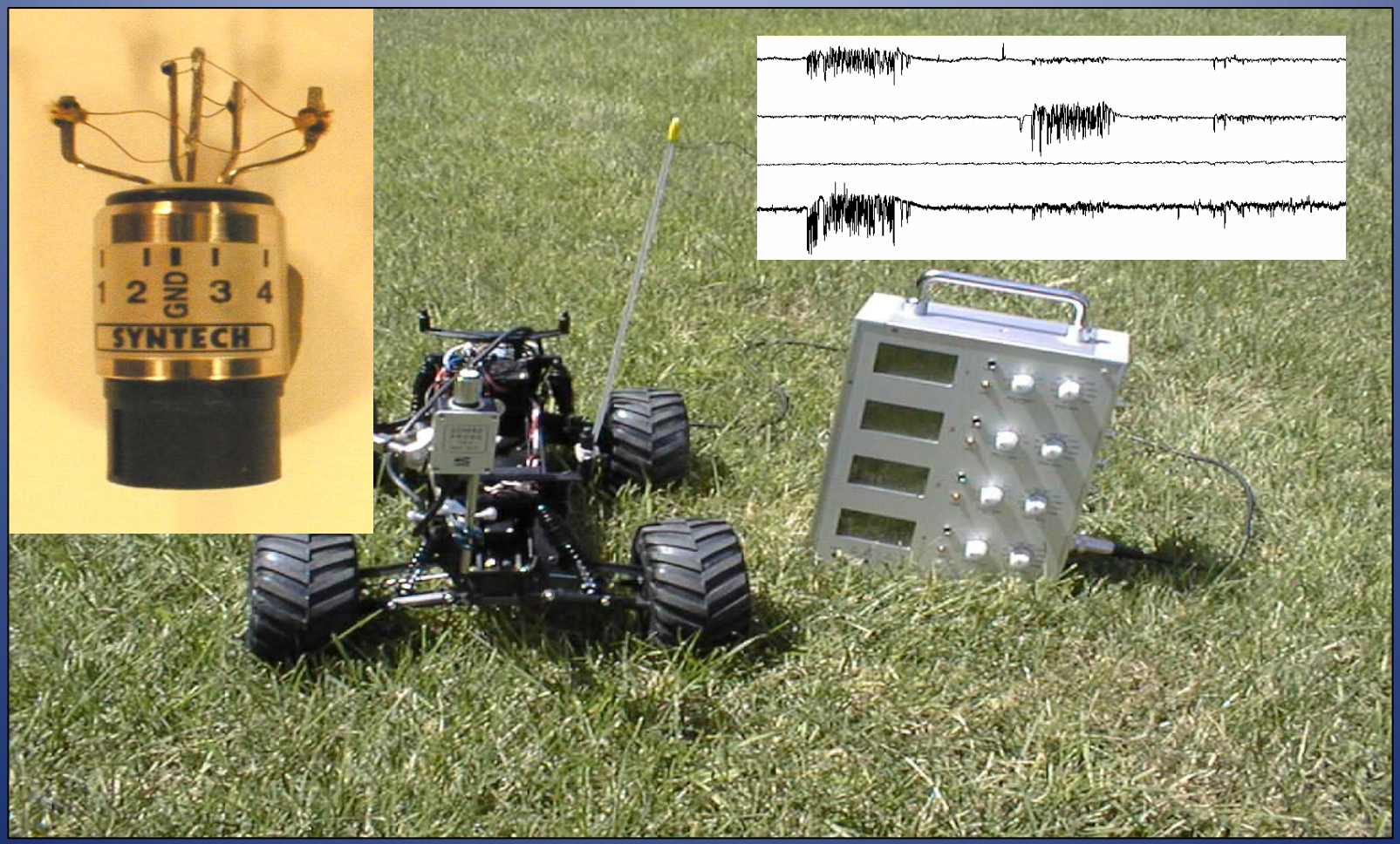
Biosensors: Learning from Nature





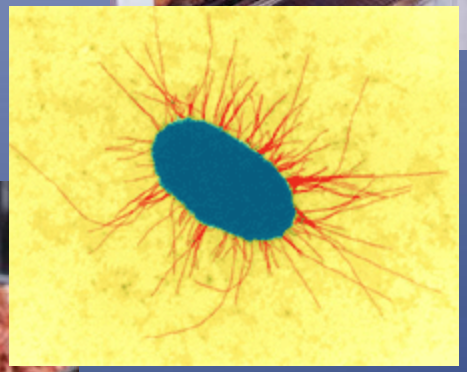
Heliothis virescens male

Biosensors: Learning from Nature

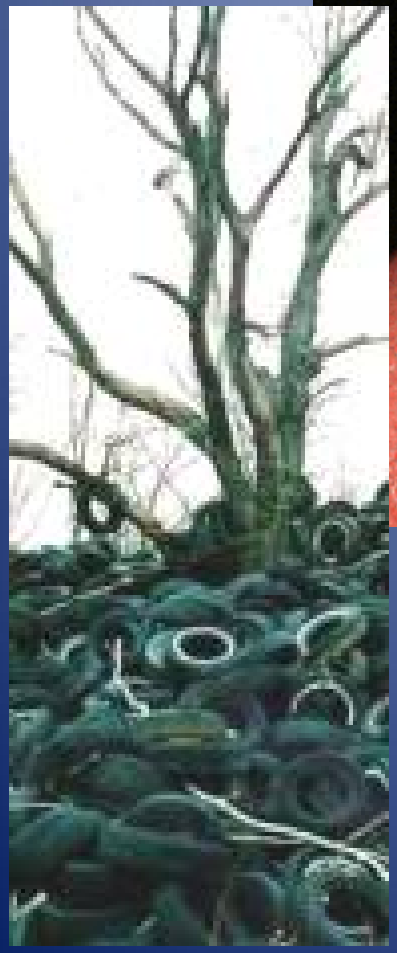


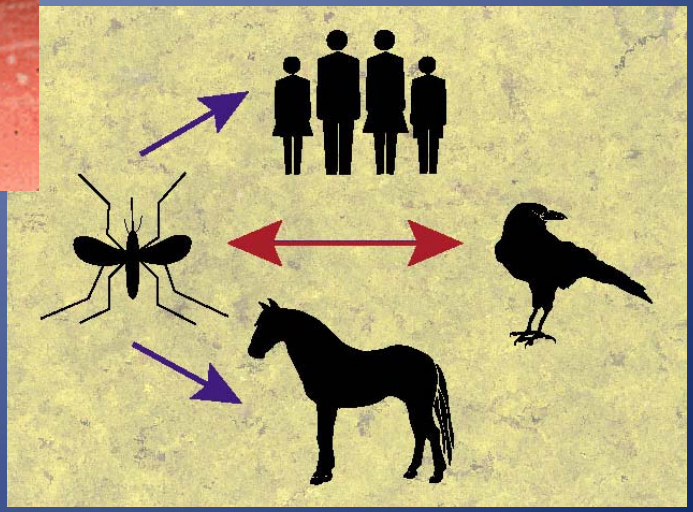
Guarding against Food-borne Disease

Food safety is a continuing research emphasis (HACCP)



Guarding against Human Disease





West Nile Virus

Guarding against Animal Diseases

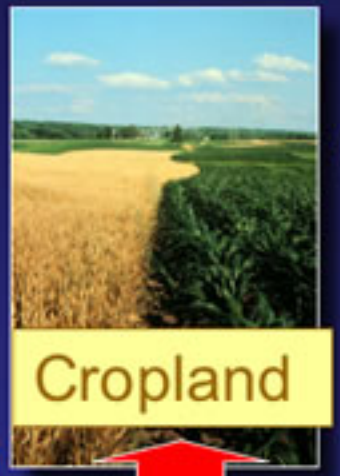
- A variety of animal diseases have been in the news recently
  - Recognition
  - Diagnosis
  - Response
  - Control
  - Prevention

Guarding against Plant Pests

- Non-disease pests can threaten agriculture

Asian long-horned beetle

Phosphorus Cycle


Cropland

Crops

Animals

People

Manure

Fertilizer

Soil

Biomass to Bioenergy

Switchgrass

Crops and
Crop Residues

Photo credits DOE/NREL
Steve Williams, COAS

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