NDSU Plant Pathology

Department profile:

- 12 research faculty and 4 Extension faculty, mostly aligned by commodity. Based in Walster Hall.
- Research and Extension activities on the causes, effects, diagnosis and management of plant diseases and insect pests of economic importance.
- Nationally-recognized faculty, including first full-endowed faculty chair at NDSU. Faculty retention is a worry.
- Essentially all research programs have lab, greenhouse and field components.
- Collaborations include: 1) work with breeders to develop disease-resistant germplasm and cultivars, and 2) work with RECs and industry to develop improved and sustainable management strategies for diseases.
- Approximately 50 graduate students.

Capital Need: New field crop research facility and field equipment storage facility.

- Waldron Hall and many other facilities are dated and not designed for modern research.
- New facilities would:
  - support research aimed at identifying efficient and sustainable disease management strategies for ND crops.
  - reduce pressure on laboratory-based projects in Walster Hall.
  - improve segregation of field and lab activities.
  - improve field equipment storage.

This third floor Walster Hall was designated a "room" so fire codes are not violated by equipment in the hallway. Equipment housed here is used daily.

Several Walster Hall labs accommodate limited equipment and only a few people at a time. This picture was taken just inside the doorway.

The main departmental field storage shed is small and dated. Doors are 9 feet high so limit size of equipment that can be stored.

Major Programmatic Updates/Challenges

1. Reduction of 5.5 FTEs in department on appropriated dollars.

- Landscape plant pathology faculty and technician positions eliminated.
- Cereal rust pathology faculty position vacant and frozen.
- Biotechnology technician eliminated.
- 1.5 office staff FTE eliminated. Office staff workload and responsibilities are problematic.

2. Pulse Pathology Workload.

- Dry bean pathology program became dry bean and pulse pathology program several years ago.
- Pathology program that once interacted with one breeder and one commodity group now interacts with two of each.
- Diseases within the research portfolio increased from a handful to potentially dozens.

Plant Pathology is highly supportive of increased efforts in the AES with regards to agrobiomes and precision agriculture.

1. Agrobiomes

- Plant health is influenced greatly by interactions with micro-organisms.
- Pathology historically has focused on the specific interaction of a plant and a single, isolated pathogen.
- Recent advances have demonstrated that the microbial community *en masse* influences overall plant health - many micro-organisms are beneficial to plants.
- In the last year, American Phytopathological Society (APS) has launched:
  - Phytobiomes Roadmap.
    - "sustainable crop productivity (by) understanding diverse interacting components."
    - "Phytobiome" is a component of the agrobiome.
  - Phytobiome Journal.
  - Phytobiomes Alliance (an industry/academics collaboration).

2. Precision Agriculture

- Fungicides remain an integral part of IPM of plant diseases.
- Faculty are engaged in field-based research to identify sustainable, economic and efficient methods to control plant diseases.