Microbial Forensics in the NPDRS

Role of forensics in recovery plans:

Somewhat philosophical discussion of where forensics best fits into the biosecurity continuum of prevention, preparedness, response, and recovery, Realizing that NPDRS should be broader than recovery in the strict sense, a strong rationale can be made for inclusion of forensics in NPDRS:

- Forensic tools can be useful for pathogen detection/ ID; example: increased awareness for the need for multi-locus methods
- Better pathogen ID can lead to more targeted management (e.g., cultivar deployment; could pathogen be reintroduced repeatedly?)
- Routine detection assays will benefit from validation/ standardization standards required for forensic applications
- Need for training programs for first detectors and responders
- The justification for a scope of the NPDRS beyond just recovery was made

Some impediments relative to including forensics in recovery plans:

- If one takes a narrow view, forensic efforts more related to response than to recovery (but see comment on scope of NPDRS, above)
- Need to collect forensic evidence might conflict with efforts for speedy recovery
- Forensics and recovery can occur independently and concurrently
- Type of high-level typing needed for forensics generally not necessary for pathogen detection, ID, and management
- Forensics may be more relevant to NPDN and first detectors than recovery

Conclusions: Authors of recovery plans should be mindful of aspects of their pathosystems that would be relevant to forensics. On the flip side, also need to catalog components of forensics that will have to be part of prevention, preparedness, response, and recovery. An attempt at doing this is given below:

Prevention:

- Forensic capability as a deterrent (capability)

Preparedness:

- Training/ sensitization of first detectors/ responders
- Need for better and more discriminatory diagnostic tools, data bases, SOPs, nd resources such as culture collection, …
- Networks of scientists/ law enforcement/ security community
- Incentives for producers to report new and unusual outbreaks (industry, growers)
- Need for pathogen prioritization for focus by law enforcement

Response:

- Training of agricultural community, security community to look outside the box
- Actual application of forensic tools

Recovery:

- Better ID and diagnostic methods feeds back into improved management (e.g., cultivar deployment)
- Inform plans for better protecting the system/crop from a subsequent outbreak – can be more effective if it's known how the first one happened

What are the elements of a recovery plan that inform forensics:

- Information in recovery plans will be useful for forensics so authors should consider forensic applications; logistics of report writing could be more difficult if law enforcement/ security community were involved but could happen

Alternate approach:

Consider an NPDRS initiative, apart from the specific individual recovery plans, that would address general features of the overlap of forensic needs and response/recovery needs.