Risk and Probability

Risk

- Risk = Likelihood X Impact

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Pest Risk Assessment

– What bad thing could happen?

- Pest categorization

– How likely is it to happen?

- Potential introduction & spread

– How bad will it be?

- Potential economic & environmental effects

Risk

- Risk = **Likelihood** X Impact

  - Likelihood
  - Potential
  - Probability
  - Quantitative or qualitative

  - Relative possibility of the event

Risk

- Risk = Likelihood X **Impact**

– Economic or economic impacts

– Effects

– Consequences

– Quantitative or qualitative

– Relative magnitude of the event

Qualitative vs. quantitative pest risk assessments

- Qualitative pest risk assessments:
  - Non-numerical terms
  - Descriptive words
  - Highly adaptable
  - Most commonly used method

  - Challenge to be consistent & use terms that are interpreted consistently by others

- "The pest is highly likely to be present on fresh fruit imported from …."

- "The pest is expected to have negligible effects on market sales"

- "Outbreaks will be as frequent and serious as outbreaks of the native pest…."

Qualitative vs. quantitative pest risk assessments

- Quantitative pest risk assessments:
  - Numerical terms
  - Measurable
  - Assigns values to variables
  - Programs for modelling likelihood or impacts (e.g., @Risk, Crystal Ball)

  - Challenge to obtain data or defend selection of values for variables

- "The pest is expected to be present at detectable levels in 99 seed shipments out of 100"

- "There is an 85% chance of losses equalling or exceeding 1.2 million bushels per annum"

- "Outbreaks are projected to occur once in every 300 years 95 times out of 100"

Choosing the right methods

- Each method has pros & cons
- May use a combination of methods to address different parts of the assessment
  - Quantitative to assess likelihood along different pathways
  - Qualitative to assess impacts
- Method selected depends on many variables
  - Urgency of the issue
  - Seriousness of the issue
  - Availability of resources & expertise
  - Availability of data
  - Needs of the NPPO
  - Sensitivity of the issue
- **Focus this week will be on qualitative pest risk assessment**