

A plant health risk assessment toolbox “wishlist”*

Problem:

- Apart from @Risk and similar software, general modelling tools for risk assessment do not exist. Tools designed for other purposes are applied with mixed results. In most cases where advanced tools are used (except for species distribution models), these are custom created, and development period may exceed available time.
- Risk assessors do not advertise their requirements as a group, but instead partner on individual projects.
- As an example, the species distribution modelling software *Maxent* has been a boon for risk assessors – freely available, relatively easy to use and useful enough, if not exactly fit-for-purpose.

Potential solution:

- Create a list of risk assessment modelling tools that are in wide demand throughout national plant health risk assessors, and advertise it to the community of modellers.

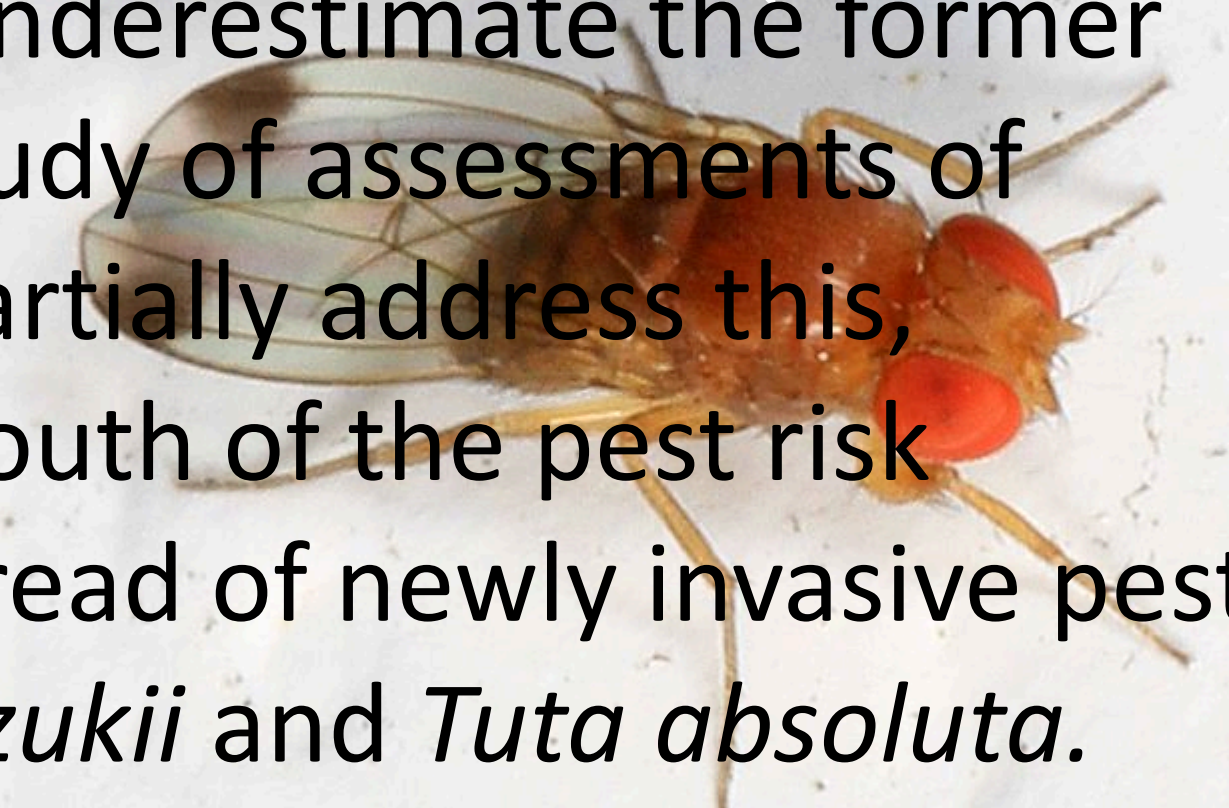
Methodology:

- Through the Plant Health Risk Assessment listserver (PHRA-L@WWW.AGR.GC.CA), survey the 155 members of the list and ask what tools they would specifically like to see in generic format.

Results:

- **Responses:** Surprisingly few responses were received. Some contradicted each other. For example, tools to aid in the prediction of import volumes, perhaps based on consumer trends, was considered important by some, but one NPPO no longer considers import volumes as a reliable coefficient of risk because of potentially wide fluctuations.
- **Pest transfer:** A **generic model for the potential for pest transfer** from a commodity or fomite to the environment was an agreed “need”, as estimating this potential is a weak spot of many assessments. Some with the capability build custom @Risk models, but a generic model (whether @Risk-based or not) would be seen as welcome by the community.
- **Consequences of introduction:** Impacts of pests are often overestimated; **models are required to estimate the net impact** after considering existing plant health measures and discounting for future spread.
- **Summary maps:** A **canned or GUI programme that logically summarizes the outcomes of several mapping exercises** (such as species distribution models) suitable for presentation was also suggested.

- **Economic modelling:** a weak point in some risk assessments – risk assessors tend to be biologists or ecologists. @Risk or canned **programmes that create useful economic models** to aid in assessing consequences of pests would be useful.
- **Environmental impacts** are also only weakly addressed, if at all, in many or most assessments. Often this is due to lack of data, but also due to a lack of an ability to value the environment in a manner comparable to that used to value industry or economy. Losses in ecosystem services are only addressed in generic terms, and are often underestimated, if addressed at all. **Models combining pest spread and ecosystem values** would be very useful aids in addressing this.
- **A specific one-time project** was also suggested to **examine the realities of likelihood and impacts** – risk assessors often underestimate the former and overestimate the latter. A retrospective study of assessments of organisms that eventually established could partially address this, however this is probably complicated by the youth of the pest risk assessment process and the relatively slow spread of newly invasive pests. Exceptions are to be found: e.g. *Drosophila suzukii* and *Tuta absoluta*.



* Or, what every plant health risk assessor wants for Christmas