



WEED RISK ASSESSMENT AND EVALUATION PROTOCOLS: AN INTEGRATED APPROACH



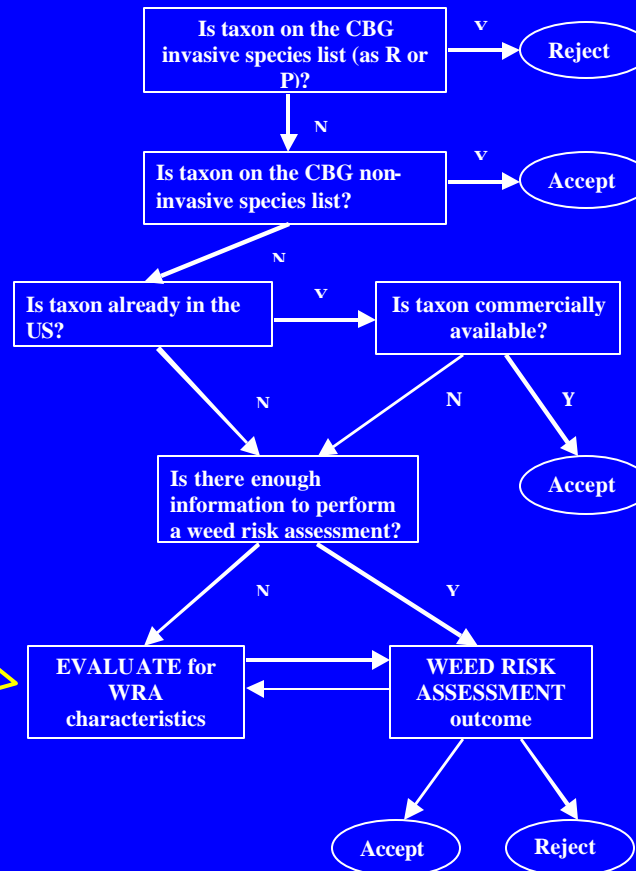
Kayri Havens, James Ault and Lara Jefferson

Chicago Botanic Garden, 1000 Lake Cook Road, Glencoe, IL 60022, USA

Background

- Invasive species have been recognized as a severe threat to biodiversity and cost the United States (U.S.) approximately \$35 billion per annum. Because of these environmental and economic risks, organizations and individuals importing plants into new regions should evaluate plant introductions for their potential to escape cultivation and invade natural areas.
- Current weed risk assessment (WRA) models used in the U.S. are not precise enough to provide a “yes” or “no” answer for woody taxa, and have not yet been developed specifically for annuals and herbaceous perennials. We tested WRA models to determine their effectiveness for the Chicago Region and selected one for use in Chicago Botanic Garden’s invasive screening protocol that includes the use of regional invasive plant lists, commercial availability, WRA and on-site evaluation of plants.
- By using this integrated approach, we have implemented a screening protocol that promises increased confidence in predicting invasiveness, is time and space efficient, and user-friendly.

CHICAGO BOTANIC GARDEN MODEL



Seed Biology Traits:

- Dormancy (Y/N, type)
- Survival outdoors over winter
- Longevity on/in soil

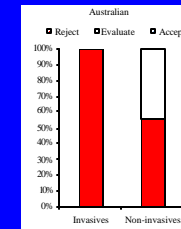
Plant Biology Traits:

- Duration from seedling to reproductive maturity
- Self compatibility (Y/N)
- Potential fruit/seed dispersal
- Survival outdoors over-winter
- Vegetative spread (Y/N, rate)

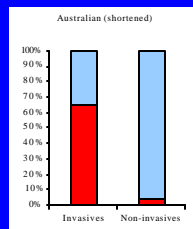
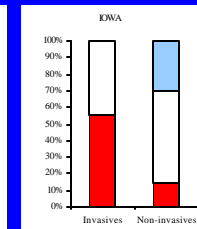
Weed Risk Assessment Protocols

Three protocols tested:

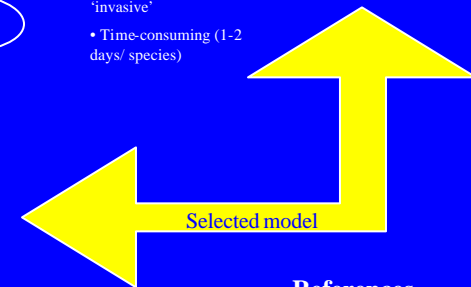
- I. Australian (Pheloung et al. 1999)
- II. IOWA (Reichard and Hamilton 1997, Widrlechner 2002)
- III. Shortened Australian (Peter Williams Pers. Comm.)



- Large % of non-invasives classed as 'invasive'
- Time-consuming (1-2 days/ species)



- No evaluation category
- Not widely tested



References

- Pheloung, P.C., Williams, P.A. and Halloy, S.R. 1999. A weed risk assessment model for use as a biosecurity tool evaluating plant introductions. *Journal of Environmental Management* 57, 239-251.
- Reichard, S.H. and Hamilton, C.W. 1997. Predicting invasions of woody plants introduced into North America. *Conservation Biology* 11, 193-203.
- Widrlechner, M. 2002. Developing a comprehensive strategy to assess the risk of non-native woody plants in IOWA. The 7th Annual Janet Meakin Poor Research Symposium. Invasive Plants: global issues, local challenges. Chicago Botanic Garden, Chicago, IL. 27-30 October 2002.