

SHOULD WE CONSIDER SOME CROP WEEDS AS INVASIVE? Douglas Doohan, Associate Professor, Department of Horticulture and Crop Science, Ohio State University, 1680 Madison Avenue, Wooster, OH 44691.

Weed ecologists are an anomaly in the culture. Who else asks of a new plant species encountered in the field for the first time, 'is this the next big thing?'. That question and all it implies is couched within the word *invasive*. When we use the word *invasive* we are communicating to each other and to our stakeholders something ominous and potentially threatening about the species at hand. At the simplest level we are communicating that something is different and deserves close attention and possible action. The *invasive* designation also conveys powerful political content; in the sense of possible regulation and funding for research and containment. In the past we might have used the word *noxious* to describe similar species, conveying similar notions about the potential risks and opportunities.

Case histories are instructive as we consider the question. The witchweed (*Striga asiatica*) eradication program is an excellent example. The date of witchweed introduction to the US is unknown; however, symptoms of what later was confirmed to be witchweed parasitism of corn showed up in NC between 1946 and 1950 (Patterson 1990). The cause of the syndrome, described as an 'unknown disease of corn that caused symptoms similar to drought damage' was not identified until 1956 (Sands 1990). At the peak approximately 164,000 ha of land were infested in the Carolinas. More than \$250 million of federal and state funds have been used to contain and eradicate the species. Fewer than 3000 ha are still in quarantine (Eplee 2001). Cost benefit studies strongly support the use of taxpayers funds in the witchweed program. The witchweed story clearly illustrates the importance of raising the alarm and using the appropriate terminology that is currently being accepted by the various stakeholders. If you don't agree immediately with this conclusion, imagine most of the cornbelt with witchweed (Patterson 1990).

The weed ecologists conundrum is distinguishing real threats from imaginary ones. It should be no surprise that our professional opinion is far less important than that of our principal stakeholders, the farmers and ranchers of America. Farmers will not be convinced that a new weed should be taken seriously for many reasons. For one thing they are experienced in managing weeds and generally do not consider them particularly threatening or unusual. Also in the current research funding environment they are reluctant to see expenditures on problems that are not immediate. This is a form of the NIMBY (not in my back yard) mentality. Conflicting values and the resultant actions that various individual stakeholders, groups and agencies are willing to take are huge obstacles to managing invasive plants.

Characterizing the *invasive* potential of many species, enacting and enforcing regulations, surveillance, containment and eradication are costly to society and to individuals. Transferring costs to the future is also costly and in the case of *invasive* species the costs escalate as time marches on. Other costs, often overlooked in the management of agricultural resources, are externalities. Externalities are those costs that must be borne by other individuals and by society at large. In the case of *invasive* weeds of cropland those would include spread to non-infested land and possibly the need for more intensive herbicide application with associated off-target impacts. At Ohio State

University we hope to apply risk analysis to the challenge of aligning individual farmer incentives and the societal goal of preventing invasion. Risk analysis is composed of 3 steps: science level risk assessment, risk management (selection of policy instruments and evaluation of their effectiveness) and risk communication (an interactive exchange of information and opinions concerning risk among risk assessors, risk managers, consumers and other interested parties (Codex 1997)).

New weed species that show up in cropland should be considered potentially invasive. Most will likely prove to be innocuous. A few may permanently degrade the agro - ecosystem if allowed to spread. Much research is needed to develop better tools to characterize the invasive potential of species and the vulnerability of agro-ecosystems. Funding at this time is barely adequate to probe the relevant questions. Weed ecologists and those involved in weed management should carefully consider how to most clearly communicate the risk of invasive species of cropland and the benefits from prevention. In my opinion spending time interacting with the principle stakeholders – the farmers and ranchers of America is probably the key.

#### Literature Cited

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