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Weed Science Surveys I: Problematic Plants

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Surveys are an important tool to acquire information from large groups. They are used in politics (Gallup Poll), marketing (the person that stops you in the mall ask questions), government (US Census Bureau), television rating (Nielson ratings) and science. Surveys can be conducted by sending out a mail-in survey, over the internet, or by contacting people directly. In some cases surveys are conducted by going out and making observations, for example weed identification and density in grower's fields. In most cases, they are used to obtain information for a large group by sampling a subset group within the larger group. One of the hardest aspects of

In the case of voluntary surveys, large numbers are often contacted to obtain a minimum number of people that need to respond to provide an adequate subset. The number of surveys sent out is related to the amount that you expect to get back. Survey response rates can be from 5 to 30%^{1,2,3,4}, but the trick is to send out enough that you get the required number of responses to make the survey valid.

The Extension Weed Science Team at Purdue University has used surveys in the past to investigate problematic weeds, the perception of growers with resistant weeds, the distribution of resistance weeds, and the management

Table 1. Top ten problematic weeds in Indiana,

1996	2000	2004
giant ragweed	giant ragweed	giant ragweed
Canada thistle	Canada thistle	common lambsquarters
hemp dogbane	Johnsongrass	Canada thistle
common lambsquarters	common lambsquarters	common cocklebur
horseweed (marestail)	shattercane	velvetleaf
Johnsongrass	hemp dogbane	horseweed (marestail)
burcucumber	burcucumber	waterhemp
shattercane	velvetleaf	burcucumber
giant foxtail	common ragweed	common chickweed
fall panicum	common cocklebur	dandelion

designing a survey is being sure that you have equal representation of the large group in the smaller subset. For example, how many randomly selected fields do you have to survey to get the "bigger picture" of what is actually going on across a large area? How many homes does Nielson Media Research have to survey to get the best representation of everyone in the US.

of resistant weeds. The following series of articles will touch on some of the surveys that have been done and present some results from these surveys. In 2004, one such survey asked growers what their primary pest was. An average of 78% of respondents reported that weeds were their highest ranked pest, followed by insects and disease at 8%, and nematodes at 6%⁵.

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The following series of articles over the next several weeks, will explore some of the surveys that the weed science team at Purdue University have done and published. The first, one that has been written about in the past, investigates the problematic weeds in the state of Indiana.

The Purdue University Cooperative Extension Service has been using surveys for many years to determine Indiana's top ten most problematic weeds in agriculture and to try and identify any shifts in the weed spectrum. Surveys were mailed out in 1996, 2000, and 2004 to growers, county educators, and consultants, to identify the problematic weeds in Indiana^{5,6}. Although there are some additions and subtractions from year to year and some changes in rank, the usual suspects are generally present. Giant ragweed, Canada thistle, common lambsquarters, and burcucumber always make the list. One trend that is seen in the list of weeds is the removal of the annual grasses giant foxtail and fall panicum. Although giant foxtail is very

common in Indiana, the introduction of Roundup Ready[®] soybean and glyphosate as an in crop herbicide in 1996 provided an effective tool to control giant foxtail. Johnsongrass is also notably missing from the 2004 results. It might be suggested that the presence of horseweed (marestail) in 1996, its disappearance in 2000, then the reappearance 2004 mirrors the introduction of glyphosate then the development of glyphosate resistance in that plant in the state of Indiana.

In the 2004 survey, winter annuals were included as a selection, adding common chickweed as the number one problematic winter annual. In the same survey, results were broken down across the state into nine regions. This allowed for investigation of regional differences across the state. Dandelion was highly ranked in the north and central eastern parts of the state, while velvetleaf was ranked high in the northern parts of the state when compared to the southern parts.

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2. Czapar, G.G., M.P. Currey, and L.M. Wax. 1997. Grower acceptance of economic thresholds for weed management in Illinois. *Weed Technol.* 11:828-831.
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4. Norsworthy, J. 2003. Use of soybean production surveys to determine weed management needs of South Carolina farmers. *Weed Technol.* 17:195-201.
5. Gibson, K.D., W.G. Johnson, and D.E. Hillger. 2005. Farmer perceptions of problematic corn and soybean weeds in Indiana. *Weed Technol.* 19:1065-1070.
6. Nice, G. and B. Johnson. 2005. Indiana's top ten most problematic weeds. Web Address: <http://www.btny.purdue.edu/weedscience/2005/topten05.pdf>

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Other Articles Available on The Purdue Weed Science Web Page

1. [Identification of Six Alternative Winter Annual Weed Hosts for Soybean Cyst Nematode](#)
2. [Late-Season Postemergence Issues in Roundup Ready Soybeans](#)
3. [Asiatic Dayflower Pretty But Hard to Control](#)
4. [Morningglory Control in Roundup/Glyphosate Tolerant Corn](#)
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