# Interactive Weed Identification Database Created for Wisconsin

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Have you ever had difficulty identifying a plant and found yourself flipping through pages of a plant identification book looking for a matching picture? This is a common method used, but is not very efficient. Partially because I got tired of doing this myself, I have created a new online weed identification tool to help with weed and invasive plant identification. The database contains 280 of the most common weeds/invasive plants found in agricultural, urban, and natural settings in Wisconsin. The database can be accessed (for free) by going to the website http://weedid.wisc.edu . Once you arrive at this website click on the Weed ID Tool on the left column. The database is organized to ask questions about the unknown plant and based on the user's input, the website will produce a list of plants (scientific and common names) along with thumbnail images that match the information entered.

**How does it work?** The website is separated into two steps; first the user is asked if the plant in question is a broadleaf, grasslike, or woody species (See figure 1).

Figure 1: Demonstration of the first step



Once this information is entered it will lead the user to a separate screen that will ask specific questions of each group. Questions ask where it was found as well as specific questions about the growth, leaf, stem, and floral characteristics (see Figures 2 and 3). The user has several answers available to select from a dropdown menu to the right of each question. The user is not required to answer any of these questions, but it is recommended to begin your search by answering just a few questions that are distinct. If selections result in too many plants, continue to answer additional questions to narrow the number of results. It is rare that the selection will result in one plant, but often a list of several result. The user can quickly scroll down the page looking at the images and click on pictures to verify the identification of the unknown plant. Avoid answering too many questions as one incorrect answer can eliminate the desired plant from the results. Therefore, it is better to answer fewer questions that are unique to the plant (such as plants have spines, thorns, or prickles). The user may change answers and re-search the database to narrow or broaden the search. Leaving all questions unanswered will return all species of the chosen weed type contained in the database.

**Example:** I have a weed species that I recognize is a broadleaf plant with purple flowers and a square stem that I found in a wetland (purple loosestrife). Searching all broadleaf weeds would result in looking at images of over 200 plants, but by just entering that this plant was found in a wetland would reduce the number of plants to 86. Entering that the plant also has purple flowers would further reduce the selected plants to 17. If the user also included that plants had square stems only two plants resulted, purple loosestrife and wild mint. The user could then view the images to see which plant best fit the sample. See figures 2-3 for examples of the output.

Typically answering five to six questions can narrow the search to 10 plants or less. In some cases, the search will result in several species that are very similar and cannot be distinguished by the characteristics the database uses. In these cases it is common that a genus is identified, but the user will need to check other resources on how to distinguish between the species identified in the database.

**Limitations of this tool:** While useful, this tool is limited in several ways. The biggest limitation is that the species must be entered in the database to be found. With over 3,000 plants found in Wisconsin, adding all plants would limit the usefulness of this tool. The goal of this database is to help identify weeds and/or invasive plants, *not all plants of Wisconsin*. This allowed for a smaller set of species (approx. 10%) to be entered and allow for selection of the appropriate species while entering only a few characteristics. Some weed/invasive plants were omitted from this database as species selection focused on commonly found species to Wisconsin. Due to this, new invaders, or species that are not known to be present in Wisconsin have not been included. In addition, ornamental plants will also not appear on this database unless they have been documented to be weedy/invasive in Wisconsin.

**Feedback:** If you use this website please fill out the survey at the bottom of the search page. It asks if the plant was identified correctly, and has a space provided that allows for the user to provide comment. Any information given by the user will help document the usefulness of this tool, and allow for comments on how to improve the database in the future. I also welcome any suggested additions to the database species list, as unfortunately several species that are not currently common in Wisconsin will be so in the near future.

Figure 2: Demonstration of the second step of the weed identification tool for purple loosestrife



Figure 3: Demonstration of the result of the search for a plant found in a wetland/riparian area, with square stems, and purple flower color. Thumbnails can then me enlarged to confirm identification.