# *This template provides section headings and instructions for Weed Science manuscripts. When using the template to format a manuscript, insert your own text and remove this paragraph and the section instructions. Retain line numbering.*

# Short title: Maximum of 30 characters and spaces

# The full title should be no more than 200 characters and spaces, centered, in bold, sentence case and should include words useful in online searches. Scientific names in the title should be given in full (without authority).

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ORCID iD is required for corresponding author. Provide details for each author of professional affiliation at the time the research was conducted, using this format:

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**Abstract**

A single paragraph of no more than 300 words that provides an objective and informative digest of the significant content of the paper, not simply a description of the contents. When a plant is first mentioned, give the scientific and usual common names e.g. large crabgrass [*Digitaria sanginalis* (L.) Scop.] or soybean [*Glycine max* (L.) Merr.]. After first mention, use abbreviated scientific names (e.g. *D. sanguinalis*), and use the common name for crops (e.g. soybean). Refer to the USDA Plants Database ([https://plants.usda.gov](https://plants.usda.gov/)) for plant names. For microorganisms and animals, at first mention use the common name and scientific name without author, and the abbreviated scientific name thereafter. Do not include citations, tables or figures. At the first mention of a herbicide rate, express the rate either on the acid equivalent (ae) basis or active ingredient (ai) basis. Omit trade names for herbicides, other pesticides, and surfactants or other adjuvants in the abstract.

**Keywords:** Up to8additional words from the manuscript that will direct online searches to the article. Alphabetical, lower case.

**Introduction**

Begin on a new page. The Introduction should provide context for the work presented in the manuscript by reviewing other relevant research and citing key references. Include a summary of the research goals or other aims of the work. Follow the instructions in the Abstract section for first and subsequent mentions of plant and animal names in the Introduction and the rest of the manuscript.

**Materials and Methods**

This section should provide sufficient information to allow others to replicate the research described. **Any use of AI tools in manuscript preparation, including large language models such as ChatGPT, must be described in this section.** Describe novel methods in detail; established research protocols can be described more briefly and appropriate citations provided. **The design of experiments reported here should allow appropriate statistical analysis; in most cases that requires replication in time and/or space.** Show sources of materials in parentheses following the first mention; for equipment, provide a brief description of the item, model number (if applicable), and the source. Example: Plots were treated with glyphosate (Roundup WeatherMax®, 540 g ai L-1, Bayer).” Commercially available software packages (e.g. SAS/STAT) should be cited in this way and not in the references. Freely available software described in the peer-reviewed literature (e.g. R) should be referenced by citing the relevant article in the text and in the references section. If five or more herbicides are mentioned, list them in a Table providing herbicide common and trade names; herbicide formulation (if necessary); herbicide rate(s) in active ingredient or acid equivalent; name of respective herbicide manufacturer; and herbicide manufacturer city, state, and website. Include latitude and longitude coordinates for field locations by specifying the coordinates in parenthesis e.g. “Vegetable Crop Research Farm in Champaign, Illinois (40.08⁰N, 88.26⁰W).”

## Results and Discussion

These are combined as one section, but italicized subheadings can be used.

***Example of a Subheading***

There is no separate Conclusion section. Provide a clear and precise description of the experimental results and how they were interpreted, including details of statistical analyses. Use tables and figures where appropriate to present data; cite them in the text as Table 1, Figure 1 etc. and attach them to the end of the manuscript (see below). Discuss the results in the broader context of previous research, and describe their implications for the research goals and/or working hypotheses presented in Materials and Methods.

**Acknowledgments**

 Individuals who contributed to the research but who do not meet the criteria for authorship may be acknowledged in this section.

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**Competing Interests**

A competing interest declaration is required. Competing interests are situations that could be perceived to exert an undue influence on the content or publication of an author’s work. They may include, but are not limited to, financial, professional, contractual, or personal relationships or situations. If the manuscript has multiple authors, include competing interest declarations relevant to all contributing authors. Example: “Competing interests: Author 1 is employed at organization A, Author 2 is on the Board of company B and is a member of organization C. Author 3 has received grants from company D.” If no competing interests exist, the declaration should state “Competing interests: The author(s) declare none."

References

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**Table**s

Present each table on a separate page. Use the full scientific name (without authority) for weeds and other non-crop species in the table title. Redefine all abbreviations used in the table, even if the definition has already been given in the text. All text within each table should be in lower case letters except for the first word of a phrase or sentence, and proper nouns that should have initial capitals. Column headings should relate to data or information in the body of the table. For additional formatting details see: <https://www.cambridge.org/core/journals/weed-science/information/author-instructions/preparing-your-materials>

**Figures**

Attach figures to the end of the manuscript with the figure legends (as editable text) directly beneath them. Color graphics and color photographs are welcome. Use scientific names in full (without authority) in figure legends for weeds and other non-crop organisms. Include data points with plotted curves, and provide equations with predicted curves or in figure legends. If an explanation of symbols is required, include the key in the figure. Scale bars included in photomicrographs should be placed directly on the image. For details of image formatting and acceptable file types, see <https://www.cambridge.org/core/services/authors/journals/journals-artwork-guide>