

How to Maximize Weed Management

1. **Ask this question first: Were weeds present at harvest last year in any of your fields?**
 - A. Suspect most plants of **kochia, waterhemp, wild oat, common ragweed, and green foxtail** present at harvest to be resistant to the herbicides applied, particularly herbicides in Groups 1, 2, 4, 5, 9, 14, and 27. Acknowledging the presence of resistant weeds in a field is critical to maximizing weed management.
2. **Choose the right herbicide PROGRAM, NOT just a single herbicide or single herbicide application.**
 - A. PRE followed by POST herbicide program whenever possible.
 - B. Choose the most effective herbicides based on resistant weed types in the field.
 - C. Apply multiple herbicide sites of action in each application where possible.
 - D. PRE herbicides almost always provide some weed control even with reduced rainfall.
 - E. **Any reduction** in weed density from PRE herbicides almost always improves POST herbicide activity.
 - F. Apply residual herbicides in first POST application to control late emerging weeds where possible.
3. **Apply maximum recommended herbicide rates, NOT minimum rates where possible.**
 - A. Consider soil types, organic matter, and/or pH for proper rates of soil-applied herbicides.
 - B. Consider crop growth stage and environmental factors when choosing herbicide rates and adjuvants, especially for minor crops.
 - C. Evaluate pre-mixture herbicides making sure most effective active ingredient rates are applied.
4. **Apply ALL POST/Burndown herbicides when ANNUAL weeds are less than 3 inches in height.**
5. **If weeds are present in no-tillage fields, in most cases, apply burndown herbicides preplant, NOT after planting.**
 - A. Must start with a weed-free seedbed prior to planting or at least prior to crop emergence.
 - B. Apply herbicides in the fall to control winter annual, biennial, and perennial weeds and obtain some early-season control of certain annual weeds (i.e. kochia, horseweed, wild oat) in no-tillage fields.
6. **Apply herbicides using the proper spray volume.**
 - A. Apply 20 GPA spray volume for ALL contact herbicides, especially glufosinate and paraquat.
 - B. Always follow label directions for spray volume.
 - C. Increase spray volume when increasing droplet size, even for translocating herbicides.
 - D. Greater weed densities and/or taller weeds **require** a greater spray volume.
7. **Scout every field before and after each herbicide application.**
 - A. This includes burndown and PRE herbicide applications.
 - B. Scout 5 to 10 days after each herbicide application.
8. **Medium to coarse spray droplets usually provide the most consistently effective weed control.**
 - A. Must follow ALL label directions for nozzle type AND spray droplet size.
9. **Use PROPER adjuvants AND rates as recommended by herbicide label.**
 - A. Use full recommended rates of spray grade AMS for glyphosate and glufosinate.
 - B. AMS replacements are usually less effective for glyphosate and glufosinate and some other herbicides.
 - C. **Not all** adjuvants are created **equal**. Use the best adjuvant, not the cheapest adjuvant.
10. **Sprayer travel speed**
 - A. Slower travels speeds (<8 mph) are critical for tall weeds, dense weed populations, field borders and contact herbicides.

- 11. IF a second POST herbicide application is necessary, apply 14 days after the first application.**
- 12. Water source and temperature (cold most detrimental).**
 - A. Hard water ions tie up herbicides, particularly glyphosate and glufosinate, but others as well.
 - B. Soil particles in water tie up glyphosate and paraquat.
- 13. Vertical tillage almost never controls ALL weedy plants NOR properly incorporate PRE herbicides.**
 - A. Weeds surviving tillage are more difficult to control with POST herbicides.
- 14. Sprayer operation.**
 - A. Maintain proper boom height. In most cases 20 to 25 inches above target. Nozzle angle impacts height.
 - B. Check sprayer calibration frequently. Don't just look at total spray volume applied.
 - C. Check each nozzle multiple times during the growing season and replace worn nozzles.
 - D. ONLY use nozzles designed for use with Pulse Width Modulation (PWM) sprayers.
- 15. Apply POST herbicides at Delta-T values between 3.6 and 14.4 and please do not apply at greater than 18.**
 - A. Delta-T values are based upon humidity AND temperature.
 - B. Delta-T values change throughout the day! Check before spraying the next field.
- 16. Apply herbicides at proper time of day, especially glufosinate, glyphosate, and paraquat.**
- 17. Mix herbicides in the proper order according to herbicide label(s) to improve weed control or use the A.P.P.L.E.S. method in the ND Weed Control Guide (page 86).**
 - A. Fill clean spray tank at least half-full with water before adding any products.
 - B. Begin agitation and continue until spray solution has all been sprayed out.
- 18. Please remove all surviving plants in fields before seed production begins and/or prior to grain harvest.**
 - A. Combines quickly and easily spread weed seeds farther into a field and into other fields.
 - B. Weed seeds spread by water, wind, animals, equipment, and humans.
- 19. Manage weeds in each field, not the entire farm.**
- 20. Plant a greater diversity of crops in the crop rotation.**
- 21. Use all possible methods of weed control, not just herbicides alone.**
 - A. Cultural practices are critical to improving weed control. Goal is quick crop canopy closure.
 - B. Use mechanical, robotic, weed seed destructor, and other weed control methods.
- 22. Practice field margin weed management since greater weed density is usually near field borders.**
 - A. Outside field margin: Mow weeds before seed production and as often as necessary.
 - B. Inside field margin: May need an additional herbicide application or row-cultivate and/or pull weeds.
- 23. Quote: "It's the little details that are vital. Little things make big things happen," (John Wooden)**

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