SeedSCOOP

# Making Decisions Based on Weed Scouting in Corn

Weed management starts and ends with scouting. Timely scouting allows the farmer to know what species of weeds are in the field, where they are, and how severe the infestation is within in the field. Regardless of which weed management tool is used, they all become less effective as the weed increases in size, so the adage, "scout early and often" is certainly true. Scouting helps manage herbicide resistance as weed size can impact the ability of herbicides to control them. The key to successful weed control and scouting is proper weed species identification. Many weeds look similar, but each species may require vastly different management tactics. Weed identification resources are available at https://integratedweedmanagement.org/index.php/iwm-toolbox/weed-identification/.

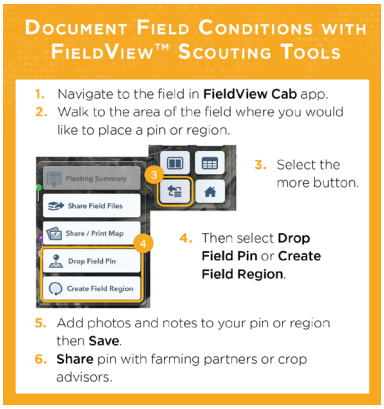
### *What is the best sampling method for assessing weed populations?*

While scouting for weeds can provide accurate and timely information, there is no single scouting strategy that is best for all situations and the scouting program should be dynamic and flexible. Adaptive scouting tactics should be used that build on previous information and experience within a field. The method that is used identify weed species present, weed size and growth stage, type of weed (annual, perennial, grass or broadleaf), and the severity of the infestation. There are many specific applications available for smartphones and tablets that can help support weed scouting. Climate FieldView™ can be used to drop geo-referenced pins. Imagery is provided for any field that is mapped and can help display variability across fields. Imagery can be used to identify potential trouble spots and target where to scout. An effective scouting program is essential to monitor weed populations throughout the growing season. Dark-green imagery can indicate possible weed pressure and where scouting should be considered.

### *When should scouting be conducted?*

- Scouting prior to planting determines what type of burndown herbicide or tillage program should be used. Additionally, this timing can help determine the need to consider a tank mix product that provides early season residual control.
- Scouting after planting assesses the effectiveness of the weed control strategies used prior to planting and if a follow-up application is necessary.
- Scouting should include weed species that are known to be resistant along with any potential resistance development issues noted.[1]

### *What are some of the sampling methods?*[2]




A quick assessment that can be used is the random grid assessment. Drive or walk in grid pattern and stop only where weeds are present. A utility vehicle can help speed up the process. Once a patch is located, the area can be estimated by driving around the perimeter or visually estimating the area. Taking an image of each patch can help quantify the weed density. If using GPS or apps available like Climate FieldView, the precise location of each patch can be recorded. A rougher estimate of the position can be determined by counting rows or using a measuring device. In some cases, splitting the field into smaller areas of similar topography can be used to scout irregular or large fields. The information obtained from this sampling procedure can be used to map the field showing the locations of the weed patches. Some Geographic Information System (GIS) software can be used to determine the percent of the field infested by all the patches or individual patches. This helps to monitor

# *Making Decisions Based on Weed Scouting in Corn*

the size of the patch over time. The advantage of this method is that is relative quick and easy to use, and it works best for perennial weeds. The major disadvantage of this method is that it may not allow the scout to see the smaller annual weeds.[2]

A grid sampling assessment is more time consuming but can provide more specific information.

Data are collected on a uniformly-spaced grid coordinate system. At each grid note, weed density or presence/absence data are recorded in a quadrant. There are several ways to record weed density:

1. **Quantitative.** Recording of the actual weed density for each species, which can be time consuming under high populations.
2. **Semiquantitative.** Counting weeds up to a set number (e.g. 20) for each species. Reduces the time involved in sampling and from a practical sense there is not a difference between 20 weeds and 50 weeds per $ft^2$.
3. **Semiquantitative by groups or types.** Grouping weed types such as grass versus broadleaf, or small-seeded versus large-seeded broadleaf. This can be less time consuming but provides less specific information.
4. **Qualitative.** Assessing if weeds are present or absent at a given point in the quadrant. Very quick but lacks specific information on weed complex.[2]

### *Does scouting pay-off?*

The short answer is yes. A scouting study conducted in North Carolina evaluated the time to estimate weed population densities and effectiveness of herbicide recommendations using four different methods.[3] The windshield (estimate made from the edge of the field), whole-field, (estimate based on walking the field), range (weed densities rated on 1-5 scale at six locations in the field), and actual counts (weeds estimated by counting at six locations in the field). The whole-field method allowed

the scouts to notice a greater number of weed species than the other methods. The windshield, whole-field, and range scouting methods tended to slightly overestimate density at low densities and substantially underestimate density at high densities, compared to the count method. The windshield took the least amount of time to complete (6 min per field), but also resulted in the greatest average loss. The count method had less economic risk than the windshield, whole-field, and range scouting methods.

### *Sources*


[1] Scouting for Weeds. Getting Rid of Weeds. https://integratedweedmanagement.org/index.php/iwm-toolbox/cultural-practices/scouting-for-weeds/.

[2] Clay, S. and G. Johnson. Site-Specific Management Guidelines. Potash & Phosphate Institute. SSMG-15. http://www.ipni.net/publication/ssmg.nsf/0/F9D1A31A5D6F27C6852579E500770B4B/$FILE/SSMG-15.pdf.

[3] Robinson, B., Moffitt, J. Wilkerson, G., and Jordan, D. 2007. Economics and Effectiveness of Alternative Weed Scouting Methods in Peanut. Weed Technology. Vol. 21: 88-96. https://www.jstor.org/stable/pdf/4495815.pdf.