

Weed Scouting

Weeds can interfere with crop production through competition for resources, reduction of crop quality and harvest efficiency, and harbouring disease or insect pests. Generally weed control decisions will be made based on last year's problems or from a quick check in the spring. Knowing the weed composition in a field allows for better planning of weed management strategies in your crop rotation which contributes to a sound weed management program. This can be achieved through weed scouting which is the regular examination of fields in a prescribed fashion to correctly identify and measure weed populations.

The purposes for scouting weeds include:

- to detect the presence and concentration of weeds
- to gather information to make immediate weed control decisions
- to provide field history information to be used for future decision making
- as a requirement for a move to precision agriculture and site specific management

Scouting Procedure

Weeds can be quite patchy within fields. In many cases there may be small areas with high concentrations of weeds while a large area of the field has low populations. This can be contributed to variability in the field such as drainage, topography, soil type, and microclimate. This patchiness makes accurate estimates difficult.

It is impossible to precisely determine the levels of weeds over an entire field. By selecting points for sampling throughout the field one can get a good representation of what is present. To increase the accuracy of sampling more information is better, however, the method must be practical. When scouting you must have a plan which meets your objectives with respect to accuracy, time, and labour constraints.

Typically a "W" pattern is used. Some fields may be irregular in shape and weeds may be concentrated in low, wet spots, or along field margins. In these cases the pattern should be adjusted to give a representative assessment of the weed situation in the entire field. Another method is to divide the field into smaller blocks and scout each block individually.

Generally you should stop at five points along each leg of the pattern, for a total of 20, and randomly select areas to sample. Weed counts or ratings can be recorded on a tally sheet or in a note book. This information will allow you to assess immediate or future risk from problem weeds left uncontrolled.

In a lot of cases weeds are highly aggregated in a field. As you become more comfortable with your procedure and familiar with the field you will know the problem spots and be able to direct your sampling efforts to these areas. To be more site specific in your management these areas can be flagged, matching the correct chemical with the weeds present, and spot spray rather than broadcast the entire field. This can result in better weed control, lower herbicide costs, and increased net return.

Scouting should begin when weeds first emerge and continue weekly until control options are no longer available.

Weed Counts

Data on specific weeds can be either:

- Quantitative-recording the actual density
- Semi-quantitative-counting up to a certain number
 - by species
 - by groups eg broadleaves vs. grasses
- Qualitative-presence of absence of a species or group at a sample site

Quantitative

Quantitative or detailed counts of weed numbers per square metre provide the best record of a weed problem. With high weed numbers control may be economical while at low numbers control may cost more than the return from the crop. The weed threshold value is the point at which the cost of control is paid for in the return from applying the control to the crop. Weed threshold values are generally given on a per square metre basis, however, little or no determination of these values have been conducted in our region. Therefore, the decision to apply controls is generally subjective, based on past experience.

Samples are taken using a 0.25 m² quadrat at each stop in a field. These can be made from a 150 cm length of rod bent to form three sides of a square. The quadrat should be sprayed a bright colour so it can easily be found when placed or dropped. At each stop the areas to be counted should be randomly selected by tossing a stick or ball. Weeds are counted at each of the stops and averaged by species for all samples from the field. This number is then multiplied by four to give the number of weeds/m².

Semi-quantitative

If detailed counts are not possible weeds can be counted and categorized, or with experience a visual rating system can be useful, such as follows:

Few- one to four weeds or clumps per square metre;
Common-five to 19 weeds or clumps per square metre;
Abundant- 20 or more weeds or clumps per square metre.

Qualitative

With qualitative sampling the presence or absence of a weed species is recorded at each sample area in the field. This is the most rapid method of surveying a field. It will give an indication of distribution in a field but does not reflect the severity of weed infestations.

The Weed Map

A general map of your field, either hand drawn, from a Global Positioning System (GPS), or reproduced from aerial photographs is required. For reference include any landmarks, such as roads or ditches, along with compass directions and a field name or number. Mark off sections where the weeds are present and label with weed codes and indicate their distribution and abundance. Record the growth stages of the weeds and general observations of other weeds within and outside the field along with persistent problem areas. Transparencies can be placed over your base map allowing easy comparison from year to year allowing you to assess

management decisions.

Weed Species

Individual weed species can be assigned letters or symbols for recording on the weed map. A table should be made so that there is no confusion with whatever system is used. If uncomfortable with identification of seedlings plan your field work to coincide with flower periods, as species are more easily identified at this time.

Producers should have a zero tolerance for any new weeds to a field. These should not be allowed to become established, especially those which are strong competitors, toxic, interfere with harvesting, or lower crop quality.

Growth Stage/Life Cycle

Recording the growth stage/life cycle of the weeds can be important and when considering the timing of particular control options. You may want to time treatments to discourage any further spread of some weeds. Annual, and many biennial weeds, reproduce by seed so control should prevent the ripening of seeds. Perennial weeds may reproduce by seed or vegetatively by rhizomes, tubers, etc. so effective management should consider all means of reproduction.

Useful Tools for Weed Scouting

The following basic items are helpful when scouting:

- field maps
- note pad or tally sheet
- pencil
- flagging tape
- weed reference materials

If samples must be collected for identification ([link to Collecting Plant Samples fact sheet](#)) some additional items may be required as follows:

- hand trowel
- sharp knife
- hand lens
- plastic bags
- marker
- plant press