



Agricultural Research and Extension Council of Alberta

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Crop Scouting

Crop scouting provides specific information on the presence of pests or crop injury and crucial information on the timing of control measures.

Unfortunately, it is very easy to misdiagnose a crop problem. This is because, to the untrained observer, herbicide injury, diseases and insect damage look similar. Poor plant emergence can be caused by diseases, soil compaction, improper planting depth, insects or herbicides. Wilting plants can be caused by insects, diseases or drought stress. Therefore, if in doubt, consult with a professional agronomist. This could prevent increased costs from the application of unnecessary pesticide.

Crop or field scouting means finding and controlling crop pests before they can cause economic losses. Lots of control measures are specific to one pest and it is important that the crop scout is capable of identifying the pests and damage caused by the pests. This allows the farmer to target this pest and usually this means that the controls can be more effective.

Diseases and insects seem to suddenly appear in a crop, but in most cases, they appear in small numbers and multiply and spread. Therefore, if a crop is monitored on a regular basis, the problem can be identified and controlled using spot treatments rather than spraying the entire field. If the pest is uniformly spread throughout the crop, controls can be delayed until they become cost effective.

What does the crop scout look for when scouting a field? The most obvious sign is crop damage. This could appear as thinning, stunting, early dying, discoloration, damaged stems or leaves, or missing portions of leaves or stems. Each disease and insect causes specific damage to a crop. Education and training will assist the crop scout in becoming a more effective scout.

In order to scout a crop, it is necessary to walk across a field in a V- or W-pattern and collect random samples (Figure 1). If the pest is distributed throughout the field, the crop scout calculates the number of insects that are present in the field. Very mobile insects are counted by estimating the number per square metre. Less mobile insects are shaken from the plants onto the ground and counted. This provides an accurate, quantitative assessment of insects per 50 by 50 cm of crop (multiply by 4 to determine pests per square metre).

The crop scout compares this value with the reported economic threshold for that particular pest and crop to determine if the pest level is above or below the economic threshold. If the pest occurs in patches in the field, spot treatments may be referred.

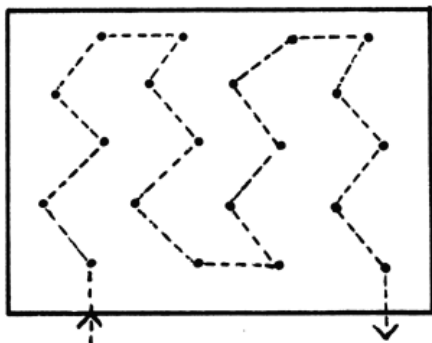


Figure 1 Scouting should be done in a V or W pattern through the field.

Wind-borne diseases and insects first appear in a field downwind from a shelterbelt or other windbreaks such as hills. For these types of pests, it is more efficient to target these areas during the scouting operation. Insect pests, such as aphids, first colonize plants at the edge of the field. These are best found by checking the edges of the field (Figure 2).

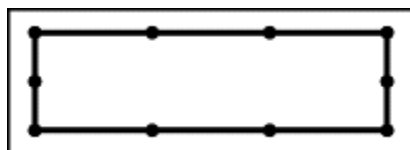


Figure 2. Crops should be checked for those pests that colonize along edges and outside rows

Methods of scouting depend upon the pest being targeted. For example, grasshopper populations can be estimated by slowly walking through the field and counting the number of grasshoppers present. Insects such as lygus bug may require the crop scout to sweep a portion of the field with an insect net. Other insects, such as wireworms (**Figure 3**), may require methods such as baiting (see *Appendix 1* for details on a wireworm scouting technique).



Figure 3. Wireworms have long, hardened, cylindrical, copper-brown bodies.

It is important to concentrate the crop scout's efforts in locations where the pest is most likely to occur using techniques that are most likely to be successful. This means understanding the pest and its lifecycle. Does the pest reside in the soil, on or in the stem, or on the leaves? Is it windblown or does it enter the field by other means? Knowledge of the pest's life-cycle is crucial in determining

the optimal scouting and control methods. A resourceful website for life-cycle information of Alberta crop pests is www.agric.gov.ab.ca.

Remember, if you are uncertain of a particular pest's identity, it is important to collect samples that can be sent to a specialist such as an entomologist who can assist you in its identification and provide information on its life-cycle.

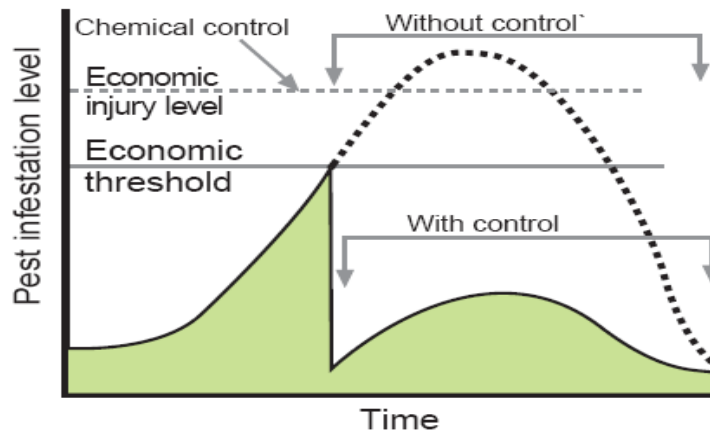


Figure 4. The economic injury level is the pest density or level of crop injury that will result in yield loss equal to the cost of managing the pest.

Figure 4 shows the relationship between the economic threshold and the economic injury level. The economic injury level is the pest density or crop injury level that results in a yield loss equal to the cost of controlling the pest. The economic threshold is the level at which control measures should be applied. The economic threshold is lower than the economic injury level in order to give the farmer time to apply control measures before an economic crop loss occurs. If control measures are applied when the pest reaches the economic threshold, economic losses can be prevented.

Record keeping is a very important aspect of crop scouting. Records should include information on the field location; how the samples were collected; record of data collected at each site; plant counts; row spacing; stage of crop development; and crop damage, if it is present. These need to be permanent records that keep track of pest outbreaks, pesticide application in each field and crop damage as a result of the infestation. Follow-up monitoring should be used to determine the effectiveness of control procedures that were used.

Regular scouting results in reduced crop losses from pests and has the added benefit of reduced pesticide use, which is beneficial to the environment.

Appendix 1: Wireworm scouting technique

Wireworms should be scouted in mid-April before planting. A few weeks before planting, select two areas of the crop where there have been problems with wireworms in the past to establish a bait station (for example sandy knolls or heavy grass infestations). Dig a hole, approximately 15 cm wide and 5 to 8 cm deep. In the bottom of the hole, bury a nylon mesh bag (ladies' knee high nylon hose work well) with 1 cup equal parts untreated and soaked corn and wheat or freshly cut potatoes. Mound the soil over the bait to prevent standing water. Dig up the bags a few days before planting and sift through the contents to look for wireworm (Figure 3). The action threshold or density of insect pests at which control should be applied to prevent the pest from rising to the economic threshold is one wireworm per bait station.

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