



Maine Potato IPM Program

#209

FIELD SCOUTING A TOOL FOR POTATO PEST MANAGEMENT

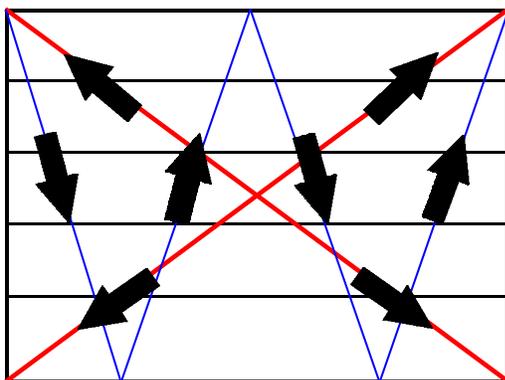
Potato production can be seriously impacted by weeds, disease, insects, and other pests. However, this negative impact can be reduced using integrated pest management (IPM) strategies. An IPM strategy combines practices such as tillage, rotation crops, variety selection and pesticides to manage problems.

Field scouting is a vital part of a farm's IPM program. Scouting involves systematically moving through fields looking for pests, measuring populations, and then using this information to make pest control decisions. The information helps growers know if a pest control treatment is needed, where it's needed, and what options are available and practical.

IPM techniques acknowledge "economic thresholds": the cost of the pest damage is weighed against the cost of the pest treatment in the decision-making process. This information can be helpful when deciding whether or not a pest situation warrants treatment.

IPM can help a pest suppression program. Potential problems often are identified early and managed, thereby reducing the control costs and crop losses. Since pest populations vary, spraying without scouting first may result in unnecessary or insufficient pesticide applications. A grower can use pesticides more effectively by knowing what pest is in a field and treating it accordingly.

There are many potato pests (insects, diseases, and weeds) common to Maine farms that can be monitored by field scouting. The major insects include: green peach, potato, buckthorn, foxglove, and melon aphids; Colorado potato beetles; and the European corn borer. Scouting can also help manage diseases (late blight, early blight, and ring rot). Common broad leaf weeds, mustard and lamb's quarter as well as grasses, such as quack grass and barnyard grass, can be scouted together during a general field survey.



When scouting for insects, it is important to get a random sample. However, the scout also needs to observe and note any high population areas in the field. Scouts should walk through the field in a "V," "X," or "W" pattern to get a random sample of pest populations within the field (see Figure 1). Fifty to one hundred plants should be randomly selected for examination, depending on the size of the field.

Figure 1.

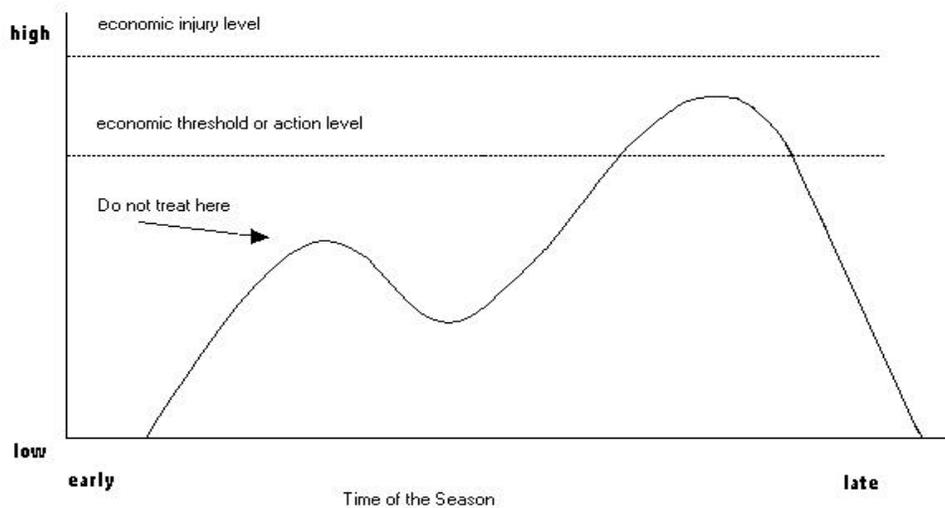
Random selection of plants is the key to an accurate indication of an insect population. Unusual plants, or plants that draw the scout's attention, should be noted separately (like areas of high population). Take care to prevent isolated areas from skewing the results. Unique plants or high insect populations may warrant separate treatment plans.

When examining a plant for insect pests, inspect a top, middle, and bottom leaf, as well as the stalk. Often, different insects will be found on different sites on the plant (Figure 2). Begin scouting when the first plants emerge.

Figure 2.

Your IPM program should take into account each pest's economic threshold. This will help you determine the best time to spray for insects. The economic threshold compares the cost of treating the pest to the cost of damage if the pest is not treated. This relationship is shown in Figure 3.

Figure 3.



The economic injury level is the point at which the pest level is high enough to destroy an economically significant amount of the crop. At the economic injury level, the value of crop loss exceeds the cost of pest suppression treatment. Economic threshold levels are set where the treatment costs equal the crop loss costs. Economic threshold levels have been determined for the aphid species, Colorado potato beetle, European corn borer, and flea beetle. These thresholds can be found in the chart below.

Chart 1.

Potato Pest	Economic Threshold
Aphids:	
Seed	10% of plants with aphids or 1 winged green peach aphid
Processing & Tablestock	50% of plants with aphids or 1 winged green peach aphid
Colorado Potato Beetles:	
Small larvae	200 per 50 plants counted
Large larvae	75 per 50 plants counted
Adult	25 per 50 plants counted
Flea Beetles:	15 holes per terminal leaflet
European Corn Borer:	1 egg mass per 15 plants counted

When scouting, consider geography, prevailing winds, and field orientation. For example, aphids and windblown spores tend to pocket in areas behind windbreaks, such as in tree lines and hills, much the same way that snow drops behind a snow fence in the winter. These areas should be checked for “blown-in” aphids, as part of the field survey.

Many times when flea beetles and Colorado potato beetles move into a field, their immigration creates a definite “edge effect,” in which the population is limited to the ends of rows or the edge rows. Later, the population disperses throughout the field. When an “edge effect” occurs, spot treatments can be very successful in controlling the population.

When scouting for diseases, pay special attention to the disease-prone areas of the field. For example, areas that tend to be damp for long periods of time should be checked for early and/or late blight. These would include low lying, sheltered, or shaded areas of fields. Fields that are physically downwind from a late blight source should be carefully inspected on a regular basis. Knolls and high ground should be included in the scouting process in these situations; these areas may “catch” windblown spores.

Begin scouting for diseases when the first potato plants in the area are four to six inches tall. However, if the seed source could be contaminated with late blight, or late blight is suspected nearby, begin scouting at emergence. With later plantings, begin scouting at emergence.

Remember that the scouting philosophy for late blight is different from that of general insects. You should not try to get a representative field sample. You should try to find any occurrence of the disease by looking in the most likely areas. Computerized disease forecasting and remote sensing can help you with late blight scouting, but use caution. These tools should be used by a field scout, not as a replacement for one.

If, while scouting, a questionable plant is found, a sample from the plant can be taken to your local Cooperative Extension office, where it can be identified. Transport and handle the samples carefully so that identification is possible. After proper identification, you can develop a management plan, if necessary.

When scouting for weeds, use a “V,” “X,” or “W” pattern to survey the field. Scout for weeds during the early, mid, and late growing season. Draw a weed map to keep track of types of weeds and locations from year to year. This is particularly important if serious weed problems occur in the latter part of the season, as they cannot be treated until spring. Often, weed problems are not evenly distributed in a field; therefore spot treatments can lead to control.

Untreated pests can cause severe damage to a potato crop by reducing yields and quality; yet growers must balance this with the cost of pest control. By scouting fields and using survey information to plan treatments, pest control decisions and costs can be managed efficiently.

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