Good orchard pest control is complicated, and it’s challenging to learn.

“Intensive Spray” approach:
Learning orchard pests is too hard. I’m just going to use the combo fruit tree spray every week, green tip through harvest.

“Laissez-faire” approach:
I don’t want to spray. I’m just going to skip it and see what happens.

Your fruit will probably be low quality and unmarketable.

Take the Sustainable Integrated Pest Management Approach
Use the “Scouting Calendar” to determine what pest issues are present at each developmental stage, and what action to take to prevent damage. Insect and disease pest severity depends on the weather and site. Not all pests listed in this packet will be problems in all sites, neither is this an all-inclusive list of pests that can threaten apples in your location.

Read and follow all required pesticide labels to decide how much to apply, when to apply, and what safety equipment is needed while mixing and spraying. The label lists what pests will be controlled, the necessary rate and the timing. The label will also list in the “Agricultural Use” box, the amount of time needed to wait to re-enter the sprayed area (REI). The label will show, under the “Crop use” section, how long to wait before harvesting the crop after the spray (pre-harvest interval = PHI).
Supplies you will need:

- 10x hand lens and/or “optivisor” (3x magnifier).
- Accurate min/max thermometer protected from direct sun or shade.
- Rain gauge or home weather station.
- Locate a NEWA weather station near you and learn how to use it to monitor weather, disease prediction models, insect pest development, thinning, and irrigation recommendations. (newa.cornell.edu).
- Small bags for leaf sampling.
- Pocket knife.
- Insect monitoring traps and pheromone lures as per specific pest fact sheet (Great Lakes IPM, Gemplers, or pesticide distributors).
- Sprayer that can provide good spray coverage throughout the tree.
- Orchard spray materials (for specific choices, see Choosing Sprays).
- To use many commercial orchard sprays, you must be a certified pesticide applicator. For information on how to become a certified applicator, see NYS Department of Environmental Conservation: Pesticide Certification and Business Registration at dec.ny.gov/permits/209.html.
- Personal protective equipment to spray pesticides (Gemplers, or your pesticide supplier, or a hardware store).
- Subscribe to Cornell Scaffolds Fruit Journal newsletter for commercial producers at scaffolds.entomology.cornell.edu. For free subscriptions contact Dr. Art Agnello at ama4@cornell.edu.
- Subscribe to a regional Cornell Cooperative Extension fruit program to get daily or weekly time-sensitive updates: Lake Ontario Fruit Program at lof.cce.cornell.edu or Eastern NY Horticulture Program at enych.cce.cornell.edu.
- For more production and pest management detail, read the content on the Cornell Fruit website: fruit.cornell.edu.

Calculating Degree Days:

Measuring ‘Degree Days’ is a method of measuring heat accumulated over the season. Plants and insects are not warm-blooded, so their growth and development is linked to the daily temperatures. We track degree days to predict the timing of certain pest events in orchards.

Degree Days are the difference between the average daily temperature and a base temperature (50°F unless otherwise noted) and added together (accumulated degree-days) starting at a certain date or event. Below the base temperature, an insect or disease in question doesn’t grow or develop. To calculate degree days:

1. Record the minimum and maximum temperature for the day (use a min/max thermometer).
2. Average those temperatures.
3. Subtract the base temperature. If this number is negative, record a “zero.”

   Example 1: Yesterday’s high was 85°F, and the low was 65°F. Average temp = 75°F. Subtract the base temperature (50), and you have 25 degree days accumulated that day. Add 25 to previous total starting at a specific event or date.

   Example 2: Yesterday’s high was 55°F, the low was 40°F. Average temp = 47.5°F. This is less than the base temperature, 50 degrees, so you have 0 degree days accumulated.

Or use a NEWA station nearby to find the accumulated degree days for pest development (newa.cornell.edu).

Create your own table to record degree days.

<table>
<thead>
<tr>
<th>Date</th>
<th>Max °F</th>
<th>Min °F</th>
<th>Precip</th>
<th>*Degree Days, daily and accumulated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Base 32 °F</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Base 32 °F</td>
</tr>
</tbody>
</table>

*Degree days = (Max temp + minimum temp)/2 - base temperature