Crop Profile for Mint in Oregon

Prepared: August 6, 1999
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General Production Information

- Oregon is the national leader in peppermint production and ranks fourth in spearmint production.
- The state grows about 35% of the nation’s peppermint and accounts for almost 8% of the spearmint market.
- Peppermint growers farm over 40,000 acres that produce more than 3,000,000 pounds of oil valued at greater than $50,000,000. Spearmint growers work about 2,000 acres and produce over 150,000 pounds of oil valued at more than $2,000,000.
- Mint production costs in Oregon are variable. Willamette Valley production costs have risen, making mint farming only marginally profitable with the cost per acre at $1,060.19. Eastern Oregon costs are $888.68 per acre. South central Oregon growers have costs of $914.04 per acre.
- Most Oregon mint—both peppermint and spearmint—is distilled for oil. A small market exists for dried mint for tea. Growers sell the spent mint (the part left after distillation) for use as soil amendments.

Production Regions

The Pacific Northwest accounts for the majority of the mint grown in the United States. (In this crop profile, mint refers to both peppermint and spearmint unless specifically noted.) Areas best suited to mint production are north of the 41st parallel where crops have 15 hours of daylight during the summer growing season (8).

Oregon mint grows in districts that represent the Willamette Valley, central Oregon, and eastern Oregon. In 1997, these counties had the most harvested acres: Union County (9,090), Crook County (6,600), Linn County (6,300), Lane County (4,900), Benton County (3,500), and Marion County (3,500) (2).

Cultural Practices

Warm days (77 °F) and cool nights (59 °F) provide ideal growing temperatures for mint. Soil must be rich in organic matter with a pH range of 6.0–7.5. During the growing season, plants have high water requirements. This situation demands deep, well-drained soil. In the Pacific Northwest, irrigation is mandatory (9).

Mint is a sterile perennial plant that produces no seeds. Growers plant state-certified, disease-free mint plants or root stock in rows spaced form 20–30 inches apart with starts 4–6 inches apart. By the second year, the plants spread out to create a solid field. Every 3–5 years, growers rotate the mint fields with another field crop (9).

In Oregon, mint growers often rotate mint to perennial ryegrass or tall fescue in the Willamette Valley; winter wheat, Kentucky bluegrass, or fine fescue in eastern Oregon; and vegetable seeds and Kentucky bluegrass in central Oregon. Mint fields rotated out of mint are usually free of grass and other weeds making them ideal for many other crops. Terbacil (Sinbar) can carry over, so growers must take care when applying it (6).
Growers mow mint once or twice during the summer, depending on the variety. Since they immediately distill the mint plants for oil, many have distilleries on the farms where the crop is grown (10).

Mint crops require adequate nutrients throughout the growing season. Plants grow rapidly in the late spring until fields reach a full canopy, usually in June (11).

By using state-certified roots or plants, growers can help prevent disease problems.

Insect Pests

Insects threaten Oregon mint almost year round. Strawberry root weevils feed on plants during the winter. Spring brings mint flea beetle larvae, symphylans, and cutworms. The summer insects include spider mites, cutworms, and loopers. Mint root borers, symphylans, and root weevil larvae are active in the fall after harvest, especially west of the Cascades.

In Oregon, the twospotted spider mite is the worst pest. Mint flea beetles are also troublesome (12).

Chemical controls:
Chlorpyrifos (Lorsban) and acephate (Orthene), both organophosphate insecticides, are used to control pests in mint. Chlorpyrifos controls root borer, and acephate controls cutworm. Even low populations of cutworms will reduce plant vigor or kill plants by feeding on foliage or roots. Chlorpyrifos is the only insecticide registered for mint root borer and garden symphylan control. Root borers feed within the rhizomes, which weakens plants and makes them more susceptible to winter injury. Garden symphylans, a severe pest in the Willamette Valley, feed on fine roots of mint and can reduce yields in newly planted fields or destroy entire stands of mint (13).

IPM programs depend on the continued use of chlorpyrifos (Lorsban), acephate (Orthene), and malathion (Cythion) (14).

Propargite (Comite) is important in Oregon to control the twospotted spider mite. Oregon growers use methomyl (Lannate) throughout the state for mint flea beetles (12).

Other insecticides used on Oregon mint are acephate (Orthene), chlorpyrifos (Lorsban), malathion (Cythion), oxydemeton-methyl (Metasystox-R), dicofol (Kelthane), and metaldehyde (Deadline) (15).

In 1997, Oregon growers reported using the following insecticides (15):

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Brand name</th>
<th>Area treated (%)</th>
<th>Number of applications</th>
<th>Pounds per acre per application</th>
<th>Pounds per acre per crop year</th>
<th>Total application (by 1,000 lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>acephate</td>
<td>Orthene</td>
<td>24</td>
<td>1-2</td>
<td>0.87</td>
<td>1.69</td>
<td>22.03</td>
</tr>
<tr>
<td>chlorpyrifos</td>
<td>Lorsban</td>
<td>27</td>
<td>1-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dicofol</td>
<td>Kelthane</td>
<td>&lt;1</td>
<td>1</td>
<td>1.00</td>
<td>0.13</td>
<td>0.13</td>
</tr>
<tr>
<td>fonofos</td>
<td>Dyfonate</td>
<td>24</td>
<td>1-2</td>
<td>2.00</td>
<td>22.63</td>
<td>22.63</td>
</tr>
</tbody>
</table>
malathion | Cythion | 2 | 1 | 0.96 | 1.02
---|---|---|---|---|---
metaldehyde | Deadline | <1 | 1 | 0.43 | 0.01
methomyl | Lannate | 10 | 1 | 0.73 | 3.35
propargite | Comite | 62 | 1-2 | 1.39 | 41.75

For more details on insect control in Oregon mint, see the 1999 PNW Insect Control Handbook, pages 106–108. (Go to http://eesc.orst.edu/agcomwebfile/edmat/ for ordering information.)

**Alternatives:**
Scientists are searching for an alternative to fonofos (Dyfonate) to control symphylans. So far, only organophosphates or carbamates have proved effective. Mint growers will continue to apply chlorpyrifos (Lorsban) until they have a reliable replacement (12).

**Biological controls:**
Growers use predator mites to control twospotted spider mites. They also use parasitic nematodes *Steinernema carpocapsae* (Biovector) (15).

In 1997, Oregon growers reported using the following biological control (15):

<table>
<thead>
<tr>
<th>Biological</th>
<th>Brand name</th>
<th>Area treated (%)</th>
<th>Number of applications</th>
<th>Pounds per acre per application</th>
<th>Pounds per acre per crop year</th>
<th>Total application (by 1,000 lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>predator mites</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Diseases**
Diseases found on Oregon mint include Verticillium wilt, mint rust, powdery mildew, stolon decay, and black stem rot (18).

**Chemical controls:**
Oregon mint growers currently apply sulfur to control diseases on mint. Sulfur is the only registered fungicide for mildew (19).

Spraying for mildew must start well before mildew intensifies in order to prevent buildup. Growers should assess fields weekly thereafter. However, this is not an optimal method in a commercial program (20).

Willamette Valley mint growers sometimes use propiconazole (Tilt) to control rusts (12).

The fungicide myclobutanil (Rally) is expected to get a new label and be available for expanded use by Oregon growers in the near future (15).

In 1997, Oregon growers reported using the following fungicides (15):
### Fungicides

<table>
<thead>
<tr>
<th>Fungicide</th>
<th>Brand name</th>
<th>Area treated (%)</th>
<th>Number of applications</th>
<th>Pounds per acre per application</th>
<th>Pounds per acre per crop year</th>
<th>Total application (by 1,000 lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>myclobutanil</td>
<td>Rally</td>
<td>1</td>
<td>1</td>
<td>0.60</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>propiconazole</td>
<td>Tilt</td>
<td>37</td>
<td>1-2</td>
<td>0.20</td>
<td>3.53</td>
<td></td>
</tr>
<tr>
<td>sulfur</td>
<td>Sulfur</td>
<td>&lt;1</td>
<td>1</td>
<td>38.58</td>
<td>0.46</td>
<td></td>
</tr>
</tbody>
</table>


**Cultural controls:**

Some studies suggest that Willamette Valley growers can use propane flaming without tillage for rust and wilt control (22).

Field sanitation and varietal selection are necessary for wilt management (23).

Mint breeders achieve true-to-type varieties by producing rooted cuttings. Biotechnology has produced several lines of mint that should be available in the near future, although growers may not accept them readily (24).

### Nematodes

Nematodes of concern are the mint, root-knot, and root-lesion varieties. They can be especially troublesome following a wet spring (18).

**Chemical controls:**

Chemicals used for nematode control include 1,3-dichloropropene (Telone) and oxamyl (Vydate) (18). Growers also apply small quantities of metam-sodium (Vapam) (15).

In 1997, Oregon growers reported using the following nematicide (15):

<table>
<thead>
<tr>
<th>Nematicide</th>
<th>Brand name</th>
<th>Area treated (%)</th>
<th>Number of applications</th>
<th>Pounds per acre per application</th>
<th>Pounds per acre per crop year</th>
<th>Total application (by 1,000 lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>metam-sodium</td>
<td>Vapam</td>
<td>&lt;1</td>
<td>1</td>
<td>158.60</td>
<td>30.93</td>
<td></td>
</tr>
<tr>
<td>oxamyl</td>
<td>Vydate</td>
<td>45</td>
<td>1-2</td>
<td>1.25</td>
<td>27.36</td>
<td></td>
</tr>
</tbody>
</table>

For more details on nematode control in Oregon mint, see An Online Guide to Plant Disease Control, http://pnwhandbooks.
Cultural controls:
Rotating fields to corn or other grains and planting clean stock can control nematodes (18).

Weeds

Because mint breaks dormancy late in the season and has a shallow root system, weeds can get a head start (12).

Weeds in mint fit roughly into these categories: annual grasses, perennial grasses, annual broadleaf plants, perennial broadleaf plants, and "others" that include sedges (16).

Oregon mint growers battle bindweed, Canada thistle, pigweed, groundsel, common lambsquarters, and mustards (12).

Chemical controls:
Oxyfluorfen (Goal), pendimethalin (Prowl), and terbacil (Sinbar), control pre-emergent broadleaf weeds. Post-emergent options include terbacil (Sinbar), bentazon (Basagran), bromoxynil (Buctril), and clopyralid (Stinger) for broadleaf weeds and sethoxydim (Poast) and quizalofop-P-ethyl (Assure II) for grasses (12).

A mint council report also lists 2,4-DB (Vin-Der), diuron (Karmex), napropamide (Devrinol), paraquat (Gramoxone), and trifluralin (Treflan) as being registered for use on mint (15).

In 1997, Oregon growers reported using the following herbicides (15):

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Brand name</th>
<th>Area treated (%)</th>
<th>Number of applications</th>
<th>Pounds per acre per application</th>
<th>Pounds per acre per crop year</th>
<th>Total application (by 1,000 lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-DB</td>
<td>Vin-Der</td>
<td>2</td>
<td>1-2</td>
<td>0.94</td>
<td>0.69</td>
<td>0.69</td>
</tr>
<tr>
<td>bentazon</td>
<td>Basagran</td>
<td>26</td>
<td>1-2</td>
<td>1.26</td>
<td>15.94</td>
<td></td>
</tr>
<tr>
<td>bromoxynil</td>
<td>Buctril</td>
<td>41</td>
<td>1-3</td>
<td>0.34</td>
<td>6.89</td>
<td></td>
</tr>
<tr>
<td>clopyralid</td>
<td>Stinger</td>
<td>15</td>
<td>1-2</td>
<td>0.17</td>
<td>1.24</td>
<td></td>
</tr>
<tr>
<td>diuron</td>
<td>Karmex</td>
<td>89</td>
<td>1-2</td>
<td>0.32</td>
<td>13.78</td>
<td></td>
</tr>
<tr>
<td>napropamide</td>
<td>Devrinol</td>
<td>&lt;1</td>
<td>1</td>
<td>1.70</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>oxyfluorfen</td>
<td>Goal</td>
<td>47</td>
<td>1-2</td>
<td>0.22</td>
<td>4.96</td>
<td></td>
</tr>
<tr>
<td>paraquat</td>
<td>Gramoxone Extra</td>
<td>75</td>
<td>1-2</td>
<td>0.43</td>
<td>15.52</td>
<td></td>
</tr>
<tr>
<td>Herbicide</td>
<td>Brand</td>
<td>Rate</td>
<td>Application</td>
<td>Price</td>
<td>Price</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-------</td>
<td>------</td>
<td>-------------</td>
<td>-------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>pendimethalin</td>
<td>Prowl</td>
<td>3</td>
<td>1</td>
<td>1.52</td>
<td>2.07</td>
<td></td>
</tr>
<tr>
<td>sethoxydim</td>
<td>Poast</td>
<td>14</td>
<td>1</td>
<td>0.31</td>
<td>2.10</td>
<td></td>
</tr>
<tr>
<td>terbacil</td>
<td>Sinbar</td>
<td>90</td>
<td>1-2</td>
<td>0.82</td>
<td>35.82</td>
<td></td>
</tr>
</tbody>
</table>

For more details on weed control in Oregon mint, see the 1999 PNW Insect Control Handbook, pages 137–143. (Go to [http://eesc.orst.edu/agcomwebfile/edmat/](http://eesc.orst.edu/agcomwebfile/edmat/) for ordering information.)

**Alternatives:**
Because pigweed is developing resistance to terbacil (Sinbar), growers will need an alternative treatment option (12).

**Cultural controls:**
In the very early years of production prior to the widespread use of herbicides, growers controlled weeds with several spring harrowings followed by weeder geese and hand weeding. They stopped using mechanical control measures when it became apparent that these methods spread wilt (17).

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References


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16. Pacific Northwest Weed Control Handbook; Extension Services of Oregon State University, Washington State


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