Crop Profile for Barley in Oregon

Prepared November, 2000

General Production Information

- Oregon ranks seventh nationally in barley production.
- Oregon growers produce over 2% of U.S. barley.
- In 1999, Oregon farmers harvested 134,131 acres of barley.
- Total production costs for irrigated barley in south central Oregon were $399.53 per acre in 1995. Dry-land barley cost about $170 per acre for fall-seeded crops and less for spring-seeded crops. Reliable numbers for no-till options are not available.
- Feed-type barley accounted for over 90% of Oregon’s 1997 barley crop; malting barley comprised less than 10% of the harvest.

Production Regions

Although growers plant about 3,000 acres of barley west of the Cascade Mountains, the major ranches for both feed and malting barley are in eastern Oregon. Klamath County had the most harvested acres in 1999 (28,000) followed by Sherman, Umatilla, Gilliam, Wasco, and Wallowa Counties (3).

Cultural Practices

Barley plants are annual grasses that may be planted either in the fall (for exposure to winter cold) or spring. Stems vary from 1 to 4 feet in length (7).

Ranchers can grow barley in areas with short growing seasons. It is less susceptible to frost than early wheat and usually has a higher yield and brings a higher price than oats. Wind erosion can be a problem on some soils (8).
About 37% of Oregon barley is irrigated (9).

‘Steptoe’ varieties are the most commonly-planted feed barleys in Oregon, accounting for over 46% of the 1997 crop. Most 'Steptoe' barley is spring planted. Other popular varieties are ‘Gallatin,’ ‘Gus,’ and ‘Baronesse.’ The most commonly-grown malting variety is ‘Morex,’ planted on 8.5% of the acres (6).

**Insect Pests**

An Idaho report lists aphids, cereal leaf beetles, thrips, and wireworms as the most commonly encountered barley pests (10).

Wheat stem maggots have caused severe damage to Klamath Basin spring barley. In areas that have cool, wet springs, wireworms may attack barley, causing a great amount of damage. Aphids are important vectors of yellow dwarf virus disease. The Russian wheat aphid can cause damage that results in whole fields being lost if growers do not detect and control infestations early (11).

**Chemical controls**

In 1994, Oregon ranchers treated for Russian wheat aphid and granary weevils (12).

<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>chlorpyrifos-methyl</td>
<td>Reldan</td>
<td>50-60</td>
<td></td>
<td></td>
<td></td>
<td>1.4</td>
</tr>
<tr>
<td>disulfoton</td>
<td>Di-Syston</td>
<td>2-15</td>
<td></td>
<td></td>
<td></td>
<td>2.3</td>
</tr>
</tbody>
</table>

For more details on insect control in Oregon small grain, go to http://ag.ippc.orst.edu/pnw/insects for the Pacific Northwest Insect Control Handbook, pre-release version 0.80 (18).

**Cultural controls**
Wireworms may not be a problem in fields where potatoes were grown recently without any damage (11).

**Biological controls**

Predators are important for aphid control. Syrphid fly larvae and ladybird beetle larvae are common predators of value (11).

**Weeds**

Five weeds cause the most problems for barley ranchers: cheatgrass, downy brome, jointed goatgrass, wild oats, volunteer crops, and Russian thistle (13, 19).

**Chemical controls**

According to a 1992 report, Oregon barley ranchers applied the following herbicides (14):

<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-D</td>
<td>2,4-D</td>
<td>41</td>
<td></td>
<td>0.75</td>
<td></td>
<td>57.4</td>
</tr>
<tr>
<td>bromoxynil</td>
<td>Buctril</td>
<td>8</td>
<td></td>
<td>0.22</td>
<td></td>
<td>3.3</td>
</tr>
<tr>
<td>chlorsulfuron</td>
<td>Glean</td>
<td>7</td>
<td></td>
<td>0.01</td>
<td></td>
<td>0.1</td>
</tr>
<tr>
<td>dicamba</td>
<td>Banvel</td>
<td>24</td>
<td></td>
<td>0.10</td>
<td></td>
<td>4.5</td>
</tr>
<tr>
<td>diclofop</td>
<td>Kelthane</td>
<td>4</td>
<td></td>
<td>0.89</td>
<td></td>
<td>6.6</td>
</tr>
<tr>
<td>diuron</td>
<td>Karmex</td>
<td>2</td>
<td></td>
<td>1.50</td>
<td></td>
<td>5.6</td>
</tr>
<tr>
<td>glyphosate</td>
<td>Roundup</td>
<td>4</td>
<td></td>
<td>0.50</td>
<td></td>
<td>3.7</td>
</tr>
<tr>
<td>MCPA</td>
<td>Rhomene</td>
<td>13</td>
<td></td>
<td>0.67</td>
<td></td>
<td>16.2</td>
</tr>
<tr>
<td>metribuzin</td>
<td>Lexone</td>
<td>2</td>
<td></td>
<td>0.33</td>
<td></td>
<td>1.2</td>
</tr>
</tbody>
</table>

Diseases

Some diseases found in barley are rust, smut, stripe, dwarf, scald, blotch, powdery mildew, scab, root and foot rot, eyespot, and chaff (15).

Chemical controls

Oregon ranchers applied the following fungicides in 1994, some as seed treatments (12):

<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>carboxin</td>
<td>Vitavax</td>
<td>54-95</td>
<td></td>
<td></td>
<td></td>
<td>3.8</td>
</tr>
<tr>
<td>difenoconazole</td>
<td>Dividend</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td>0.4</td>
</tr>
<tr>
<td>thiram</td>
<td>Thiram</td>
<td>54-95</td>
<td></td>
<td></td>
<td></td>
<td>3.8</td>
</tr>
</tbody>
</table>

The Pacific Northwest Handbook list these as effective fungicides: imazalil (Nu-Zone, Flo Pro IMZ), carboxin + thiram (RTU-Vitavax-Thiram), tebuconazole + thiram (Raxil-Thiram), triadimenol (Baytan), propiconazole (Tilt), mfenoxam (Apron XL LS), captan, and mancozeb (Manzate) (16)


Cultural controls

Barley diseases can be minimized with some cultural controls (17).

- Use pathogen-free seed
- Use resistant varieties
- Plant in late fall or early spring
- Soak seed in hot water
- Rotate crops. Avoid planting cereal or grass crops in less than 2-year rotation
- Destroy old stubble by deep plowing or burning
- Destroy volunteer barley of other infected grass species
- Seed when soil conditions favor rapid germination and emergence
- Practice tillage that accelerates breakdown of residues

**Nematodes**

Cereal cyst nematodes can reduce yields by 20 to 70% depending on the degree of infestation and how often cereal crops are planted in the rotation. The eggs may survive several years in the soil. Root-knot nematodes are a problem only in western Oregon (17).

**Chemical controls**

Soil fumigation is too expensive for barley, but it can be used on a more valuable rotation crop such as potato (17).


**Cultural controls**

Nematode controls include (17):

- Crop rotation
- Fall or winter plants; crops more tolerant of nematode damage
- Avoid planting in infected fields
- Reduce plant stress from soil compaction and low pH

**Other**

Go to http://pestdata.ncsu.edu/cropprofiles/start.html for the Idaho and Utah barley crop profiles.
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References


5. Enterprise Budget, Spring Barley, South Central Region; EM 8591; Oregon State University Extension Service: Corvallis, OR, April 1995.


8. Local small grain production, Klamath Experiment Station. hppt://www.orst.edu/dept/kes/g-prod.htm (accessed July 1999).


19. Macnab, S., Sherman and Wasco County Extension, Moro, OR. Personal communication, August 11, 2000.

Acknowledgements

This crop profile was prepared by P. Thomson, W. Parrott, and J. Jenkins, Agricultural Chemistry Extension, Department of Environmental and Molecular Toxicology, Oregon State University. S. Macnab, Sherman and Wasco County Extension, reviewed the information.