Powdery Mildew Resistant Pumpkin Cultivar Evaluation

Vince Lawson, farm superintendent

Introduction
Pumpkin cultivars with powdery mildew resistance help growers produce a high quality crop while reducing pesticide inputs and cost. This trial was set up to provide an unbiased evaluation of selected cultivars with reported resistance/tolerance to powdery mildew and generate information helpful to growers for selecting cultivars best suited to their market.

Materials and Methods

Planting. Cultivars were planted in 72 cell trays in a greenhouse on May 31, 2007 and transplanted to the field on June 15.
Plot Design. A randomized complete block with two replications was used. A plot consisted of a single row of eight plants spaced 32 in. apart with rows spaced 10 ft apart.
Fertility and Irrigation. Fertilizer (75 lb nitrogen and 120 lb K2O) was applied preplant incorporated on June 3. Additional nitrogen (40 lb) was sidedressed on August 4. Plot area was irrigated with a center pivot as needed.
Pesticides. Strategy, Sandea, and Poast herbicides; Fanfair insecticide; and Bravo, Quadris, and Kocide fungicide.

Results and Discussion

The growing season was favorable for pumpkin growth and the trial produced good yields and quality. To prevent fruit rots and disease problems, plots were sprayed with fungicides. Even so, powdery mildew developed in the planting by mid August. It was mainly seen on foliage and caused some defoliation but not vine death. Notes were taken on disease severity but only minor differences between cultivars were observed (data not presented). Generally, resistant cultivars had less powdery mildew, but because of fungicide spraying and the low level of infection these observations did not correlate with yield.

Cultivars are ranked by yield (high to low) and by fruit size (large, medium, and small) in Tables 1 and 2. Magic Lantern, ACX 6201, Dependable, Charisma PMR, and Aladdin were the highest yielding. Dependable also had the highest average fruit weight (26.0 lb) in the trial. Super Herc had low marketable yield due to a skin cracking problem and fruit rot. This objectionable trait has also been observed with Super Herc in prior seasons.
### Table 1. Pumpkin cultivar marketable yield, average fruit weight and size.

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>No. of fruit/acre</th>
<th>Market yield lb/acre</th>
<th>Avg. fruit wt (lb)</th>
<th>Height × width (in.)</th>
<th>Ht/width ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACX 6201</td>
<td>5,443</td>
<td>90,719</td>
<td>16.7</td>
<td>11.4 × 11.3</td>
<td>1.01</td>
</tr>
<tr>
<td>Dependable</td>
<td>3,421</td>
<td>89,024</td>
<td>26.0</td>
<td>15.5 × 12.0</td>
<td>1.29</td>
</tr>
<tr>
<td>Aladdin</td>
<td>4,510</td>
<td>84,654</td>
<td>18.6</td>
<td>11.8 × 11.0</td>
<td>1.07</td>
</tr>
<tr>
<td>Spartan</td>
<td>4,510</td>
<td>79,010</td>
<td>17.6</td>
<td>11.4 × 11.6</td>
<td>0.98</td>
</tr>
<tr>
<td>Gold Medal</td>
<td>3,888</td>
<td>75,822</td>
<td>19.9</td>
<td>10.0 × 11.4</td>
<td>0.88</td>
</tr>
<tr>
<td>ACX 6501</td>
<td>4,821</td>
<td>74,158</td>
<td>15.4</td>
<td>11.8 × 10.2</td>
<td>1.16</td>
</tr>
<tr>
<td>Gold Bullion</td>
<td>3,577</td>
<td>57,737</td>
<td>16.5</td>
<td>11.3 × 11.6</td>
<td>0.97</td>
</tr>
<tr>
<td>Howden</td>
<td>2,955</td>
<td>53,508</td>
<td>18.1</td>
<td>11.9 × 10.8</td>
<td>1.10</td>
</tr>
<tr>
<td>Warlock</td>
<td>3,266</td>
<td>51,424</td>
<td>15.8</td>
<td>13.2 × 11.6</td>
<td>1.14</td>
</tr>
<tr>
<td>Super Herc</td>
<td>1,400</td>
<td>29,918</td>
<td>21.4</td>
<td>12.7 × 11.8</td>
<td>1.08</td>
</tr>
<tr>
<td>Magic Lantern</td>
<td>7,775</td>
<td>97,483</td>
<td>12.5</td>
<td>9.9 × 10.6</td>
<td>0.93</td>
</tr>
<tr>
<td>Chrisma PMR</td>
<td>6,687</td>
<td>84,732</td>
<td>12.6</td>
<td>9.8 × 11.0</td>
<td>0.89</td>
</tr>
<tr>
<td>Magician</td>
<td>5,909</td>
<td>73,909</td>
<td>12.5</td>
<td>10.3 × 10.3</td>
<td>1.00</td>
</tr>
<tr>
<td>HMX 6686</td>
<td>4,821</td>
<td>69,462</td>
<td>14.4</td>
<td>9.9 × 10.4</td>
<td>0.95</td>
</tr>
<tr>
<td>20 Karat Gold</td>
<td>4,665</td>
<td>67,969</td>
<td>14.6</td>
<td>9.3 × 10.4</td>
<td>0.89</td>
</tr>
<tr>
<td>ACX 6302</td>
<td>5,909</td>
<td>67,534</td>
<td>11.3</td>
<td>10.0 × 9.0</td>
<td>1.10</td>
</tr>
<tr>
<td>Gladiator</td>
<td>4,665</td>
<td>64,781</td>
<td>13.8</td>
<td>11.6 × 11.0</td>
<td>1.05</td>
</tr>
<tr>
<td>Neon</td>
<td>4,821</td>
<td>49,060</td>
<td>10.4</td>
<td>8.2 × 9.5</td>
<td>0.86</td>
</tr>
<tr>
<td>Iron Man</td>
<td>16,949</td>
<td>64,408</td>
<td>3.8</td>
<td>5.8 × 6.4</td>
<td>0.91</td>
</tr>
<tr>
<td>Prankster</td>
<td>11,507</td>
<td>41,565</td>
<td>3.6</td>
<td>4.8 × 6.1</td>
<td>0.78</td>
</tr>
<tr>
<td>Cannon Ball</td>
<td>8,864</td>
<td>40,337</td>
<td>4.5</td>
<td>6.1 × 6.6</td>
<td>0.92</td>
</tr>
<tr>
<td>Rockafellow</td>
<td>15,239</td>
<td>34,148</td>
<td>2.2</td>
<td>5.3 × 5.1</td>
<td>1.10</td>
</tr>
</tbody>
</table>

### Table 2. Pumpkin cultivar, seed source, and fruit descriptions.

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Seed Source</th>
<th>Fruit Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACX 6201</td>
<td>AC</td>
<td>Long handles, full round shape with medium sutures.</td>
</tr>
<tr>
<td>Dependable</td>
<td>AC</td>
<td>Extra tall fruit, slight ribbing, bright orange color, large thick handles, long vines.</td>
</tr>
<tr>
<td>Aladdin</td>
<td>HM</td>
<td>Tall round shape, medium sutures, dark orange fruit with dark handles.</td>
</tr>
<tr>
<td>Spartan</td>
<td>SW</td>
<td>Round dark orange fruit, strong ribbing, nice dark handles.</td>
</tr>
<tr>
<td>Gold Medal</td>
<td>RU</td>
<td>Mix of round and tall shapes, smooth and ribbed fruit, long handles.</td>
</tr>
<tr>
<td>ACX 6501</td>
<td>AC</td>
<td>Round to tall round shape, bright orange, shallow sutures, thick dark handles.</td>
</tr>
<tr>
<td>Gold Bullion</td>
<td>RU</td>
<td>Round orange fruit with strong ribbing and thick handles.</td>
</tr>
<tr>
<td>Howden</td>
<td>HM</td>
<td>Long vines, round to tall fruit shape (variable), dark orange and deep sutures.</td>
</tr>
<tr>
<td>Warlock</td>
<td>HM</td>
<td>Tall, dark orange, strong handles, shallow sutures but rough, semi-hard shell.</td>
</tr>
<tr>
<td>Super Herc</td>
<td>HM</td>
<td>Tall upright fruit, deep sutures, dark orange color, large dark green handles, developed rough blemished surface due to skin cracking.</td>
</tr>
<tr>
<td>Magic Lantern</td>
<td>HM</td>
<td>Round to tall round shape, ribbed, deep orange color with dark handles.</td>
</tr>
<tr>
<td>Charisma PMR</td>
<td>JS</td>
<td>Fat round (oblate) shape, strong ribbing, light orange and long dark handles.</td>
</tr>
<tr>
<td>Magician</td>
<td>HM</td>
<td>Tall round shape, strong ribbing, dark orange color and nice dark handles.</td>
</tr>
<tr>
<td>HMX 6686</td>
<td>HM</td>
<td>Round dark orange fruit, dark handles, deep sutures (ribbing).</td>
</tr>
<tr>
<td>20 Karat Gold</td>
<td>RU</td>
<td>Uniform appearance, round, deep orange, shallow sutures, thick dark handles.</td>
</tr>
<tr>
<td>ACX 6302</td>
<td>AC</td>
<td>Bright orange, tall oblong shape, dark handles, shallow sutures.</td>
</tr>
<tr>
<td>Gladiator</td>
<td>HM</td>
<td>Tall round shape, dark orange, long dark handles, deep ribbing.</td>
</tr>
<tr>
<td>Neon</td>
<td>SW</td>
<td>Uniform, early color–vivid bright orange, shallow sutures, dark handles.</td>
</tr>
<tr>
<td>Iron Man</td>
<td>HM</td>
<td>Smooth round hard shell fruit, dark orange, strong thick handles.</td>
</tr>
<tr>
<td>Prankster</td>
<td>RU</td>
<td>Flattened round fruit had deep ribbing and extra thick handles.</td>
</tr>
<tr>
<td>Cannon Ball</td>
<td>HM</td>
<td>Smooth round fruit were very firm, burnt orange color, large strong handles.</td>
</tr>
<tr>
<td>Rockafellow</td>
<td>SW</td>
<td>Tall “egg” shape, very smooth and dark orange, long dark handles.</td>
</tr>
</tbody>
</table>