Salad green varieties for bench-top production

Throughout the winters of 2011-13 we evaluated many salad green varieties to determine which are most suitable for bench-top production in minimally heated greenhouses. Greens were grown in a greenhouse at a 40 ºF minimum temperature set-point with no additional light. We seeded all species in compost-based media (Fort Vee, Vermont Compost Company) at a rate of about 145 seeds per square foot. Greens were harvested at 3-6 inches long. Growth rate slowed from November to January. The results of our comparisons are presented below, including growth rate, yield potential, and descriptions of species and varieties.

Yield potential (lbs / sq ft)

<table>
<thead>
<tr>
<th>Light</th>
<th>Medium</th>
<th>Heavy</th>
</tr>
</thead>
<tbody>
<tr>
<td>~ 0.8</td>
<td>~ 1.4</td>
<td>~ 2</td>
</tr>
</tbody>
</table>

Minimum days to maturity (growth rate)

<table>
<thead>
<tr>
<th>Fast</th>
<th>Medium</th>
<th>Slow</th>
</tr>
</thead>
<tbody>
<tr>
<td>~ 27</td>
<td>~ 34</td>
<td>~ 40</td>
</tr>
</tbody>
</table>

Lettuce (Lactuca sativa)

Defender
Green romaine that adds weight and bulk to salad mixes. Resistant to lettuce downy mildew races 1-6, 19, 21 and 23.
Slow growth
Heavy yields

Outredgeous
Red romaine with ruffled leaf edges. Red color increases with light. Adds weight and bulk to salad mixes.
Slow growth
Heavy yields

Spinach (Spinacia oleracea)

Corvair
Dark green, smooth leaves. Upright growth makes for easy harvesting. Resistant to spinach downy mildew races 1-11.
Medium growth
Medium yields

Space
Medium sized, dark green leaves. Resistant to spinach downy mildew races 1-3.
Medium growth
Medium yields

Chard and Beets (Beta vulgaris)

‘Rhubarb Swiss’ Chard
Green leaves with bright red stems. Adds wonderful color and taste to salad mixes.
Slow growth
Medium yields

‘Bulls Blood’ Beets
Green leaves with bright red stems. Leaves become red with stress and age. Adds wonderful color and taste to salad mixes.
Slow growth
Medium yields
Kales (Brassica oleracea) and arugula (Eruca sativa)

**‘Red Russian’ Kale**
Deeply lobed blue-green leaves with reddish midrib.
Fast growth
Medium yields

**‘Vates’ Kale**
Curly blue-green leaves. Sweet flavored in cool weather.
Fast growth
Medium yields

**‘White Russian’ Kale**
Deeply lobed blue-green leaves with white midrib.
Fast growth
Medium yields

**Arugula**
Lobed light green leaves with a spicy flavor.
Medium growth
Medium yields

Mustards (Brassica juncea)

**Ruby Streaks**
Finely serrated maroon leaves when. Mustard flavor is more pungent when grown at higher temperatures.
Fast growth
Light yields

**Scarlet Frills**
Ruffled maroon leaves. Adds loft to salad mixes. Mustard flavor is more pungent when grown at higher temperatures.
Fast growth
Light yields

**Wasabina**
Ruffled light green leaves. Mustard flavor is more pungent when grown at higher temperatures.
Fast growth
Medium yields

**Chirimin Hakarashi**
Ruffled light green leaves. Mustard flavor is more pungent when grown at higher temperatures.
Fast growth
Medium yields

Yield potential (lbs / sq ft)
Light ~ 0.8  Medium ~ 1.4  Heavy ~ 2

Minimum days to maturity (growth rate)
Fast ~ 27  Medium ~ 34  Slow ~ 40
Chinese cabbage, tatsoi and mizuna (*Brassica rapa*)

### Tokyo Bekana
- Broad, mild flavored, leaves on thick white stems. Adds weight and bulk to salad mixes.
- Fast growth
- Heavy yields

### Fun Jen
- Broad, mild flavored, leaves on thick white stems. Adds weight and bulk to salad mixes.
- Fast growth
- Heavy yields

### Vitamin Green
- Mild flavored, dark green leaves on thick white stems.
- Fast growth
- Medium yields

### Vitaminina
- Mild flavored, dark green leaves on thick white stems.
- Fast growth
- Medium yields

### Tatsoi
- Round, mild flavored, dark green leaves on white stems.
- Medium growth
- Medium yields

### Mizuna
- Fast growth
- Medium yields

#### Yield potential (lbs / sq ft)
- **Light** ~ 0.8
- **Medium** ~ 1.4
- **Heavy** ~ 2

#### Minimum days to maturity (growth rate)
- **Fast** ~ 27
- **Medium** ~ 34
- **Slow** ~ 40

### Varieties that did not work in our bench-top system

*Endive and Mache* were too slow growing during cold, dark winter months in a minimally heated greenhouse. *Baby bok choi* and other greens grown for their thick stems were very low yielding because the outer leaves had to be thrown away and plants needed extra space to grow.

During winter months varieties in **pre-made seed mixes** may have varying growth rates. We found that it is better to plant each variety individually, and mix them after harvesting.

For more information, or if you have any questions contact: Claire Collie at Claire.Collie@wildcats.unh.edu, Becky Sideman at becky.sideman@unh.edu or Brian Krug at Brian.Krug@unh.edu

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## Variety Comparison Chart

<table>
<thead>
<tr>
<th>Type of green</th>
<th>Variety</th>
<th>Relative growth rate</th>
<th>Relative yield potential</th>
<th>Seed Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lettuce</td>
<td>Defender</td>
<td>Slow</td>
<td>Heavy</td>
<td>Johnny’s Selected Seeds</td>
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<tr>
<td>Lettuce</td>
<td>Outredgeous</td>
<td>Slow</td>
<td>Heavy</td>
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</tr>
<tr>
<td>Spinach</td>
<td>Corvair</td>
<td>Medium</td>
<td>Medium</td>
<td>High Mowing Organic Seeds</td>
</tr>
<tr>
<td>Spinach</td>
<td>Space</td>
<td>Medium</td>
<td>Medium</td>
<td>Johnny’s Selected Seeds</td>
</tr>
<tr>
<td>Swiss chard</td>
<td>Rhubarb</td>
<td>Slow</td>
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<td>Beet greens</td>
<td>Bulls blood</td>
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<td>Kale</td>
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<td>Ruby streaks</td>
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<tr>
<td>Brassica rapa</td>
<td>Tokyo bekana</td>
<td>Fast</td>
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### Yield potential (lbs / sq ft)
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