

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 °F 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)
Light ~ 0.8 **Medium** ~ 1.4 **Heavy** ~ 2

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

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



Vitaminna

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

Mild flavored, serrated, light greens leaves. Very fast growing. Originates from Japan.

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 choy 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

This work was partially funded by the NH Department of Agriculture, Markets & Food Specialty Crop Block Grant Program, and by the NH Agricultural Experiment Station and UNH Extension.

Variety Comparison Chart

Type of green	Variety	Relative growth rate	Relative yield potential	Seed Source
Lettuce	Defender	Slow	Heavy	Johnny's Selected Seeds
Lettuce	Outredgeous	Slow	Heavy	Johnny's Selected Seeds
Spinach	Corvair	Medium	Medium	High Mowing Organic Seeds
Spinach	Space	Medium	Medium	Johnny's Selected Seeds
Swiss chard	Rhubarb	Slow	Medium	Johnny's Selected Seeds
Beet greens	Bulls blood	Slow	Medium	Johnny's Selected Seeds
Kale	Red russian	Fast	Medium	Johnny's Selected Seeds
Kale	White russian	Fast	Medium	Johnny's Selected Seeds
Kale	Vates	Fast	Medium	High Mowing Organic Seeds
Arugula	Arugula	Medium	Medium	Johnny's Selected Seeds
Mustard	Ruby streaks	Fast	Light	Johnny's Selected Seeds
Mustard	Scarlet frills	Fast	Light	Johnny's Selected Seeds
Mustard	Wasabina	Fast	Medium	Kitazawa Seed Co.
Mustard	Chirimin	Fast	Medium	Kitazawa Seed Co.
Brassica rapa	Tokyo bekana	Fast	Heavy	Johnny's Selected Seeds
Brassica rapa	Fun jen	Fast	Heavy	Kitazawa Seed Co.
Brassica rapa	Vitamin green	Fast	Medium	Johnny's Selected Seeds
Brassica rapa	Vitaminna	Fast	Medium	Kitazawa Seed Co.
Brassica rapa	Tatsoi	Medium	Medium	Johnny's Selected Seeds
Brassica rapa	Mizuna	Fast	Medium	Johnny's Selected Seeds

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