

GROWING BABY-LEAF SALAD GREENS IN THE SPRING AND FALL SEASONS IN WHATCOM COUNTY

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An introduction to baby-leaf salad greens

The term “baby-leaf salad greens” refers to leafy greens crops that are harvested when they are approximately 4 inches tall. Harvesting greens at this stage results in a tender bite-sized leaf that is milder in flavor than the mature crop. Lettuce, spinach, beet greens, mustard greens, arugula, kale, and pak choi are all commonly grown as baby-leaf salad greens. Baby-leaf salad mixes have gained popularity since the early 1990’s along with bagged cut salad mixes produced by processing mature heads of lettuce. The concept of ‘ready-to-eat’ salads have a high consumer appeal because they allow consumers to eat healthy meals without sacrificing convenience. Despite this relatively recent surge in popularity, baby-leaf salad has been around for centuries. The practice of harvesting several varieties of leafy greens at an immature stage of development and mixing them for flavor and color contrast originated with the concept of mesclun mix in Provence, France in the 1700’s. Immature leaves of several varieties of leafy greens would be combined and eaten raw primarily in the rural regions of France. This practice first entered into American cuisine in the late 1960’s. The first mention of mesclun in the American culinary lexicon was in an article published in the Chicago Tribune in 1967:

"The Provence regions along the Mediterranean coast are still the keenest herb-consuming areas of France, where the current 'in' salad is called 'mesclun'--a medieval mixture of cos (romaine) lettuces [red and white], chicories [both bitter and curly], chervil and winter cress. Peasant food that has become the Rolls-Royce

of salads, it commands high prices in Saint Tropez restaurants and sells at the exclusive Fauchon store on the Place de la Madeleine in Paris at around \$2 a pound (Monique 1967)."

Baby-leaf salad mixes still fetch a high price per pound, particularly when marketed as a specialty product such as spring mix or mesclun mix.

Growing baby-leaf salad greens in Whatcom County

Many types of leafy greens grown for baby-leaf salad mix perform well in Whatcom County’s climate. Brassica crops (arugula, kale, pak choi, and mustard greens) and spinach perform particularly well in the spring and fall seasons. Some varieties are better suited for spring and fall production in Whatcom County than others. The cold, wet conditions in early spring may slow germination or cause damping off in some varieties. Quick stand establishment helps a direct-seeded crop compete with weeds. Other varieties might be more likely to bolt due to increasing day length in the spring or exposure to long day lengths in early fall. A variety’s resistance to insect pests and diseases that are common in Whatcom County is also important, particularly if the varieties are to be grown organically. Whatcom County’s temperate, humid conditions provide a favorable climate for pathogens such as: bottom rot, grey mold, downy mildew, and verticillium wilt in lettuce, white rust, fusarium wilt, downy mildew, and verticillium wilt in spinach and beet crops, as well as sclerotinia stem rot, downy mildew, and clubroot in brassica crops.

Washington State University is working with the Cloud Mountain Farm Center in Everson to identify varieties of leafy greens that are best suited for spring and fall baby-leaf salad mix production in Northwest Washington. Ten varieties (Figure 1) of leafy greens falling into the three main crop types included in baby-leaf salad mixes (brassicicas, chenopods, and lettuces)



Figure 1. The ten varieties included at a variety trial at the Cloud Mountain Farm Center and WSU Mount Vernon. The varieties are, from left to right: arugula var. Adagio, spinach var. El Real, beet var. Bull's Blood, romaine var. Flashy Trout Back, romaine var. Brown Golding (*top row*), Asian mustard var. Bekana, kale var. Winter Red, Asian mustard var. Yukina Savoy, pak choi var. Joi Choi, and Asian mustard var. Komatsuna (*bottom row*).

are being grown in replicated variety trials in the spring and fall at Cloud Mountain Farm Center in Everson and the WSU Northwestern Washington Research and Extension Center in Mount Vernon. Varieties are evaluated for total and marketable yield, stand establishment, days to harvest, and postharvest shelf life.

Experimental Methods

Varieties are planted on raised beds to protect the crop from heavy rainfall (Figure 2). Beds are 7 inches high and 3 feet wide. The field was rototilled and organic fertilizer (8-2-4 Wil-Gro Pro Granic, Wilbur-Ellis Company, Yakima, WA) was



Figure 2. Variety trials planted on raised beds at WSU Mount Vernon NWREC in Spring 2013 (left) and Fall 2012 (right). Plots are 10 ft long by 3 ft wide and irrigated with two lines of drip tape per bed.

applied at a rate of 50 lbs N/ acre was applied to the bed centers, then beds were shaped. Six rows, 2.5 inches apart, were marked on the beds, and plots were 10 feet long. Seed were planted by hand to ensure uniformity throughout the trial. Seeds are spaced at approximately 1/2 inch apart within each row and covered with a thin layer of soil by hand after planting. All plantings were managed organically.

Both seasons, there were two planting dates approximately two weeks apart, the beginning

of April and mid-April in spring, and the beginning of September and mid-September in fall. Beds are irrigated with two lines of drip tape (8 mm wall thickness, 8 in. emitter spacing, 0.670 gmp/100 feet) per bed. Irrigation is applied at a rate of 1 inch per week and was adjusted for precipitation. At Cloud Mountain Farm Center in the fall of 2013, micro-emitters were used in the place of drip irrigation.

Each plot was harvested by hand using a saw-toothed sickle when leaves reached a height of 4 inches (Figure 3). Plants were cut one inch



Figure 3. A lettuce plot at harvest; the crop and any weeds growing in the bed were harvested.

above the soil, including any weeds growing in the plot. The harvested crop was sorted into three groups and weighed: marketable leaves, unmarketable leaves (any leaves with disease symptoms or insect damage), and weeds (Figure 4). Each plot was harvested only once, however substantial regrowth suitable for harvest was observed in the weeks after the initial harvest.

The postharvest shelf life of each variety was evaluated by placing 200 grams of marketable leaves from each plot in an unsealed plastic produce bag in a walk-in refrigerated storage room at 40 ° F. Leaves in each bag were visually evaluated twice weekly and rated on a scale



Figure 4. Harvested mustard greens are sorted by hand into three groups: marketable leaves, unmarketable leaves, and weeds.

from one to nine for decay, discoloration, wilting, and visual quality.

Preliminary Results

The variety trial is ongoing, but preliminary results from fall 2012 and spring 2013 reveal that lettuce crops have a slower rate of germination and growth in the cooler spring and fall conditions than brassica and chenopod crops. The yield of the three crop types did not differ significantly from the spring to the fall, and did not differ significantly between the Cloud Mountain and Mount Vernon sites. The yield of the three crop types (Brassicacrops, Chenopods, and Lettuces) were not significantly different from one another (Figure 5).

However, when we divided the yield of each crop type by the days to its harvest (the number of days from planting to harvest) the brassica crops had a significantly faster growth rate than the lettuce crops (Figure 6). The growth rate of the chenopod crops was not significantly different from the growth rate of the brassica or lettuce crops.

These results indicate that brassica crops and chenopod crops are more productive than let-

Figure 5. Yield (g) of the three crop types (Brassica, Chenopod, Lettuce) per 3 row-feet in the spring and fall seasons at the Cloud Mountain and Mount Vernon locations.

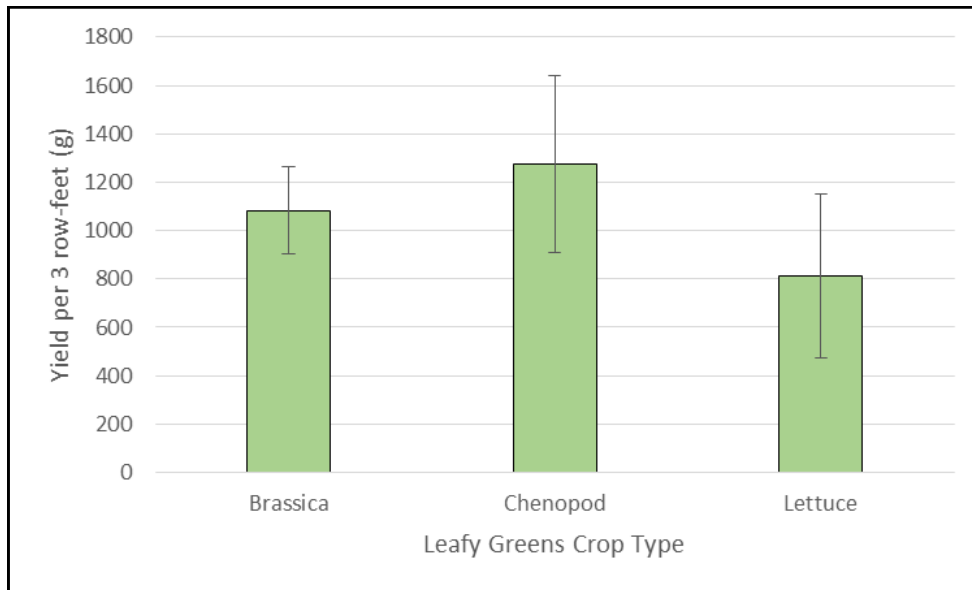
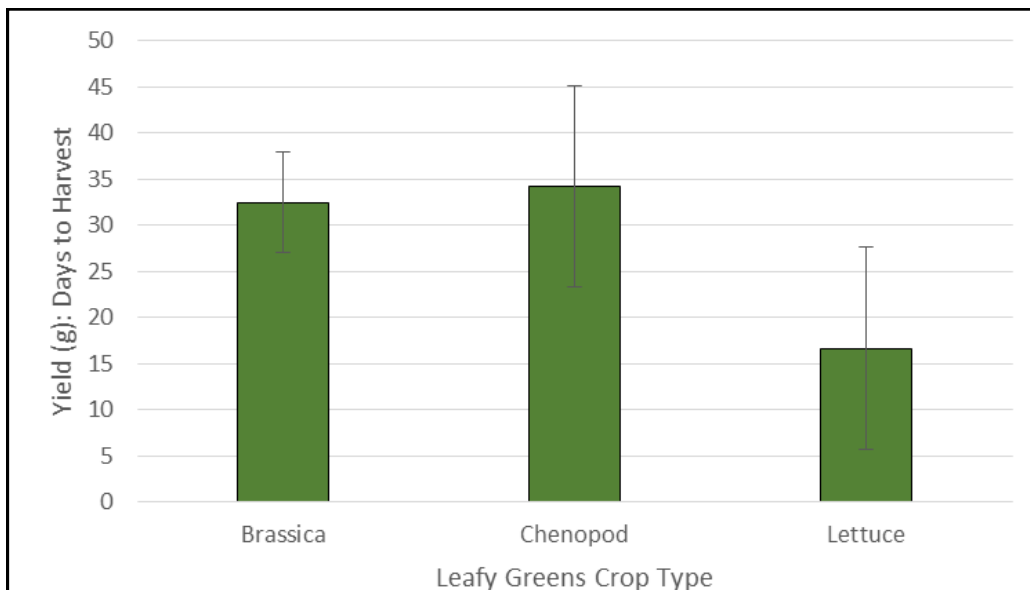


Figure 6. Yield (g) of the three crop types (Brassica, Chenopod, and Lettuce) per day to harvest (grams per day) in the spring and fall seasons at the Cloud Mountain and Mount Vernon locations.



tuce crops in the cool, moist growing conditions of spring and fall in northwest Washington. Baby-leaf salad green growers could potentially substitute a mild mustard green such as 'Bekana' for lettuce. 'Bekana' germinates quickly, reaches marketable size in 26-36 days in spring and fall, crowds out weeds and has the appearance of looseleaf lettuce.

For More Information on this project please visit:

<http://vegetables.wsu.edu/LeafyGreens.html>

