



2012 Organic Pea Variety Trial Results

The following tables present the results of organic pea variety trials that took place on research stations and cooperating farms in Washington, Oregon, Wisconsin, and Minnesota in 2012. These trials were part of the USDA-OREI funded project Northern Organic Variety Improvement Collaborative. Trials will continue in 2013.

Detailed descriptions of the trial methods and rating systems are listed after the results tables.



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Table 1: NOVIC 2012 Washington Pea Data - Part 1

Variety Name	Percent Germination	Nodes To Flower	Trellis (1-5)	Powdery Mildew Resistance (1-5)	Enation Resistance (1-5)	Plant Height (cm)	Average Pod Length (cm)	Average Pod Width (cm)
Cascadia	59.33 a	9.70 a	3.40 a	5.00 a	4.25 a	76.49 a	73.04 d	17.61 bc
Magnolia Blossom	69.67 a	10.83 a	3.60 a	4.25 ab	4.50 a	116.60 a	79.20 cd	16.58 c
OSP II	77.20 a	9.17 a	2.80 a	4.25 ab	4.75 a	70.70 a	93.65 abc	22.69 ab
S1423	80.17 a	8.80 a	3.20 a	4.75 a	4.25 a	72.68 a	77.50 cd	16.94 c
S1431	70.50 a	10.72 a	3.20 a	5.00 a	4.75 a	86.75 a	97.26 ab	22.86 ab
Sugar Lode	73.33 a	8.57 a	2.80 a	5.00 a	4.75 a	65.23 a	86.02 bcd	17.81 bc
Sweet Horizon	65.33 a	9.63 a	4.00 a	4.75 a	5.00 a	73.58 a	94.02 abc	21.14 abc
Swiss Giant	79.50 a	9.20 a	2.40 a	2.50 b	2.00 b	108.40 a	107.80 a	23.79 a

Letters after the scores represent groups of varieties whose means are not significantly different for that trait. In other words, all the varieties which have a score with an "a" after the number have essentially the same score for that trait. NA indicates that data were not available for that trait for a particular variety. For more information on how traits were measured, please see the protocols at the end of this document.



Table 2: NOVIC 2012 Washington Pea Data - Part 2

Variety Name	Flavor (1-5)	Tenderness (1-5)	Total Marketable Weight (g)	Total Marketable Pods	Notes
Cascadia	4.33 a	3.83 a	725.60 a	114.60 a	no count on last pick no count on last pick no count on last pick plant height too hard to discern because of poor trellising We couldn't do multiple harvests because of poor trellising the plants were on the ground and the wet rotted fruit or even flowers
Magnolia Blossom	3.00 a	3.60 ab	728.50 a	100.50 a	no count on last pick no count on last pick no count on last pick
OSP II	3.50 a	3.17 ab	1103.00 a	149.50 a	no count on last pick no count on last pick no count on last pick
S1423	3.67 a	3.83 a	701.10 a	118.70 a	no count on last pick no count on last pick no count on last pick
S1431	3.50 a	4.00 a	959.90 a	137.30 a	no count on last pick no count on last pick no count on last pick
Sugar Lode	2.83 a	3.33 ab	692.80 a	106.80 a	no count on last pick no count on last pick no count on last pick
Sweet Horizon	3.17 a	2.00 b	769.00 a	143.30 a	no count on last pick no count on last pick no count on last pick
Swiss Giant	2.20 a	3.00 ab	1036.00 a	120.50 a	no count on last pick no count on last pick no count on last pick

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Table 3: NOVIC 2012 Oregon Pea Data - Part 1

Variety Name	Percent Germination	Nodes To Flower	Trellis (1-5)	Powdery Mildew Resistance (1-5)	Enation Resistance (1-5)	Foot Rot Resistance (1-5)	Plant Height (cm)	Average Pod Length (cm)
Cascadia	48.33 b	8.40 a	4.00 a	4.67 a	4.67 a	4.33 a	44.17 a	64.67 f
Ho Dan Low	70.83 ab	7.47 a	2.60 a	5.00 a	4.33 a	3.33 a	39.67 a	102.50 ab
Magnolia Blossom	61.50 ab	11.05 a	3.20 a	1.67 b	5.00 a	4.00 a	77.33 a	76.00 ef
OSP II	72.83 ab	8.93 a	3.20 a	4.67 a	4.33 a	3.00 a	41.67 a	97.50 abc
S1423	57.50 ab	8.27 a	3.70 a	5.00 a	4.67 a	4.33 a	47.83 a	78.67 def
S1430	55.17 b	9.40 a	4.00 a	5.00 a	4.33 a	5.00 a	52.33 a	78.33 def
S1431	62.50 ab	10.40 a	2.70 a	5.00 a	4.67 a	4.00 a	61.00 a	89.00 bcde
Sugar Lode	62.17 ab	9.78 a	2.90 a	5.00 a	5.00 a	4.67 a	41.00 a	85.50 cde
Sugar Snap	54.33 b	9.60 a	2.80 a	1.00 b	1.00 b	4.33 a	67.50 a	80.30 de
Sweet Horizon	56.67 ab	9.47 a	3.70 a	5.00 a	4.67 a	5.00 a	48.00 a	91.33 bcd
Swiss Giant	80.83 a	8.80 a	3.40 a	1.00 b	1.33 b	4.67 a	55.50 a	111.70 a

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Table 4: NOVIC 2012 Oregon Pea Data - Part 2

Variety Name	Average Pod Width (cm)	Flavor (1-5)	Tenderness (1-5)	Total Marketable Weight (g)	Total Marketable Pods	Notes
Cascadia	14.83 b	5.00 a	3.67 a	1678.00 ab	269.00 abc	little deer damage
Ho Dan Low	22.83 a	4.17 ab	3.67 a	1865.00 ab	322.30 abc	medium deer damage
Magnolia Blossom	14.17 b	3.33 bc	3.00 a	1800.00 ab	293.30 abc	vigorous, late severe deer damage
OSP II	22.33 a	3.00 bc	4.33 a	2028.00 a	513.30 a	severe deer damage
S1423	15.00 b	2.00 c	3.00 a	2047.00 a	328.70 abc	some snows
S1430	15.00 b	3.67 ab	2.67 a	2341.00 a	371.00 ab	
S1431	21.83 a	3.67 ab	3.33 a	1827.00 ab	377.70 ab	clean, productive severe deer damage
Sugar Lode	16.70 b	3.00 bc	3.00 a	1292.00 ab	209.00 abc	mild deer damage
Sugar Snap	15.60 b	4.50 ab	4.50 a	168.00 c	30.67 c	pea enation (?) damage-wrinkled leaves, veiny, gnarled pods
Sweet Horizon	21.67 a	4.00 ab	3.00 a	2000.00 a	401.70 ab	mild tasting a little deer damage
Swiss Giant	24.33 a	4.00 ab	3.33 a	773.00 bc	97.00 bc	moderate deer damage

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Table 5: NOVIC 2012 Wisconsin Pea Data - Part 1

Variety Name	Percent Germination	Nodes To Flower	Trellis (1-5)	Powdery Mildew Resistance (1-5)	Plant Height (cm)	Average Pod Length (cm)
Cascadia	16.60 b	10.67 c	2.75 a	4.20 ab	61.20 c	219.30 a
Magnolia Blossom	39.40 b	13.27 ab	4.00 a	2.80 ab	105.80 a	212.40 a
OSP II	25.60 b	12.33 bc	2.50 a	4.00 ab	65.20 c	590.80 a
S1423	17.00 b	12.20 bc	2.75 a	5.00 a	69.25 bc	239.80 a
S1430	9.40 b	11.60 bc	2.75 a	4.20 ab	79.60 abc	202.10 a
S1431	17.40 b	13.80 ab	2.75 a	4.00 ab	81.80 abc	265.00 a
S1432	31.00 b	NA NA	NA NA	1.00 b	63.00 c	68.90 a
Sugar Lode	27.00 b	13.40 ab	2.75 a	4.20 ab	55.70 c	225.10 a
Sugar Snap	20.40 b	15.53 a	4.25 a	2.80 ab	97.40 ab	217.80 a
Sweet Horizon	25.80 b	13.67 ab	2.50 a	4.00 ab	68.10 c	215.00 a
Swiss Giant	74.40 a	12.47 bc	3.50 a	2.80 ab	98.50 a	205.40 a

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Table 6: NOVIC 2012 Wisconsin Pea Data - Part 2

Variety Name	Average Pod Width (cm)	Flavor (1-5)	Tenderness (1-5)	Total Marketable Weight (g)	Total Marketable Pods	Notes
Cascadia	54.72 a	3.54 a	3.06 a	372.60 a	61.80 a	
Magnolia Blossom	53.33 a	2.67 a	3.19 a	490.20 a	96.40 a	off-flavor slight dirt, off-flavor
OSP II	38.60 a	2.62 a	2.75 a	886.60 a	166.40 a	off-flavor
S1423	46.91 a	2.77 a	3.17 a	829.80 a	145.20 a	off-flavor strong off-flavor
S1430	42.22 a	3.21 a	2.85 a	416.00 a	76.00 a	weird flavor off-flavor
S1431	67.68 a	2.33 a	3.19 a	557.00 a	113.00 a	slightly bitter off-flavor
S1432	14.50 a	NA NA	NA NA	85.00 a	21.00 a	
Sugar Lode	59.05 a	3.00 a	3.06 a	716.60 a	130.00 a	overall on all varieites frost damage,
Sugar Snap	45.81 a	3.00 a	2.75 a	185.20 a	43.00 a	but still counted as marketable, off-flavor
Sweet Horizon	43.96 a	2.81 a	2.56 a	632.80 a	153.20 a	off-flavor
Swiss Giant	46.93 a	2.50 a	3.12 a	520.40 a	74.80 a	slightly grassy off-flavor

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Table 7: NOVIC 2012 New York Pea Data - Part 1

Variety Name	Percent Germination	Nodes To Flower	Trellis (1-5)	Powdery Mildew Resistance (1-5)	Plant Height (cm)	Average Pod Length (cm)
Cascadia	75.00 ab	11.87 ab	3.67 ab	5.00 a	79.00 cde	65.17 ef
Ho Dan Low	88.75 ab	11.40 ab	3.00 ab	5.00 a	71.67 de	87.50 bc
Magnolia Blossom	83.75 ab	14.20 a	4.33 a	3.00 bc	151.00 a	71.50 de
OSP II	85.25 ab	12.67 ab	3.33 ab	5.00 a	76.67 de	89.67 b
S1423	72.50 b	11.00 b	3.67 ab	5.00 a	77.67 de	75.00 de
S1430	74.00 ab	NA NA	NA NA	NA NA	NA NA	NA NA
S1431	72.00 b	13.73 ab	3.00 ab	5.00 a	118.00 abc	83.17 bcd
Sugar Lode	88.50 ab	11.60 ab	2.67 ab	5.00 a	62.33 de	73.00 de
Sugar Snap	70.50 b	13.07 ab	3.67 ab	3.00 bc	143.30 a	76.33 cde
Sweet Horizon	79.75 ab	11.93 ab	4.00 ab	5.00 a	91.67 bcd	81.83 bcd
Swiss Giant	93.75 a	11.00 b	4.33 a	2.33 c	130.70 ab	103.30 a
Wando	68.75 b	12.60 ab	4.33 a	3.33 b	154.30 a	67.00 ef
Waverex	34.25 c	11.13 b	2.33 b	1.33 d	49.00 e	57.17 f

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Table 8: NOVIC 2012 New York Pea Data - Part 2

Variety Name	Average Pod Width (cm)	Flavor (1-5)	Tenderness (1-5)	Total Marketable Weight (g)	Total Marketable Pods	Notes
Cascadia	17.00 b	3.67 a	4.00 a	2686.00 a	413.80 ab	
Ho Dan Low	21.83 a	3.33 ab	3.00 a	2605.00 a	461.00 ab	spots (black mildew?), spots mildew/spots,
Magnolia Blossom	15.33 bc	3.33 ab	3.00 a	1395.00 abcd	331.00 ab	mildew/spots, mildew/spots, all speckled, some worse than others mildew/spots,
OSP II	23.17 a	3.00 abc	3.67 a	2181.00 a	394.50 ab	black mildew/spots, black mildew/spots, spots black mildew/spots,
S1423	15.83 bc	3.67 a	3.33 a	2216.00 a	434.00 ab	
S1430	NA NA	NA NA	NA NA	1323.00 abcd	345.00 ab	
S1431	21.83 a	3.33 ab	3.00 a	1533.00 abcd	392.00 ab	spots, mildew/spots, spots,
Sugar Lode	14.67 c	2.67 abc	3.00 a	1801.00 abc	300.80 bc	
Sugar Snap	15.17 bc	4.00 a	4.00 a	443.20 bcd	95.25 cde	Not ready at 1st harvest mildew/spots, Not ready at 1st harvest mildew/spots, Not ready at 1st harvest mildew/spots,
Sweet Horizon	21.50 a	3.67 a	2.67 ab	2377.00 a	520.20 a	spots, spots,
Swiss Giant	23.67 a	3.00 abc	2.67 ab	1813.00 ab	267.50 bcd	mildew/spots, mildew/spots, mildew/spots,
Wando	13.83 c	1.33 bc	1.00 b	208.30 cd	59.33 de	Not ready at 1st harvest'not edible mildew/spots, Not ready at 1st harvest:not edible mildew/spots, Not ready at 1st harvest:not edible mildew/spots,
Waverex	10.07 d	1.00 c	1.00 b	97.50 d	47.00 e	Not ready at 1st harvest'not edible all have specks mildew/spots, Not ready at 1st harvest:not edible mildew/spots, Not ready at 1st harvest:not edible

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NOVIC Pea Trialing Guide-(revised 4/6/11, JRM, MM, LM, AC)

At Planting:

Peas should be planted mid June to evaluate their performance in heat and to determine potential for a late summer/fall slot.

Record date of planting.

- Seeds will be distributed 100 seeds/packet. Plant entire packet into 10 foot single row (approximately 1.25 inches within row spacing).
- Seedlings will be later thinned and a trellis for support needs to be installed after planting.

NOTE: When evaluating, consider all plants in the plot (do not leave border plants at plot ends because it is too hard to separate these from the plot when making multiple harvests).

Data collected during vegetative growth up to bloom:

- Percent germination is recorded after 2 weeks and *then* seedlings are thinned to achieve a stand of 40 plants per plot (4 plants/foot).
- Flowering and node count – At the mother sites, record date that 50% of the plants in a plot have at least one flower open.
- After plants begin flowering, count number of nodes along the main stem from the node above the cotyledon to the first flowering node on 5 plants/plot.
- Trellising – rate on a 1-5 scale about time of first bloom (this can be done at time flowering and node count is done). 5=plants find trellis and grow up it with essentially no assistance; 3=plants remain on trellis with initial grower training; 1=plants continue to flop into aisles without tying up.

Data collected after reproductive growth begins:

Disease and insects - If any disease or insect problems are notable, take data at the time that they are observed. Otherwise assess for the problems listed below at about the second pod harvest stage. Because diseases and insects are patchy, data should be taken at both mother and daughter sites as opportunities arise.

- Powdery Mildew - rate on a 1-5 scale where 5=no disease; 3=mildew on plant, but remains productive; 1=leaves and pods covered with mildew. (This disease may not occur in east coast environments until late fall). (See photo scale).
- Aphid – rate on a 1-5 scale where 5=virtually no aphids in plot; 3=aphids as common as elsewhere in field; and 1=plot heavily infested.
- Foot rot (Fusarium wilt) - rate on a 1-5 scale where 5=Plant green down to soil; 3=Stem and foliage browning $\frac{1}{4}$ way up plant; and 1=Stem and foliage browning $\frac{1}{2}$ way up plant or more. (See photo scale).
- Pea Enation Mosaic Virus – rate on a 1-5 scale where 5=No virus present; 3=half of the plants in the plot infected; and 1=all plants in the plot symptomatic. (Note that this disease will not be found in eastern environments. In addition, PEMV in the PNW may occur as part of a virus complex with red

clover vein mosaic and calico viruses.) (See photo scale).

Plant traits

Plant Height – record height of one typical plant per plot at mother sites only. This should be done at 2nd or 3rd harvest. If plant tops the trellis and flops, straighten out when height is measured to get a estimate of the height of trellising needed.

Overall – rate overall appearance of plot at the first picking on a 1-5 scale. 5=excellent stand, vigor, plant health, productivity and pod quality; 3= medium stand, vigor, plant health, productivity and/or pod quality; 1= poor stand, vigor, plant health, productivity and/or pod quality.

Harvest operations:

- At the mother site, harvest pods every 10 days to 2 weeks with 3 pickings total.
- First picking should be when 75% of the plants have at least one harvestable pod (see below for definition of harvestable).
- Note date of each harvest.
- For each plot, weigh pods to obtain total fresh weight and count number of pods. This should be done at each picking.
- Grade pods as marketable and unmarketable and weigh and count the unmarketable group (there are usually fewer unmarketable to count and marketable can be obtained by subtraction). To determine whether a pod is marketable or not, ask yourself whether as a fresh market grower, you would sell it or not.
- Snap pea pods are considered harvestable when pods are plump and berries inside pods are moderately to fully developed and sweet, but have not yet become starchy. Snow pea pods are considered prime when pods have reached nearly full size but the seeds within have only started to develop.
- At time of first harvest, sample a subset of 10 fully mature, marketable pods and take measurements as described below.

At daughter sites, there are two possible approaches where farmers may be integrated into the process:

- Option A: pick on same schedule as mother trial, obtain total pod weights and a weight for 10 randomly selected, fully mature, marketable pods. Weigh unmarketable pods in the total sample.
- Option B: If daughter sites cannot be visited frequently enough to conduct multiple harvests, pick and weigh pods as above from one picking at what would correspond to 3rd picking date. On five plants per plot, count number of nodes with pods and count total number of pods.
- Growers may keep the crop.

Data collected after harvest:

Pod Measurements (done once on mother trial sample, 1st picking (do not pick plot if there are not enough pods for these measurements); daughter sites excluded.)

Choose 10 fully mature marketable pods per plot and measure the following in metric units:

Pod length - Measure length of pods in subsample (lay out end to end along meter stick and divide total by number of pods to get an average).

Pod height –Lay out side by side and measure 10 pods at their thickest point from dorsal to ventral suture (divide by 10 to get the average pod width).

Pod straightness (This trait is different for snow and snap peas. For snow peas, it is a measure of "spooning" or crumpling; for snap peas, it is the degree of adaxial curvature.). Rate on a 1-5 scale where 5=Pods straight; 3=Pods slightly curved; and 1=Pods strongly curved (fish hooks). See figure 1 below for snap peas.

Stringlessness - Take this measurement only if stringless snap peas are included in the trial. This trait does not need to be measured on snow peas. For each pod in subsample, pull string and measure length of string and destemmed pod. Record this information with pod length in order to calculate stringlessness proportion, which is quantified as the ratio of string to total pod length.

Flavor – measure on a 1-5 scale with 5=intense, good pea flavor; 3=acceptable pea flavor; and 1=flavorless. x=distracting off-flavor, can be combined with numerical rating.

Tenderness – measure on a 1-5 scale where 5=very tender pod, chews quickly; 3=moderately tender, slightly fibrous but swallowed; 1=tough pod, much fiber remains in mouth that cannot be chewed.