2011 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 2011. These trials were part of the USDA-OREI funded project Northern Organic Variety Improvement Collaborative. Trials will continue in 2012 and 2013.
Detailed descriptions of the trial methods and rating systems are listed after the results tables.

List of Tables

Table 1: NOVIC 2011 Washington Pea Data

Variety Name	Percent Germination	Nodes To Flower	Trellis (1-5)	Average Pod Length (cm)	Average Pod Width (cm)	Flavor (1-5)	Tenderness (1-5)	Total Marketable Weight (g)
Cascadia	38.67 a	6.33 a	3.00 a	43.35 a	8.80 a	4.00 a	3.67 a	328.00 b
OSP II	54.83 a	6.64 a	3.80 a	38.20 a	8.20 a	3.67 a	3.33 a	951.50 a
OSU-S1423	59.00 a	5.85 a	4.00 a	40.70 a	8.40 a	3.33 a	3.00 a	165.00 cd
OSU-S1430	45.83 a	5.85 a	4.25 a	89.00 a	16.00 a	3.50 a	3.50 a	NA NA
OSU-S1431	53.33 a	6.72 a	4.00 a	99.00 a	21.00 a	3.00 a	4.00 a	NA NA
Sugar Prince	35.83 a	7.27 a	2.67 a	7.80 a	1.50 a	3.50 a	2.00 a	309.00 bc
Sugar Sprint	38.83 a	7.60 a	3.00 a	7.50 a	1.50 a	2.33 a	3.00 a	112.50 d
Sugaree	33.50 a	7.07 a	3.67 a	NA NA	NA NA	NA NA	NA NA	NA NA
Sweet Horizon	56.67 a	7.12 a	3.20 a	28.32 a	7.36 a	4.25 a	3.00 a	234.67 bcd

Letters after the scores represent groups of varieties whose means are not significantly different for that trait. In other words, all the varities 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 2011 Oregon Pea Data - Part 1

Variety Name	Percent Germination	Nodes To Flower	Trellis (1-5)	Powdery Mildew Resistance (1-5)	Foot Rot Resistance (1-5)	Enation Resistance (1-5)	Plant Height (cm)	Average Pod Length (cm)	Average Pod Width (cm)
Cascadia	43.40 bc	10.84 a	3.80 abc	5.00 a	4.60 a	4.60 ab	61.33 bc	70.30 bc	15.92 b
OSP II	59.80 ab	11.48 a	3.00 bcd	5.00 a	5.00 a	4.40 ab	62.00 bc	95.50 a	23.05 a
OSU-S1423	58.60 ab	9.68 a	3.40 abc	4.80 a	4.20 a	4.40 ab	67.33 bc	74.98 b	15.28 bc
OSU-S1430	62.80 ab	9.80 a	4.20 ab	4.80 a	4.20 a	4.60 ab	80.00 b	71.02 bc	14.64 bc
OSU-S1431	64.60 ab	12.36 a	4.00 ab	5.00 a	5.00 a	4.40 ab	71.67 bc	90.04 ab	22.04 a
Sugar Prince	26.00 c	9.30 a	1.75 d	5.00 a	5.00 a	2.50 b	35.00 de	53.43 c	10.13 d
Sugar Sprint	24.00 c	8.54 a	2.25 cd	5.00 a	5.00 a	2.50 b	20.33 e	55.00 c	12.60 cd
Sugaree	33.20 c	10.80 a	4.80 a	4.75 a	5.00 a	3.40 ab	109.33 a	80.00 ab	14.47 bc
Sweet Horizon	67.80 a	11.40 a	3.40 abc	4.80 a	5.00 a	5.00 a	53.00 cd	88.20 ab	21.50 a

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Table 3: NOVIC 2011 Oregon Pea Data - Part 2

Variety Name	Pod Straightness (1-5)	Flavor (1-5)	Tenderness (1-5)	Total Marketable Weight (g)	Notes
Cascadia	4.00 a	4.00 ab	4.00 a	1334.21 ab	Second and third pick was not done on Cascadia because stand/yield was too low.
OSP II	3.25 a	2.50 b	4.50 a	1637.50 a	bland flavor, pretty tasteless, Twisty at the base of plant.
OSU-S1423	3.25 a	3.60 ab	3.50 a	1270.30 ab	90 percent dead and dry on 8/22 possibly due to foot rot though did not look terribly rotten Spots on leaves.
OSU-S1430	3.25 a	3.20 ab	3.00 a	1143.66 ab	90 percent dead and dry on 8/22 possibly due to foot rot though did not look terribly rotten unmarketables were too small, Brown spots on leaves Several snow pea types in mix
OSU-S1431	4.62 a	1.80 b	3.75 a	1529.42 a	RCMV? Twisty at the base of plant.
Sugar Prince	5.00 a	3.33 ab	3.50 a	123.70 b	Small stunted w pods
Sugar Sprint	5.00 a	5.00 a	4.00 a	81.00 b	Small stunted w pods. Red Clover virus. very small pods,
Sugaree	4.00 a	4.00 ab	3.67 a	1550.67 a	PM; brown spots on leaves. Sugaree plant architecture is great. Vigor is great, yield/pod load is low. Bottom of plant twists around a lot before growing upward hard to get node .
Sweet Horizon	5.00 a	3.20 ab	2.88 a	1003.11 ab	Red Clover virus. has some shell peas, Spots on leaves

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Table 4: NOVIC 2011 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)	Average Pod Width (cm)
Cascadia	48.00 ab	12.07 cd	4.33 a	5.00 a	97.67 c	75.00 ab	15.30 a
Cascadia (High Mowing)	NA NA	NA NA	NA NA	NA NA	NA NA	67.00 b	14.20 a
OSP II	63.00 a	13.33 bcd	4.33 a	5.00 a	93.00 c	91.38 a	22.07 a
OSP II (Osborne)	NA NA	NA NA	NA NA	NA NA	NA NA	73.50 ab	19.60 a
OSU-S1423	55.33 a	12.80 cd	4.33 a	5.00 a	103.33 c	79.75 ab	14.57 a
OSU-S1430	42.33 abc	12.60 cd	4.67 a	5.00 a	109.00 bc	79.12 ab	13.93 a
OSU-S1431	30.00 abc	14.80 abc	4.67 a	5.00 a	125.67 ab	84.38 ab	20.82 a
Sugar Prince	5.00 c	NA NA	NA NA	NA NA	NA NA	NA NA	0.00 b
Sugar Snap	37.33 abc	16.53 a	3.00 a	3.00 c	138.33 a	73.25 ab	15.10 a
Sugar Sprint	14.00 bc	10.50 d	NA NA	NA NA	NA NA	NA NA	NA NA
Sugaree	26.67 abc	15.93 ab	3.33 a	3.67 b	136.67 a	76.62 ab	15.12 a
Sweet Horizon	28.33 abc	14.67 abc	4.33 a	5.00 a	101.00 c	83.67 ab	13.05 ab

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Table 5: NOVIC 2011 Wisconsin Pea Data - Part 2

Variety Name	Pod Straightness (1-5)	Flavor (1-5)	Tenderness (1-5)	Total Marketable Weight (g)	Notes
Cascadia	3.25 a	3.50 a	3.75 a	1149.88 a	Shell types many very straight, rest have curve of 3. straight pods are very fiberous but more pea flavor, Large string
Cascadia (High Mowing)	3.00 a	2.00 a	2.00 a	208.00 a	
OSP II	3.50 a	3.50 a	2.50 a	1678.70 a	Snow Snow juicy! very curled (don't lay flat and did not stretch to measure) Snow lot are very straight Snow
OSP II (Osborne)	2.00 a	3.00 a	3.00 a	118.00 a	
OSU-S1423	3.50 a	2.00 a	3.00 a	959.67 a	
OSU-S1430	3.50 a	2.50 a	2.00 a	1217.03 a	
OSU-S1431	4.00 a	2.75 a	3.50 a	407.93 a	Snow Snow
Sugar Prince	NA NA	NA NA	NA NA	NA NA	
Sugar Snap	4.00 a	3.50 a	4.50 a	154.20 a	Lots of pods 9/6 Farmer note: plants looked spindly at 3 wks
Sugar Sprint	NA NA	NA NA	NA NA	NA NA	3 plants all look eaten, 1 has flowers 1 of 6 plants has flowers on 9/6, others eaten 9/8
Sugaree	4.25 a	1.75 a	2.00 a	449.25 a	
Sweet Horizon	4.33 a	2.33 a	2.00 a	421.57 a	Lots of pods Many are straightness of 5, Some are very straight

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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 andnode 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 ¼ way up plant; and 1=Stem and foliage browning ½ 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.