



Field Pea Variety Trial 2014 Results

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Interest in field peas in Maine stems from the need for viable rotation crops for organic grain production and from increasing demand for organic and non-GMO feed grains for dairy, chicken, and other livestock. Field peas can break small grain disease cycles, are grown with the same production equipment as small grains, and as legumes, fix all of the nitrogen required for the crop.

We conducted two trials, in 2013 and 2014, to assess the feasibility of organic field pea production in Maine. Because field peas are normally grown in more arid climates, there is concern that our humid conditions could exacerbate disease and lodging issues. In addition, field peas are thought to be less competitive with weeds, which under organic production practices could negatively impact yields and cause an increase in the weed seed bank.

GROWING PEAS WITH CEREALS, 2013

In 2013, we conducted a trial at the University of Maine's Aroostook Farm in Presque Isle looking at the practice of growing peas in mixes with barley or oats. It is thought that cereal/pea mixes could reduce the risk of lodging and improve crop competitiveness with weeds. Yield results from this trial were encouraging, with monocrop peas yielding just under 4000 lbs/acre. Yields were similar for the oat/pea mixture and lower for the barley/pea mixtures (3000 to 3600 lbs/ac depending on barley variety). Weed pressure at this site was low and no major differences in weed biomass were observed among the treatments. Lodging was widespread, fairly uniform throughout the site, and could not be linked to any one seeding practice. For a complete summary of this trial, see <http://umaine.edu/localwheat/research/field-peas/>.

PEA VARIETY TRIAL, 2014

In 2014, we conducted a variety trial at the University of Maine's Rogers Farm in Old Town comparing 15 varieties of monocrop field peas (Table 1). All of the varieties were determinate, semi-leafless grain types, meaning they tend to be shorter and have more tendrils than forage type peas, which makes them less susceptible to lodging.



Photo: "Salamanca", the tallest variety at 49 inches on July 10.

Table 1. Varieties and suppliers for the 2014 field pea variety trial.

Variety	Supplier (source)	Cotyledon (seed) color
Abarth	Pulse USA	Yellow
AC Agassiz	Meridian seeds (Leo Vojto Glenham SD)	Yellow
AC Earlystar	Meridian seeds (Canterra Seeds)	Yellow
AC Thunderbird	Meridian seeds (NDSU)	Yellow
Bridger	Legume Logic (Great Northern Ag)	Yellow
Daytona	Meridian seeds (Leo Vojto Glenham SD)	Green
DS Admiral	Pulse USA	Yellow
Jetset	Meridian seeds (NDSU)	Yellow
Korando	Pulse USA	Yellow
Mystique	Pulse USA	Yellow
Navarro	Legume Logic (Great Northern Ag)	Yellow
Nette	Pulse USA	Yellow
Salamanca	Legume Logic (Great Northern Ag)	Yellow
Spider	Legume Logic (Great Northern Ag)	Yellow
SW Midas	Pulse USA	Yellow

METHODS

The previous crop at this site was conventional potatoes and the soil type was Melrose fine sandy loam. The field was harrowed two times prior to planting. No fertility was applied and the peas were inoculated with a pea/lentil inoculant. The varieties were planted on May 9 with an Almaco small-plot cone seeder with 6.5-inch row spacing. The target plant density was 9 plants/ft² or 390,000 plants/acre. Plots were tine harrowed with a Lely weeder on May 29 when the peas were approximately 4 inches tall, and harvested on August 19 with a Wintersteiger small plot combine.

RESULTS

Weeds

Timely planting, early vigorous growth, and tine weeding may have contributed to the overall excellent level of weed control found within the plots. Background weed pressure was high at this site; common lambsquarters, redroot pigweed, and hairy galinsoga were found in high numbers in the alleyways and plot edges. However, weed biomass in the plots, ranked visually at harvest, was very low for all varieties.

Disease

Diseases are a concern for peas and can cause yield loss at all growth stages. This is particularly true in Maine where average rainfall is much higher than in the arid regions where field peas are typically grown. Few diseases were noted up through flowering with the exception of *Rhizoctonia*. *Rhizoctonia* is a common root rot fungus found in soils and can attack susceptible plants at any growth stage. Small patches were noted at the beginning and throughout flowering, and the disease became more widespread as the plants started to dry down. No differences in *Rhizoctonia* incidence or severity were noted among the varieties. White mold (*Sclerotinia*) was found in the plots as plants started to lodge.

Plant Heights and Lodging

Plant height, taken on July 10, toward the end of flowering, averaged 46 inches for all varieties (Table 2). None were shorter than 42 inches, which is on the extreme end for these shorter stature varieties and

most likely contributed to lodging. Varieties with the most severe lodging included Navarro, Nette, and Spider, while Bridger, Mystique, and Salamanca lodged the least.

Yield

Pea grain yields averaged 3517 lb/acre for the trial and ranged from 2706 lb/acre for Navarro to 4426 lb/acre for Spider (See Table 2). While there is little historical yield information for dry peas in Maine, yields from these trials compare with other major dry pea production regions, and with our 2014 results.

Table 2. Field pea growth habits, test weight, and yield in 2014.

Variety	Days to flowering (DAP†)	Flowering duration (DAP)	Plant Height (inches)	Lodging (0-9 scale‡)	Test weight (lbs/bu)	Yield§ (lbs/acre)
Abarth	46	14	45	6	61.0	3176
AC Agassiz	48	22	44	6	61.0	3069
AC Earlystar	52	18	46	7	61.6	4300
AC Thunderbird	53	17	43	7	61.9	3001
Bridger	48	11	46	4	61.3	3623
Daytona	53	10	45	8	60.5	3211
DS Admiral	52	10	48	7	61.2	4169
Jetset	52	10	44	7	61.6	3757
Korando	48	11	42	7	62.0	4144
Mystique	52	18	46	3	62.0	3403
Navarro	46	14	47	9	59.9	2706
Nette	48	11	43	9	62.0	3709
Salamanca	52	10	49	4	61.3	3310
Spider	52	10	48	9	61.6	4426
SW Midas	48	11	45	7	61.4	3133
Site average	50	13	46	7	61.3	3517
LSD (0.05)	--	--	7	1	1.0	1011

† Days after planting

‡ 0 = no lodging, 9 = severe lodging

§ Yield at 13.5% moisture

DISCUSSION

Results from our two years of trials suggest dry peas can be a viable crop in Maine. Overall yields were good to excellent and peas proved to be very competitive with weeds. Diseases were observed in 2014, but the impact on yield was limited because the diseases were not widespread until the plants started to dry down. Sites (soil drainage) and weather conditions most likely contributed to differences in disease levels between years. Lodging occurred in both years and was severe in many of the varieties in 2014. Lodging and ease of harvest continue to be a concern for dry pea production in Maine. In addition, deer damage was widespread in the 2014 trial and should be considered in areas with high populations. In future trials, swathing will be investigated as a way to avoid lodging and speed up dry down.

Updated October 2015

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