

Evaluation of Field Pea Types for Cover Crop/Forage Applications

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A field trial was initiated at the CREC to determine the differences in yield and N concentrations among various field pea varieties and types for their use as a green manure cover crop or annual forage. Due to rising costs of commercial fertilizers, particularly nitrogen sources, the use of field peas as a cover crop has been gaining attention. Seven commercial varieties of field peas were used in this trial. All varieties were of long-vine type growth habit with the exception of DS Admiral, which is a semi-leafless, food-grade type pea. Arvika, 4010, Austrian Winter, and BBSPea are marketed for cover crop/forage use, while Grande and Victoria are food-grade types. Varieties used exhibited large differences in seed size, 1800 to 5000 seeds per pound, thus seeding rates differed greatly among these varieties. This is an important trait to consider as smaller seed size should result in lower seeding costs. All entries were sown at 300,000 PLS/AC on May 19, in 7-inch rows. The previous crop was spring wheat with a fall soil test indicating 15 lbs. N/ac in the top two feet. No additional N was used in this trial. Granular inoculant (*rhizobium* spp.) was used prior to planting at recommended rates. The trial was harvested on July 15, 57 days after planting. Entries flowered from two to seven days prior to harvest. Although all of the flower durations were not equal, the intent of the trial was to measure the amount of biomass and N concentrations on a given day.

Data gathered (Table 1) illustrate differences of up to 6 days in flower initiation. Vine length is reported to illustrate the differences in plant growth among the varieties. Canopy height was taken prior to harvest to aid in determining the degree of plant lodging when compared to the vine length measurement. If one compares the vine length and canopy height of DS Admiral, it can be noted that they are the same, indicating the plant stood straight up. Yield data and crude protein are reported on a DM basis. Significant differences in yield and percent protein were detected. DS Admiral had the highest biomass yield with the lowest protein while Austrian Winter had the lowest yield with the highest percent protein. Converting yield and protein to the pounds of N per acre illustrate differences among the varieties, although the findings were not significant, indicating that varieties were equal in N concentration per acre. This trial will be continued to further examine the potential of field pea varieties in central North Dakota for biomass and N yields.



Forage pea, July 2008.

Forage Pea**Carrington**

Variety	Days to Bloom	Vine Length inch	Canopy Height inch	Harvest Moisture %	Yield @ 15%M ton/ac	Yield @ DM ton/ac	Crude Protein %	N con. in Biomass lb/ac
4010	52.3	39.4	21.0	82.9	2.0	1.7	20.2	113.4
DS Admiral	49.5	32.2	32.2	81.5	2.3	2.0	18.2	119.9
Arvika	53.8	41.1	21.9	83.5	1.8	1.5	21.1	101.8
Austrian Winter	54.8	33.3	19.9	84.2	1.4	1.2	23.0	89.3
BBSPea	54.0	36.6	25.7	84.1	1.5	1.3	21.5	87.4
Grande	51.0	31.7	22.3	84.1	1.7	1.5	21.4	105.1
Victoria	49.3	34.2	21.9	85.6	1.4	1.2	22.4	82.8
Mean	52.1	35.5	23.5	83.7	1.74	1.47	21.1	100
C.V.%	1.2	6.3	10.5	1	12.7	12.7	11.6	26.9
LSD.05	0.9	3.3	3.7	1.3	0.3	0.3	4.4	NS

Planting Date = May 19 @ 300,000 PLS/ac; Harvest Date = July 15, 57 days after planting; Previous Crop = Spring Wheat

Fall soil test 15 lbs. N ac with no additional N used.

Granular inoculant was used prior to planting.

Results confirm previous findings from the CREC of the amounts of N that can be fixed from an annual pea crop in a relatively short period of time. Although all of this N will not be available at one time like commercial sources, it will contribute to the overall soil N bank over time. As we continue to trial pea varieties for N contribution, it is apparent that small seed size, early season vigor, early maturity, high biomass yields and N concentrations are all important criteria for variety selection.