Asparagus Cultivar Trial

In 2006 the Vegetable Research Program at the University of Saskatchewan initiated a cultivar testing program for asparagus. The trial was planted at the Horticulture Field Research Facility in Saskatoon, SK. The site features a Sutherland Series clay soil (pH 7.9, E.C. <1 dS/m). Clay soils are not generally recommended for asparagus production as they can distort spear growth and promote root disease but if well managed clay soils have the potential to produce excellent yields.

Seed of the asparagus lines to be tested was obtained from various sources across N. America. Established varieties as well as un-named new lines were included in the trial. Twelve week old greenhouse grown seedlings were transplanted into the field in mid-June. The seedlings were planted into 15 cm deep planting trenches. Each plot consisted of 25 plants, spaced 30 cm apart within the row. Rows were spaced 2 m apart. There were four replicates of each cultivar arranged in a randomized complete block design. Weeds were controlled by hand in the first year. The planting trenches were gradually filled in as part of the weeding process over the 1st growing season.

In spring of each subsequent growing season about 50 kg/ha of N as 46-0-0 was lightly rotovated in prior to emergence of the first spears. Herbicides (linuron or metribuzin) applied prior to crop emergence was used to provide weed control through the harvesting period. These herbicides were watered in with an overhead irrigation system which was also used to maintain optimum soil moisture conditions through the harvest period. The trial was harvested for 2 weeks in the 3rd year, 6 weeks in the 4th year and for 6-8 weeks in all subsequent years. Harvesting was terminated as soon as emergence of new spears started to slow and spear diameter began to decline. The spears were counted, weighed and graded. Once harvest was completed, herbicides (linuron, metribuzin or flumioxazin) were applied between the rows using a shielded sprayer. An additional 30 kg/ha of N fertilizer was applied by top dressing at that time. Once the harvest was completed, drip irrigation lines were installed for each row. This allowed the asparagus plants to be kept well watered without encouraging weed growth between the rows. Each fall, after several killing frosts, the trial area was flailed to a height of 30 cm - this flailing treatment reduced the trash load and encouraged breakdown of diseased crop residues while leaving enough crop residue behind to trap snow in the plot area.

Results for 2015

The winter of 2014/2015 was long and cold but the snow pack was consistent enough to protect the roots of the overwintering crop. The date of the first harvest in 2015 (May 15) was about average. Record low rainfall from May through mid-July of 2015 necessitated frequent irrigation but made the scheduling of harvests very easy. A -3C frost occurred on May 29 and some spears harvested after the frost had to be graded out. Cullage rates were above normal in 2015. Consistently warm temperatures throughout June resulted in very rapid growth – leading to production of spears that were culled out as oversized or due to excessively open tips. Harvest was terminated in late June after a total of 21 harvests covering a 7 week period.

There were no obvious problems with disease or insect pests observed in the 2015 trial. The high water table levels created by consecutive wet growing seasons from 2010-2014 had not caused any obvious loss of plant stand or damage to the harvested crop. Weeds were generally well controlled by the tillage/herbicide program – with the exception of cleavers which seems to be resistant to the herbicides being used. Spot applications of 2,4-D using a shielded sprayer were used to control this weed in 2015.

Yield and spear characteristics in the University of Saskatchewan asparagus cultivar trial in 2015.

	Mkt wt (kg/plot)*	Avg. Spear wt (g)	Cumulative yield (2008-2015) (kg/plot)
Andreas	9.5	21	53.4
Argenteuil	3.7	12	33.3
Arianne	12.1	19	59.7
Connovers	3.5	13	32.4
Filias	6.9	15	40.7
G. Millennium	13.8	16	71.6
G. Thiessen	10.7	15	57.1
Hannibal	8.7	14	48.6
J. Gem	7.4	15	39.8
J. Giant	7.4	16	48.0
J. King	8.7	14	40.2
J. Knight	8.0	16	40.1
J. Supreme	8.4	16	49.8
Larac	5.2	14	29.3
M. Washington	4.6	14	37.4
Marte	10.6	23	51.9
Mondero	9.1	14	52.8
Selias	8.6	19	50.3
UC 72	4.6	15	34.3
UG 005	11.5	19	58.5
UG 006	5.7	14	33.0
UG 007	7.7	13	35.6
UG 008	6.6	16	36.2
UG 009	8.3	14	41.5
Viking	6.0	13	30.6
AVG	7.9	15	44.3

* plots were 8 m long, with 25 plants per plot at the time of trial establishment in 2006.

Marketable yields averaged over the 25 asparagus lines tested in 2015 (7.9 kg/plot) were not as high as those recorded in 2014 (8.9 kg/plot) but were otherwise higher than in all other years (Fig 1). Exceptionally warm weather throughout the 2015 harvest period accelerated crop growth – so 4 more harvests were taken in 2015 versus the previous year – but the overall harvest period in 2015 was actually a few days shorter than in 2014. The high temperatures in 2015 also increased grade out which would have contributed to the slightly lower marketable yields observed in 2015.

Guelph Millennium was by far the highest yielding cultivar in 2015, followed by Arianne, UG 005, and Guelph Thiessen. Guelph Millennium, UG 005, Guelph Thiessen and Arianne had also produced outstanding yields in previous years of testing. The highest yielding lines combined good stands with high yield/plant of marketable spears. **Cumulative yields of Guelph Millennium over the past 8 harvest seasons (2008-2015) are now 61% greater than the average of the 25 asparagus cultivars included in this trial (Fig. 1).** After getting off to a slow start, UG 005 has begun to consistently produce excellent yields with a very high % of marketable spears. Cumulative yields of Guelph Thiessen are also high, although the yield potential of this cultivar seems to vary from year to year. Arianne has also produced consistent high yields, but the spear size of this cultivar is larger than typically seen in most markets. As in previous years, the lowest yielding lines in 2015 (Larac, Connovers and UC 72) also had the poorest stand of surviving plants. Viking continues to perform poorly - this is noteworthy as it was, until recently, the most widely grown asparagus line in Saskatchewan.

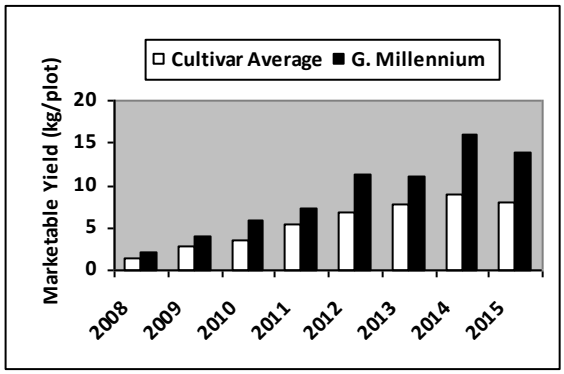

Figure 1. Yields over the first 8 years of testing for Guelph Millennium asparagus compared to the average of the 25 asparagus lines included in the trial.