

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 hard 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 2016

The winter of 2015/2016 was fairly mild but the snow pack was consistent enough to protect the roots of the overwintering crop. Spring of 2016 came very early and the first asparagus was ready for harvest on May 2 – which is 3 weeks earlier than normal. Warm dry conditions through the harvest period resulted in easy harvests and good crop quality. There were no damaging frosts at any point in the 2016 harvest season. The average cullage rate in 2016 was 10% which is near normal. Harvest in 2016 was terminated on June 28 after a total of 23 harvests covering an 8 week period.

For the first time since this trial was initiated, spotted asparagus beetles (Fig. 1) caused some feeding damage to the emerging spears – leading to some culling. The higher than normal beetle populations in 2016 could be attributed to mild winter conditions followed by very favorable spring weather. No attempt was made to control the asparagus beetles in 2016 – but their numbers will be more closely monitored in spring of 2017. There were no obvious problems with disease observed in the 2016 trial. Weeds were well controlled by the



Fig. 1. Spotted asparagus beetle (photo by Jeff Hahn)

tillage/herbicide program – with the exception of cleavers which appears resistant to the herbicides being used. Hand weeding and spot applications of 2,4-D were used to control this weed in 2016.

Table 1. Yield and spear characteristics in the University of Saskatchewan asparagus cultivar trial in 2016.

| | Mkt wt (kg/plot)* | Cumulative yield (2008-2016) (kg/plot) |
|---------------|-------------------|--|
| Andreas | 12.0 | 65.4 |
| Argenteuil | 5.1 | 38.4 |
| Arianne | 14.9 | 74.6 |
| Connovers | 5.9 | 38.3 |
| Filias | 9.4 | 50.1 |
| G. Millennium | 14.9 | 86.5 |
| G. Thiessen | 13.2 | 70.3 |
| Hannibal | 11.4 | 60.0 |
| J. Gem | 8.4 | 48.2 |
| J. Giant | 10.0 | 58.0 |
| J. King | 9.5 | 49.6 |
| J. Knight | 9.0 | 49.1 |
| J. Supreme | 9.9 | 59.7 |
| Larac | 7.5 | 36.8 |
| M. Washington | 5.6 | 43.0 |
| Marte | 12.6 | 64.5 |
| Mondero | 13.9 | 66.7 |
| Selias | 12.1 | 62.4 |
| UC 72 | 6.0 | 40.3 |
| UG 005 | 14.6 | 73.1 |
| UG 006 | 9.1 | 42.1 |
| UG 007 | 11.1 | 46.7 |
| UG 008 | 10.3 | 46.5 |
| UG 009 | 10.4 | 51.9 |
| Viking | 6.4 | 37.0 |
| AVG | 10.1 | 54.4 |

* 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 2016 (10.1 kg/plot) were higher than in all other years of testing (Fig. 2). This suggests that the overall health of the plot is still good.

Guelph Millennium, Arianne and UG 005 were the highest yielding cultivars in 2016. All of these lines 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 9 harvest seasons (2008-2016) are now 64% greater than the average of the 25 asparagus cultivars included in this trial (Table 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. The lowest yielding lines in 2016 (Larac, Argenteuil, Connovers, Mary Washington and UC 72) had also performed poorly in previous years. Viking continues to perform poorly - this is noteworthy as it was, until recently, the most widely grown asparagus line in Saskatchewan.

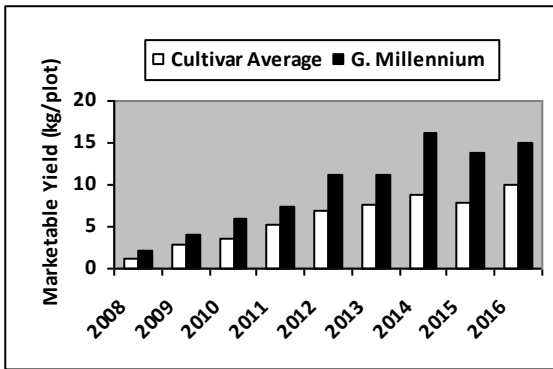


Fig. 2. Yields over the first 9 years of testing for Guelph Millennium asparagus compared to the average of the 25 asparagus lines included in the trial.