MASTER GARDENER PROGRAM

2015 State Seed Trial Report

In 2015, 133 Minnesota Master Gardeners in 46 counties grew 362 trials of annual vegetables and ornamentals from seed in their gardens. All participants deserve our thanks and congratulations for their efforts!

There were eight different trials, each of which included six different varieties of the genus being tested. Most participants grew the trials “blind” with regard to the identities of the varieties.

The descriptions of the winners, losers, and “also rans” are in the pages ahead. But as we all know, weather plays a very important part in how well things grow. A dry summer will favor some varieties, while a wet one will favor others. Temperature variations also affect growth, especially at the extremes.

Most of us two-legged creatures fondly remember the summer of 2015 for its early spring, relatively moderate temperatures, and well-timed precipitation. But each type of plant has its own preferences, and not all share ours.

To refresh our memories and put the seed trial results in the context of growing conditions, attached at the end of this report is a summary of each month’s weather during the 2015 growing season (May-October), as recorded by the Minnesota Department of Natural Resources and posted at their website http://www.dnr.state.mn.us/climate/journal/index.html

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ROMANO BUSH BEANS

CODE: MB=NAVARRO, CF=ROMANO PURPIAT, LG=CAPITANO, JH=ROMA 2, DK=#14, AND ST=MARCONI

Although there was a wide variety of planting dates starting with April 14, Romano Bush Beans were planted directly into the gardens by a majority of our participants between May 15 and June 7. There was also a wide variety of harvest dates probably due to differences in planting dates. A majority of the first harvest dates were in the second half of July.

Navarro

Navarro was rated as #1 in this trial of six varieties, and 58% of the participants said that they would plant the variety again. Words used to describe the beans included tender (34%), crisp (30%) and tough (26%). The variety had very few insect issues. Flavor terms used for the green beans included rich, sweet and bland. A majority of the beans were picked at a length of 5 – 5.5 inches, and total of 4,412 beans were picked for the trial, bringing in Navarro as #2 in production.

Romano Purpiat

Although Romano Purpiat was rated #2 on this trial, 57% of the participants said that they would not plant the variety again. One participant mentioned that the plants did not seem as sturdy as others, and this might be the reason for the above responses. Or possibly participants did not like the purple color. The beans were described using such words as tender (33%), crisp (28%) and tough (22%). Terms to describe the flavor of the beans included rich, sweet and bland. Plants had few insect issues, and 75% said that they had no insect problems at all. Average bean length was 4 inches, and total number of beans picked for the season was 3,955 or #5 in total production.

Capitano

Capitano was ranked as #3 by participants in the trial, and 68% said that they would plant the variety again. Words used to describe the beans included tender (49%), crisp (32%) and tough (11%). Flavor terms included rich, sweet, and bland. Bean color was yellow, and 83% of the participants said that they had no insect issues with the variety. Bean length for the majority was 4 – 4.5 inches. Capitano ranked first in total production with 4,947 beans picked by the participants.
Roma 2

Roma 2 was ranked 4th by participants in the trial, and 51% said that they would plant the variety again. The beans were described as tender (39%) and crisp (34%). Flavor descriptive words for these green beans included sweet and bland. Most participants (83%) said that they did not have insect issues with the beans. A majority of the participants picked beans at an average length of 5 or 5.5 inches. 4,002 Roma 2 beans were picked this season making it fourth in production.

#14

Bean variety #14 was ranked 5th in the trial, and 55% of the participants stated that they would not plant the variety again. The green beans were described as tender (43%) and crisp (20%). Terms to describe the beans included rich, sweet and bland. Variety #14 was a little longer bean with participants measuring average lengths between 5 – 6.5 inches. 75% of the participants had no insect issues with the bean. 4,143 beans from this variety were picked for the season, giving it a production rating of #3.

Marconi

Marconi was rated 6th out of six in this bean trial, and 51% of the participants stated that they would not plant it again. These green beans were described as tender (40%) and crisp (18%). Flavor terms used for the bean included both rich and bland. 79% of the participants stated that they did not have insect issues with the variety. Marconi was measured at an average length of 4-4.5 for the majority of participants. 3,693 beans were picked from this variety over the summer, giving it the production rating of #6 out of 6.

ASIAN GREENS

CODE: MB=TAN TSAI, CF=RUBY STREAKS LG=CARLTON, JH=VIOLETTA 2, DK=TOKYO BEKANA, AND ST=SPICY GREEN

The 2015 growing season proved to be very beneficial to many of our seed trial varieties, especially the Asian Greens. Our evaluators planted the seeds from mid-April to early June. Some planted successive plantings during the first weeks of July for a late summer and fall harvest. Most direct-seeded, though a few started their seeds indoors then transplanted them into the garden. Harvest dates varied due to the range of planting dates and whether they chose to harvest the leaves as micro-greens, e.g., 3-6", and to make multiple cuttings throughout the growing season, as opposed to waiting until the plant was more fully formed. The mild fall weather allowed for an extended harvest. Many of those who
harvested later in the season experienced bolting. Plants that did bolt/flower attracted different pollinators.

In general, evaluators said all varieties were easy to grow and many ate the different colored varieties mixed in with their regular salad greens. Most ate them uncooked. While some varieties had some damage from flea beetles, none except Tokyo Bekana had significant damage.

**Spicy Green**

Spicy Green had a germination rate of 62% and was rated number one. This very zesty mustard flavored variety has serrated, bright green leaves and had the strongest mustard flavor of all varieties tested. Think something reminiscent of Wasabi from Japan. The mustard flavor is dramatically reduced when steamed or stir fried. 64% said they would grow this variety again. Spicy Green is fairly cold tolerant and produced very good yields throughout the growing season and well into early-mid November.

**Tokyo Bekana**

Tokyo Bekana has an upright growth habit. It had a 66% germination rate and was ranked number two in our trial. This is one of two varieties with bright green leaves. The ruffled and curly shaped leaves were judged to be mild by 67% of the evaluators. This variety produced larger leaves than both Violetta and Ruby Streaks, providing the grower with a nice yield. 64% said they would grow this variety again.

**Ruby Streaks**

Ruby Streaks had a germination rate of 55% and was rated number third in our trial. This colorful red/purple variety with dark green stems has very serrated leaves and was rated as mild to a zesty mustard (40%) in flavor. Again, evaluators were split as to whether they would grow this again (55% yes; 46% no).

**Violetta**

Violetta had a germination rate of 60% and was rated number four. This variety has red-violet spoon shaped leaves. Its growth habit is not as large as the other varieties and is similar in shape to Tan Tsai. The flavor was rated as mild by 93% of our evaluators, and 64% said they would grow this variety again. Violetta is not as cold hardy in the spring as
the other varieties, so planting it in early to mid June is recommended. However, this variety provided continuous cuttings into the fall.

**Carlton**

Carlton has very large dark green leaves with slightly ruffled edges. The growth habit is upright. It had a germination rate of 73% and was rated as number five in our trials. The smooth, spoon shaped leaves had a flavor rating of mild to slightly mustard. 73% said they would grow this variety again.

**Tan Tsai**

Tan Tsai had a germination rate of 67% and was rated last, sixth in our trial. This spoon shaped, dark green variety was rated mild by 76% of our evaluators. Evaluators were split as to whether they would grow it again (55% yes; 46% no). This variety has a shape commonly seen at farmer's markets and in grocery stores, e.g., Pac Choi.

**BLACK HEIRLOOM TOMATOES**

**CODE: MB = CHEROKEE PURPLE, CF = BLACK PRINCE, LG = JAPANESE BLACK TRIFELE, JH = BLACK KRIM, DK = CONVENTIONAL, ST = PURPLE CALABASH**

Tomato seeds were sown indoors approximately 6-8 weeks before all danger of frost was past and the soil was warm. When the first true leaves developed, seedlings were transplanted into plug trays or 1"-2" pots, then again into 3-4" pots to create a better root system. Seedlings were moved outdoors after danger of frost had passed and placed 18"-24" apart in the garden.

The healthiest plant of each variety was chosen for the evaluation. Some disease was reported, mainly blight. However many gardeners reported no disease problems. For a change, rain seemed plentiful this summer, and regular watering did not seem to be an issue.

**Cherokee Purple**

Cherokee Purple was by far the overall winner with 42% of gardeners ranking it number one and stating that they would grow it again. Fruit diameter was 3.3" and an average of 11 fruit was harvested from each plant. 62% reported a balanced flavor and firm texture.
Japanese Black Trifele

Japanese Black Trifele ranked second with 30% of gardeners ranking it first but with 45% of gardeners stating that they would grow it again. Fruit size was 2.5” and it came in on top with an average whopping 21.8 fruit harvested from each plant. 46.9% reported the flavor as sweet and 34.4% stated that the texture was firm.

Conventional

Conventional came in third place with 24% of gardeners saying that they would grow it again. Fruit size was 3” in diameter and an average of 13.3 fruit were harvested from each plant. 37% reported a balanced flavor and a firm texture.

Purple Calabash

Purple Calabash ranked fourth with only 12% stating that they would grow it again. An average of 15.3 fruit was harvested from each plant, and the average fruit size was 2.4”. 25% of gardeners reported that Purple Calabash had a tart flavor and mealy texture. Gardeners did report Septoria Leaf Spot issues with Purple Calabash in addition to Blight.

Black Prince and Black Krim

Black Prince and Black Krim tied for last place with only 3% of gardeners ranking it first. Black Krim averaged fruit size of 2.3” and 19.7 fruit per plant. It had a balanced flavor and smooth texture. Black Prince averaged the smallest fruit at 2.2” diameter and the lowest average number of fruit per plant at 9.3. Taste was balanced and texture firm. Only 2% of gardeners would grow it again. Gardeners did report Septoria Leaf Spot issues with Black Krim in addition to Blight.

WHITE-HEADED CAULIFLOWER

CODE: MB = SNOW CROWN; CF = AMAZING; LG = CANDID CHARM; JH = MINUTE MAN; DK = TERZOLA; ST= SNOW QUEEN IMPROVED

Cauliflower seed was sown indoors in early May and transplanted outdoors approximately June 1. The healthiest plant of each variety was chosen for the evaluations. Minimal disease and insect damage was reported. Most varieties were rated as having crunchy and flavorful heads.
Terzola
Terzola was the all-around winner of the trial with 36.4% of gardeners ranking it number one. It ranked first in all categories with an average head size of 5.3 inches. Terzola came in with the highest percentage of gardeners ranking its flavor as flavorful and its texture as crunchy. Head form was rated as firm, and 54.5% stated that they would grow it again.

Snow Crown
Snow Crown ranked second in the trial. It had an average head size of 4.7 inches, was in a three-way tie (with Candid Charm and Snow Queen Improved) for third place in flavor, and was average in texture. 50% of gardeners would grow it again.

Snow Queen
Snow Queen Improved was a distant third in rankings. It was in the three-way tie for third in flavor and was in a tie for last for texture. 36.4% of gardeners would grow it again.

Candid Charm
Candid Charm ranked fourth in the trials; however, 45.5% of gardeners stated that they would grow it again. Average head size was 3.73 inches and it was in the three-way tie for third with respect to taste.

Minute Man
Minute Man ranked fifth, again with 45.5% of gardeners stating that they would grow it again. It ranked lowest in flavor and texture with 45% stating that its flavor was bitter and 40% stating that its texture was spongy.

Amazing
Amazing was the lowest ranking variety; again with 45.5% of gardeners stating that they would grow it again. It had the smallest average head size at 3.66 inches. However, it actually ranked second in flavor.
PATTY PAN SQUASH

CODE: MB = BENNING’S GREEN TINT, CF = EIGHT BALL, LG = LUNAR ECLIPSE, JH = SUNBURST, DK = TONDO DI PIACENZA, ST = FLYING SAUCER

The squash seeds were sown outdoors usually around May 17th. Evaluators planted 6 seeds of each variety and on average 4 of each variety germinated. All varieties were first harvested between July 19th and August 8th.

There was not much of a difference in flavor and texture among the varieties tested. You either like summer squash or you don’t.

Powdery mildew was a common occurrence on all varieties. Squash bugs and vine borers less prevalent. In general, if disease and insects were a problem on one variety it was a problem on all. Some of our evaluators reported over 25 fruit per plant on several varieties.

Benning’s Green Tint

Benning’s Green Tint was this year’s number one variety. It had the best germination rate, the most flavor, the most production, and overall was ranked #1. 70% would plant this variety again.

Sunburst

Sunburst was second. Germination was 70% and it produced fruit earliest at July 19th. 93% said they would plant this variety again. Sunburst produced the second most fruit.

Flying Saucer

Ranked third was Flying Saucer. 70% said they would plant it again. Its germination was 65% and produced the 4th most fruit.

Eight Ball

Eight Ball would be planted again by 40% of our evaluators. Its germination was 73%.
Lunar Eclipse
Lunar Eclipse was fifth in the Patty Pan squash trials.  67% would plant it again.  This variety was the last to produce fruit, August 8th on average.

Tondo di Piacenza
In last place was Tondo di Piacenza.  Germination was difficult at an average of 61%.  Only 55% would plant it again.  This variety was ranked lowest and had the least production.

THYME

**CODE: MB = MOTHER OF THYME, CF = PRO-EASY, LG = SUMMER VULGARIS, JH = GERMAN WINTER, DK = LEMON, ST = ORANGE**

Thyme seeds were started indoors early in April.  Evaluators said the best germination was with Pro-Easy and German Winter.  All varieties were first harvested within 10 days of the 4th of July.  Very little insect or disease damage was reported on any variety.

After the trial was concluded, we learned that Pro-Easy is a sub-variety of German Winter, specially selected by Park Seed for its high rate of germination.  For all intents and purposes, Pro-Easy is German Winter thyme.

Pro-Easy
Pro-Easy was the number one variety.  This variety had the highest germination, was most likely to be planted again and voted best overall by the evaluators.  75% would plant this variety again.  The fragrance was described as sweet and spicy.

German Winter
German Winter was second in most categories.  The fragrance was sweet, spicy and citrusy.  70% said they would plant it again.

Orange
Orange had a taste that was acceptable and 54% would plant this variety again.
Summer Vulgaris
Summer Vulgaris would be planted again by 61% of the evaluators and they said the fragrance was acceptable.

Mother of Thyme
Mother of Thyme had an acceptable taste and 65% would plant it again. Its flavor was described as sweet and spicy.

Lemon
Lemon was the least favorite in the trial, however it did have the earliest harvest. Only 35% would plant this variety again. The taste was rated poor.

FLOWERING/ORNAMENTAL KALE

CODE: MB=PIGEON PINK, CF=SONGBIRD PINK, LG=PIGEON VICTORIA, JH=NAGOYA ROSE, DK=CRANE ROSE, ST=KAMOME PINK
The varieties chosen for this trial were advertised as turning pink or red in the fall and especially good for ornamental (as opposed to culinary) use. Color was evaluated 3 times: the first and third weeks of September, and the first week of October.

Virtually all of the seed companies instructed that the seeds be planted 6-10 weeks before the average first frost. We asked participants to plant in mid-July. An average of 6 seeds were sown directly into the garden, left uncovered (as they need light for germination), and kept moist. Even so, germination was unacceptably low for all varieties. Very little insect damage and no disease was reported.

One of the key things we learned from this trial was that mid-July is a little late for planting ornamental kale seeds in Minnesota. July 1 would have been better. If gardeners want better germination, they would be wise to start the seeds indoors rather than out.
Pigeon Pink

The winner was Pigeon Pink. At 8.5" tall and 10" wide, it was nicely round and ruffled. Though the slowest to color, the centers eventually turned a lovely pinkish cream. Its germination rate was 15%, and 42% of participants would plant it again.

Songbird Pink

Songbird Pink was a close second. At 8.25" tall and 8" wide, it was nicely symmetrical. The second slowest to color, the centers gradually became a rose color. Germination was 18%, and 45% of participants would grow it again.

Pigeon Victoria

Pigeon Victoria placed third. It grew a nicely compact 10" tall and 12" wide and developed a rosy-pink center that gradually faded to cream toward the outside. Germination was 18%, and 48% of participants would grow it again.

Nagoya Rose

Nagoya Rose took fourth place. With attractive fringed leaves, it grew 9" tall and 10" wide. The center turned purple a little sooner than most of the others. Germination was 16%, and 52% of participants would plant it again.

Crane Rose

Crane Rose placed fifth. It was the tallest (11") of the group. It was the earliest to turn color (purple/rose). Germination was 18%, and 52% of participants would grow it again.

Kamome Pink

In last place was Kamome Pink. That said, it was the most colorful of the varieties, having 57% of its foliage turning pink/peach by the first week of October. Alas, its germination was the lowest of all (13%), and only 39% of participants would plant it again.
RED/PINK MORNING GLORIES

CODE: MB=ROSITA, CF=DOLCE VITA, LG=VENICE PINK, JH=CRIMSON RAMBLER, DK=SCARLETT O’HARA, ST=CANDY PINK

While we humans thoroughly enjoyed the mild summer of 2015, Morning Glories prefer hot humid weather. Nevertheless, our seeds grew well enough to give us a good idea of what to expect in Minnesota gardens.

Most seeds were started indoors in late April. The average date of transplant into the garden was June 1. The varieties all bloomed most abundantly in September. None experienced significant insect damage, and no disease was reported.

Dolce Vita

The clear winner of the trial was Dolce Vita. The earliest to bloom, it grew and bloomed abundantly, featuring pearly white flowers with pink throats starting in early August. Dolce Vita also had the best germination rate (86%). 75% of participants would grow it again.

Scarlett O'Hara

The runner-up was Scarlett O'Hara. A later bloomer (September), its stunning red flowers were hard to miss. Germination was 73%, and 57% of participants would grow it again.

Crimson Rambler

While finishing in 3rd place, Crimson Rambler was rated #2 in rate of flowering, behind Dolce Vita. The flowers were a deep rose color with white throats. The germination rate was a low 59%, but 54% of participants said they would grow it again.

Venice Pink

Venice Pink was one of the earliest-blooming varieties. It featured both the largest (1.8” diameter) and the most unusual flowers, with uniquely variable patterns of pink and white splashes and stripes. It had a decent germination rate of 77%, but only 49% of participants would grow it again.
Candy Pink

Candy Pink came in 5th overall with its vivid, candy-pink flowers. It had a low germination rate of 61%, but 61% of participants liked it well enough to say they would grow it again.

Rosita

Rosita was the poorest performing variety. Relatively few participants even saw the 1.3” red flower with a white star and white edge. Germination was a dismal 39%. Even so, 48% of participants said they would grow it again.

The Seed Trials Coordinating Committee extends its thanks to all the Master Gardeners who grew these trials and contributed their knowledge to the ever-growing treasure trove of information as to which varieties grow best in Minnesota gardens.

We look forward to gardening with you again in the summers to come!

Sue Schiess, Marc Battistini, Mary Dalsin, Larry Cipolla, Janice Gestner, Lisa Gilliland, with assistance from the State Master Gardener Office (especially Andrea Rice!)

SUMMARY OF MINNESOTA WEATHER DURING THE 2015 GROWING SEASON

What happened in May 2015:

- May monthly precipitation totals were above historical averages across most of Minnesota, terminating a predominantly dry pattern that originated during the mid-summer of 2014 and continued into the early spring of 2015. In many communities, May precipitation totals exceeded the historical average by one to three inches.

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- Average monthly temperatures for May were near, to slightly below, historical averages for Minnesota. Extremes for May ranged from a high of 90 degrees F at Benson (Swift County) on the 28th, to a low of 23 degrees F in various northern Minnesota communities on the 1st and again on the 19th and 20th. Below-freezing or near freezing temperatures were reported in many areas of the state on May 19 and 20. Fortunately, wide-spread frost damage to crops did not occur.
What happened in June 2015:

- June monthly precipitation totals were variable across Minnesota, but overall were close to historical averages. Even in those areas receiving below-average June rainfall, the rains were well-timed and beneficial.

Average monthly temperatures for June were very close to historical averages across Minnesota. Extremes for June ranged from a high of 99 degrees F at Madison (Lac qui Parle County) on the 9th, to a low of 25 degrees F at Embarrass (St. Louis County) and Brimson (St. Louis County) on the 1st.

What happened in July 2015:

- July monthly precipitation totals were highly variable across Minnesota. Above-average rainfall was reported in northwest, central, east central, and southeast counties. Below-average rainfall totals occurred in northeast and southwest sections of the state. In portions of northeast Minnesota, it was the second consecutive month of below-average precipitation.
- Heavy rainfall events, associated with severe storms, occurred at regular intervals during the first three weeks of July.
- Average monthly temperatures for July were very close to historical averages across Minnesota. Extremes for July ranged from a high of 98 degrees F at Browns Valley (Traverse County) on the 12th, to a low of 37 degrees F at International Falls on the 7th and Hibbing on the 8th.

What happened in August 2015:

- August monthly precipitation totals were highly variable across Minnesota. Above-average rainfall was reported in a number of counties, especially in southwest and east central Minnesota. Below-average monthly rainfall totals were observed in northwest and southeast sections of the state.
- Heavy rainfall events, associated with severe storms, occurred during the first two weeks of August.
- Average monthly temperatures for August were very near, to slightly below, historical averages across Minnesota. Extremes for August ranged from a high of 95 degrees F at a number of locations on the 14th, to a low of 33 degrees F in low-lying areas of northeast Minnesota on the 26th.
What happened in September 2015:

- September monthly precipitation totals were highly variable across Minnesota. Above-average rainfall was reported in northeast Minnesota and portions of southern Minnesota. Below-average monthly rainfall totals were observed in west central and northwest sections of the state.

Average monthly temperatures for September were well above historical averages across Minnesota. Preliminary data indicate that the statewide average temperature for September 2015 was nearly six degrees above normal and may set an all-time high record for the month. Extremes for September ranged from a high of 94 degrees F at Marshall (Lyon County) on the 3rd, to a low of 18 degrees F in Isabella (Lake County) on the 29th.

What happened in October 2015:

- October monthly precipitation totals were variable across Minnesota. Above-average precipitation was reported in central and east central Minnesota. Below-average monthly precipitation totals were observed in northwest, northeast, west central and south central sections of the state.

- Average monthly temperatures for October were above historical averages across Minnesota, ranging from two to four degrees above normal. Extremes for October ranged from a high of 97 degrees F at Sabin (Clay County) on the 11th, to a low of 12 degrees F near Isabella (Lake County) on the 18th. On a statewide basis, October 11, 2015 was the warmest October 11th of the modern record. Many locations set records for the highest temperature ever measured so late in the year.