Franklin County Master Gardener Volunteer Vegetable Trials Evaluation 2020

August 9, 2020

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Introduction

Due to a number of factors, the Franklin County Extension Service Master Gardener Vegetable Trials (VT) Plot at Waterman Farm experienced unusual challenges in 2020, making results for the year outside the norm. Some of the challenges were related to the Covid Pandemic and resulting protocols enacted by the Center for Disease Control, Franklin County Health Department, and the Ohio State University.

In March of 2020, in-person classes were suspended. This affected MGV Trainee experience, as well as their intern activities. All in-person on-campus activities were suspended as well, resulting in delayed training for interns at the VT plot.

The protocols required strict accounting for volunteers, with only 10 persons allowed in the field at any one time, with masks and social distancing required. A Doodle tally kept track of volunteers for every Monday/Thursday session. This social distancing resulted in an extended period for MGV interns of the class of 2020 to receive orientation to VT. Six orientation sessions extended from June 5 to Oct 24, 2020, with some of them being conducted in the evening, or for a single intern. Over 60 interns were accommodated.

Not until May 26, 2020 were volunteers finally allowed to work in the Veggie Trials Garden. At that point, the weeds were shoulder high in some of the raised beds and the garden plot had not been cultivated.

May 26, 2020 overgrown raised beds

2020 was the first year that the farm crew covered planting rows with plastic. In between planting rows, black gardening fabric was installed. These materials provided excellent weed control.

We planted some pepper and parsley in the Howlett Hall greenhouse right before the university shut down. Fortunately Mike Anderson, the greenhouse manager, took very good care of our newly planted trays. We were unable to return to plant tomatoes, eggplant and zinnias.

Additionally, some plants were provided by the Extension Office, purchased commercially or donated. Some vegetable varieties were directly seeded in the ground.

In 2020, the VT Garden participated in Dr. Sally Miller's scouting project of downy mildew in cucurbits and basil. Veggie Trials volunteers attended a Zoom meeting held by Dr. Miller and her assistant, Francesca Rotondo, to help us identify downy mildew. Dr. Miller's office provided melon, squash and cucumber seeds, as well as basil seeds to supply sentinel plants. VT volunteers planted and monitored the study subjects through the season. Study results were communicated to Dr. Miller. Produce from the study was included with vegetable donations to area food pantries.

After assessing all the data, the top producers chosen based on yield and performance were:
Boro beets
Cornito Giallo bell pepper
Gold Mine yellow bush beans
Royal Purple radish
Slovana Hybrid bell pepper

The Top Producers handout link is included in Appendix B.

In 2020 Vegetable Trials donated 6,687 pounds of produce to food pantries. This included the official Vegetable Trials harvest of 3,605 pounds as well as additional donations from gardeners' homes and 3,183 pounds of corn from the Waterman Farm.

Method

The plot used in the 2020 Vegetable Trials is found within the Waterman Farm, a part of the OSU Agricultural Research and Development Center, located at the northwest corner of Kenny Road and Lane Avenue in Columbus, Ohio. The plot is 125' by 75' in size. A diagram of the 2020 plot appears in Appendix A.

The plot is organized into the following three areas:

(1) On the south side there are ten raised beds which are 4' by 12' each.
(2) Twelve cultivated field rows, divided by 5' paths. Three of the rows were divided into three 20' segments, seven into two 30' segments and two of the 75' rows were sweet potatoes. The warm weather varieties occupied the field rows. All the winter squash varieties occupy seven row segments adjacent to each other. All tomato varieties and cucumbers were trellised on fencing.
(3) A small area with perennial wildflowers is located north of the shed.

The same number of plants were included in each row segment for each of the regular tomato and pepper varieties. For other varieties, within each type of vegetable (e.g., beets, spinach), different varieties occupied the same amount of space in the plot or raised bed which enables us to make a rough comparison of the productivity of the different varieties. Vegetable cultivars were chosen by subcommittees of Master Gardeners during the winter season and acquired from a variety of sources including Johnny's Select Seeds, Burpee, and Seed Savers Exchange. Three varieties of sweet potato slips were purchased from Steele Plant Company. The varieties in the raised beds and other greens (chard, kale, collards) grown in the field this year were direct seeded. The plot was tilled by farm management prior to planting. A transplant conditioner applied to seedlings when they were transplanted into the plot. For a few weeks after planting, row covers were used to protect the plants in the raised beds from insects and other pests. Drip lines were placed in the center of each row in the main plot. The raised beds were watered using a hose connected to the irrigation line.

Zinnias were planted at the end of each row segment. They attracted a wide variety of both birds and pollinator insects.

Weather Report

Temperature and precipitation during the 2020 crop year

2020	Growing Degree Days at end of month	Growing Degree Days in month	2020 Temp.	2020 Precip.	Norm Temp.	Norm Precip	Temp. difference from norm	Precip. difference from norm
March	114	87	46.5	8.16	42.3	3.66	4.20	4.20
April	236	122	49.2	4.22	53.9	3.71	-4.70	0.51
May	724	381	60.0	6.29	63.3	4.58	-4.00	2.08
June	1310	693	73.3	2.40	64.0	4.33	1.00	-2.18
July	2201	891	79.3	3.62	72.3	4.42	3.70	-0.80
August	2952	751	74.4	4.75	75.6	3.95	-0.10	0.80
September	3460	509	66.59	4.30	68.0	3.49	-1.50	0.81
October	3672	211	54.5	4.19	55.7	3.26	-1.20	0.93

The season growing began with a wetter and warmer than normal March which was followed with much cooler-than-normal temperatures in April and May.

By June our temperature average was back to near normal but precipitation was low so watering assistance was needed. Going into the following month, we saw July 07, 2020 posting the hottest date for the whole 2020 year and as precipitation was a bit below normal we continued to irrigate the crops. August saw a near average month followed by a bit cooler September and October temperatures with near-average precipitation amounts.

Data from NOAA Online Weather Data https://nowdata.rcc-acis.org/iln/ and https://www.weather.gov/wrh/climate?wfo=iln

Vegetable Evaluation Data

A discussion for each group of vegetables follows, including a description of each cultivar (usually from the seed catalog where the seeds were purchased), days to harvest, seed source, overall rating for the season, yield data, and comments about pests and other problems encountered.

In the tables below, the “overall rating” refers to the 1-5 scale. The rating used is the “mode” (most frequently occurring value) is used in place of the arithmetic mean (“average”) because the categorical judgments that we make are qualitative data for which arithmetic means are not appropriate. The “harvest date” refers to the date of the first significant harvest that included more than one or two fruits. The cultivars listed below were evaluated by the participating Master Gardeners weekly from July 6, 2020 through October 8, 2020 using a Likert scale ranging from 1 (“perfect condition”) through 5 (“dead”). Half were evaluated by the group that

met on Mondays; the other half by the Thursday gardeners. Once a cultivar was categorized as "dead" (5), the data analysis was discontinued.

Warm-Season Crops

Beans

Gold Mine. "Gold Mine produces very high yields of crisp, ultra-sweet wax beans that are borne on compact and unusually upright plants. The beans grow together in clusters that make harvest a snap. Beans are 5-5 1/2" long. Plants yield early and need no support. One 2 oz. seed pack will sow a row of about 20 ft. Our seed is not treated." Burpee

Kentucky Wonder Bush. 52-65 days. "This cousin of Kentucky Wonder Pole Bean has the same great taste, but has the picking advantage of a bush bean! Kentucky Wonder bush bean seeds mature in just 50 days - a week earlier than most bush beans. The 16" plant is hardier than a pole bean, and doesn't need staking. The 8" meaty pods are crisp, and packed with delicious seeds." Seed Savers Exchange

Purple Queen. 52 days. "Easy to see and so very easy to pick, the gorgeous beans turn green after cooking. Beautiful in a basket and tasty on the plate." Burpee

All three varieties were planted on 6/5/2020 in the field in 20 foot rows. On our first evaluation on July 7th the Gold Mine plants were healthy, Kentucky Wonder had some leaf damage, and Purple Queen had some Japanese beetle damage and a few plants were missing. On October 5th at the end of the season fewer than half of the Gold Mine, Kentucky Wonder Bush, and Royal Queen were healthy and were no longer flowering or producing edible fruit. Gold Mine yellow bush beans were recommended as a top producer in 2020, producing more than twice as much fruit on healthier looking plants.

We also recommend starting a second season of beans. Pencil Pod Golden Wax were planted on 8/3/2020 in a raised bed. On October 5th at the end of the season they had good foliage, blooms plus were still producing fruit. They produced 15 pounds of fruit over a 28 day period. The plants were evaluated 5 times and were always very healthy with an overall rating of 1.

Cultivar	Overall Rating	Duration from seed to first Harvest (days)	First Harvest	Length of Harvest (days)	Last harvest	Total Yield (lbs.)
Gold Mine	1.5	52	7/27/2020	70	10/5/2020	27.7
Kentucky Wonder	2.0	52	7/27/2020	56	10/22/2020	15.0
Purple Queen	2.0	66	8/10/2020	56	10/5/2020	10.1

Peppers

Ace F1. 50 days green, 70 days red ripe. “Extra-early, highly productive standard. Huge yields of medium-size, 3-4 lobed fruits. Has apparent tolerance to blossom drop as nearly every flower produces a pepper. Widely adapted but perfly crops and particularly good for pack sales.” Johnny’s Selected Seeds

Cornito Giallo. 55-60 green, 75-80 red, yellow or orange ripe.” The best sweet peppers for the home garden. Our “Cornitos” or “little horns” are smaller versions of our traditional Italian Corno di Toro “bull’s horn” peppers Carmen and Escamillo. The trio of Cornito Giallo, Cornito Rosso, and Cornito Arancia are all of similar size, productive, attractive, and, most of all, of superior eating quality. They make excellent snacks eaten out of hand, sliced into salads, fried, and roasted. They are widely adapted and perform well both out of doors and in high tunnels.” Johnny’s Selected Seeds

Fish. 80 days from transplant. “The 3"-long, colorful, striped peppers of this variety are borne on 2'-tall plants with beautiful variegated foliage. Traditionally used in oyster and crab houses around Chesapeake Bay, this 19th century African-American heirloom was first offered by William Woys Weaver in the 1995 Seed Savers Exchange Yearbook. His grandfather received the seeds in the 1940s from Horace Pippin of West Chester, Pennsylvania. 80 days from transplant. Medium hot.” Seed Savers Exchange

Slovana Hybrid. 65-70 days. “Nonstop harvest of delicious, gemlike 4½ oz. neon-golden peppers sparked with rich flavor with a delicate sweetness. ‘Slovana’ unleashes a nonstop harvest of delicious, gemlike 4½ oz. neon-golden peppers sparked with rich flavor with a delicate sweetness. Compact 17–26" plants are loaded with glowing pyramidal 6" x 2" fruits that transition from light-green to pale-yellow at maturity. Delightful fresh or roasted. Burpee

Twenty seeds of all four cultivars were started in the greenhouse on March 12, 2020. When the plants were taken out of the greenhouse to be hardened, 10 Ace, 9 Cornito Giallo, 10 Fish, and 12 Slovana Hybrid were viable to be fostered. On 5/26/20 and 5/28/20, nine of each variety except 10 Slovana Hybrid were planted in raised beds instead of the field (Because of the late start due to CoVid 19 restrictions at OSU, our plot wasn’t cultivated yet.). Three-foot stakes were used to support each plant.

The peppers were evaluated 14 times. They did really well in the raised beds, looking great all summer. Both Cornito Giallo bell pepper and Slovana Hybrid were recommended as top producers. Cornito Giallo produced 72.6 pounds of peppers. Slovana Hybrid was next, producing 65.9. Fish was a small pepper but very pretty pepper, only producing 16.8 pounds.

Cultivar	Overall Rating	Duration from seed to first Harvest (days)	Duration from transplant until harvest	First Harvest	Length of Harvest (days)	Last harvest	Total Yield (lbs.)
Ace	1	116	39	7/6/2020	98	10/12/20	61
Cornito Giallo	1	116	41	7/6/2020	108	10/22/20	72.6
Fish	1	126	51	7/16/2020	98	10/22/20	16.8
Slovana	1	116	41	7/6/2020	108	10/22/20	65.9

Sweet Potatoes

Beauregard. 90-110 day maturity. "Beauregard sweet potatoes are an outstanding release that has been accepted by farmers everywhere. Chances are this is the variety that is available in your local market. Red-orange outside color and orange inside color. Quick maturing with good shape." Steele Plant Company.

Centennial. 90-110 days maturity. "Centennials could be the most widely recognized sweet potato. Carrot color inside with copper to orange outside skin. "Baby Bakers" in about 90 days. The Centennial has been used in many bake-off contests." Steele Plant Company.

Murasaki. 105 days. "This variety has purple skin and white flesh. Called a Japanese sweet potato. Has a nutty flavor along with a high vitamin content. Resistant to many sweet potato diseases." Steele Plant Company.

The sweet potatoes were transplanted from slips on 6/4/20. We transplanted 50 slips of Beauregard into a 60 foot row, 25 of Centennial and Murasaki into 30 foot rows. The sweet potatoes had a small amount of leaf damage but they were still very healthy and productive. Twice as many Beauregards were planted because we got 25 slips free. Half the yield of Beauregards was 227.4 pounds compared to 142.4 for Murasaki and 131.3 for Centennial. We have recommended Beauregard as a top producer in 2016, 2018 and 2019. Some grew so large that you could feed your whole family with just one tuber for Thanksgiving dinner.

Cultivar	Overall Rating	Planted	Duration from slips to harvest (days)	Harvested	Length of Harvest (days)	Total Yield (lbs.)
Beauregard	1.5	6/4/20	126	10/8/20	7	454.8
Centennial	1.5	6/4/20	133	10/15/20	1	131.3
Murasaki	1.5	6/4/20	133	10/15/20	1	142.4

Tomatoes

Celebrity. 72 days. “Long popular variety with good flavor. Medium-large, 7-8 oz., flavorful, globe-shaped, firm, red fruits ripen midseason. Widely adapted. High resistance to alternaria stem canker, Fusarium wilt race 1, nematodes, tomato mosaic virus, and Verticillium wilt. AAS winner. Vigorous determinate.” Johnny’s Selected Seeds

Fourth of July. 49 days. “Our earliest tomato, you could have luscious vine-ripened fruit as early as the Fourth of July! The indeterminate plants produce a plentiful harvest of red 4 oz. tomatoes all season long.” Burpee

Garden Gem. 60-65 days. “Garden to Table Goodness. This semi-determinate, snack-size tomato has been hailed as a breakthrough. It was developed to have true heirloom taste, with modern disease resistance and high fruit yield. It has firm, juicy fruit with a smooth, balanced flavor. These plants will produce tomatoes for an extended period of time and thrive in heat and humidity. Fruit ripens in about 60-65 days from transplant. If you grow them from seed, the first mature fruit will take 81 to 93 days.” Available from Proven Winners. Mary O’Connor, a Franklin County Master Gardener Volunteer, gave us seeds from plants developed at the University of Florida.

Large Red Cherry. 75-80 days. “Originally from Ben Quisenberry, a tomato collector from Syracuse, Ohio. Extremely productive plants yield large 1½-2" cherry tomatoes. Great full flavor. Ben preferred this variety for canning whole. A favorite for salads and fresh eating. Indeterminate.” Seed Savers Exchange

Eight seeds of the Large Red Cherry, twenty-four seeds of the Fourth of July and twenty-four seeds of the Garden Gems were planted in one of the leaders’ houses on 5/10/20 because we didn’t have access to the greenhouse. When the plants were hardened, 24 Fourth of July, 22 Garden Gem, and 8 Large Red Cherry were viable to be fostered. Eight Large Red Cherry, 20 Fourth of July and 20 Garden Gems were planted in the field on 6/9/20. Ten Celebrity tomatoes were given to us and were also planted on 6/9/20. Five-foot fences were used to support the rows of plants.

Looking at the harvest yield per plant, Large Red Cherry, a cherry tomato, was the top producer producing 27.7 pounds per plant, followed by Celebrity at 18.5 pounds, Fourth of July at 14.1 pounds, and Garden Gem, a cherry tomato at 11.3 pounds.

Cultivar	Overall Rating	Duration from seed to first Harvest (days)	Duration from transplant until harvest	First Harvest	Length of Harvest (days)	Last harvest	Total Yield (lbs.)
Celebrity	1.0	N/A	62	8/10/20	56	10/5/2020	185.2
Fourth of July	1.0	78	48	7/27/20	66	10/1/20	282.8
Garden Gem	1.5	81	51	7/30/20	70	10/8/20	226.1
Large Red Cherry	1.0	85	55	8/3/20	66	10/8/20	221.4

Cool-Season Crops

Beets

Boro. 50 days. "Fast maturing with strong tops. Tough, widely adapted, and reliable. Smooth, rich red skin and excellent flavor. Attractive fine taproot. Big healthy tops. Stores well through the winter in proper conditions." Johnny's Selected Seeds

Burpees Golden. 55 days. "Heirloom. Sweet, mild flavor with an inviting orange color. Burpee introduced this savory golden beet, a color breakthrough in the beet world, in the 1940s. Now, generations later, it remains an heirloom favorite. Gardener-chefs prize the 2" globes' sweet, mild flavor and golden glow. Delicious roasted, in soups, and in salads when complemented by grapefruit and red onion." Burpee

Each variety was planted in half a raised bed on 6/1/2020. The Boro had better germination than the Burpees Golden. The Boro was chosen as a top Producer for 2020, producing more than double the yield of the Burpees Golden beets.

Cultivar	Overall Rating	Duration from seed to first Harvest (days)	First Harvest	Length of Harvest (days)	Last harvest	Total Yield (lbs.)
Boro	N/A	45	7/16/20	42	8/27/20	27.0
Burpees Golden	N/A	49	7/20/20	38	8/27/20	12.6

Collards

Vates. 60-80 days. "(Brassica oleracea) (aka Blue Stem, Vates Non-Heading) Developed by and named for the Virginia Truck Experiment Station. Dark green leaves on upright 24-inch plants. Known for lack of purpling in veins and leaves. Excellent variety for boiling. Bolt and frost resistant." Seed Savers Exchange

Vates collard seeds were planted in a raised bed on 6/4/2020. Fourteen evaluations recorded very healthy plants during the summer months and a 19.5 pound harvest.

Cultivar	Overall Rating	Duration from seed to first Harvest (days)	First Harvest	Length of Harvest (days)	Last harvest	Total Yield (lbs.)
Vates	1.0	46	7/20/2020	144	12/11/2020	19.5

Kohlrabi

Kolibri. 45 days. “Prettiest, Most uniform purple variety. 3” bulbs with uniform, deep-purple skin and nearly fiberless, crisp white flesh.” Johnny’s Selected Seeds

Terek. 40 days. “Early, uniform, and great tasting. The best all-around kohlrabi we've found. Remarkable uniformity, texture, and flavor even past typical market size. Exceptionally sweet and mild. Holds a long time in the field without getting woody. Small petiole attachment makes for easier stripping and peeling. Terek's compact plant allows for tighter spacing and produces higher marketable yields. High quality up to 6" in diameter.” Johnny’s Selected Seeds

Both varieties of Kohlrabi were transplanted into raised beds on 6/1/2020. Kolibri was evaluated 4 times and Terek 5 times. Plants were very healthy.

Cultivar	Overall Rating	Duration from transplant to first Harvest (days)	First Harvest	Length of Harvest (days)	Last harvest	Total Yield (lbs.)
Kolibri	1.5	42	7/13/2020	10	7/23/2020	17.0
Terek	1.5	42	7/13/2020	14	7/27/2020	11.3

Radishes

Royal Purple. 33-35 days. “Plump and round as a globe, ‘Royal Purple’ combines sweet-mild flavor and firm flesh–a cruncher’s delight. Our breeding team is wild about this radical new radish. Stunningly beautiful, plump, elegantly round and over 2" diameter, ‘Royal Purple’ combines mildly sweet taste and firm flesh—a cruncher’s delight. Resistant to pests and disease, ‘Royal Purple’ germinates and grows rapidly, with your first harvest just 33 days after sowing. Great choice for beginners.” Burpee

Royal Purple Radish was planted as a second season crop on 8/20/2020 in a quarter raised bed and 80 feet in the field. Harvest began 21 days after seeding and continued for 42 days. Almost 44 pounds of radish, really nice looking round red radishes were harvested.

Cultivar	Overall Rating	Duration from seed to first Harvest (days)	First Harvest	Length of Harvest (days)	Last harvest	Total Yield (lbs.)
Royal Purple	N/A	21	9/10/2020	42	10/11/2020	43.8

Master Gardener Volunteers

All volunteers in the 2020 evaluation project are members of the O.S.U. Extension Franklin County Master Gardener volunteer program. Karin Arnold, Chris Atzberger, Pat Claeys, Debbie Falter, Lorraine Normore provided leadership from planning to final evaluation. Some volunteers were experienced vegetable gardeners, while others were still learning Thanks to these Master Gardeners for their tireless efforts in planning, planting, maintaining, evaluating, and harvesting the plot throughout this usually hot and dry season: Carolyn Abood, George Albu, Karin Arnold, Mark Arnold, Christina Atzberger, Linda Bauer, Michael Biggert, Pamela Bradigan-Sestile, Laura Brennan, Rain Burroughs, Mary Butterfield, Margie Campbell, Steven Carter, Pat Claeys, Julie Clemens, Stan Corl, Freda Daniely, Leila David, Mark DeBard, Nancy Derian, Kris Dobmeyer, Christine Doolittle, Elias Dunbar, Karen English, Shaunessy Everett, Debbie Falter, Gail Gross-Brown, Rosemary Hage, Diane Harry, Ann Henkener, Linda Hennessy, David Hogrefe, Bill Johnson, Kathi Kemper, Kevin Kinney-Maronie, Dana Kromer, Sabine Kuhn, Carmen Ladman, Betsy Loeb, Nancy Loy, Katrina McAllaster, Cyndi Mohler, Melainie Moore, Randy Morrison, Sandy Murray, Monica Neil, Lorraine Normore, Mary O'Connor, Susan Peck, Nancy Perkins, Ann Poole, Denise Porter, Susan Rector, Deborah Rinto, Judy Rodgers, Ann Sheldon, Abbie Sigmon, Becky Squires, Joseph Stewart, Mariann Stewart, Evelyn Tolliver, Barbara Vanarsdall, Nancy Waina, Connie West, Carol Williams, Eva Woodruff

Data for this report was compiled by Karin Arnold. The report was written by Karin Arnold, Chris Atzberger, Pat Claeys, and Debbie Falter. Photos by Pat Claeys.

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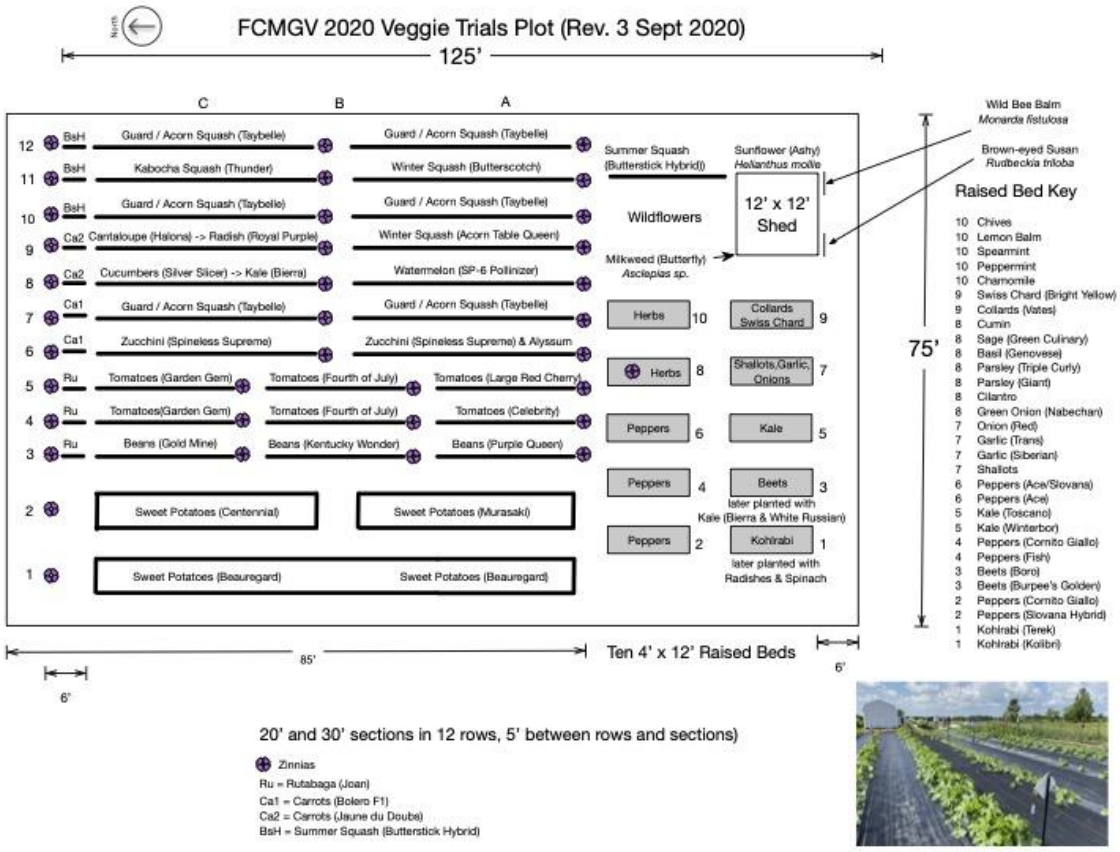
Appendix A

2020 Plot Layout



Appendix B

Vegetable Trials Top Producers

What should I plant this year? To help home gardeners in Franklin County answer this question, Master Gardener volunteers manage the Vegetable Trials research garden. Each year, two or more varieties of the vegetables most popular among home gardeners are raised using good cultural practices and evaluated for plant health and yield.

The Vegetable Trials Top Producers handouts from previous years can be found at the link below. More detailed results of the annual Vegetable Trials are also available at:
https://franklin.osu.edu/program-areas/master-gardener-volunteers/veggie-trials.