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Heirloom Summer Squash at the Kerr Center

2009 Season Observations

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Kerr Center revived its horticulture program in 2008 with demonstration trials of heirloom okra and sweet sorghum. In 2009, we continued our focus on heirlooms with plantings of summer squash and tomatoes. This publication reports on our experience with the summer squash.



HEIRLOOM VARIETY TRIALS

What Are Heirlooms and Why Bother with Heirloom Squash?

“Heirloom” or heritage crop varieties are usually old cultivars, no longer in wide use by large-scale commercial growers. Some are truly hand-me-down selections nurtured by generations of family gardeners; others may be early releases from USDA or land grant university breeding programs that remain in limited use by gardeners and small farmers. One thing everyone agrees on is that all heirloom varieties are non-hybrid and not genetically engineered. Seed of heirloom varieties can be saved and re-planted with the expectation that the next generation will resemble the parent plant. Despite this common understanding, one person's heirloom variety may still be another's modern improved variety.

There are several reasons for our interest in heirloom varieties. Aside from the fact that they are a valuable genetic reservoir for plant breeders, many still perform well in the field. In addition, they provide profitable production and marketing niches for growers. For example, they can be



MANDAN SQUASH

marketed to feed the growing consumer interest in alternative and traditional foods and tastes. There is also a food security issue. Being able to save and re-plant seed makes the grower less dependent on commercial seed companies.

If you buy your garden seed from a local source, the selections of summer squash are usually limited to two or three varieties. In reality, there are many more available and a significant



number of them are considered heirloom. We chose 14 of these for our 2009 observational trial. (For more information on heirloom vegetables, see "Heirloom Vegetables, Genetic Diversity, and the Pursuit of Food Security" at www.kerrcenter.com/publications/heirloom-report.pdf)

A Bit about Summer Squash

Squash are considered New World vegetables, as they were in common use by Native Americans long before the arrival of Columbus. However, some suggest that the parent plants originated in southern Asia.

The word "squash" derives from the Algonquin word *askutasquash*, which means something that is eaten green or in an unripe state. All squash belong to the cucurbit family (Cucurbitaceae) - a large group that also includes melons, gourds, cucumbers, pumpkins, and chayote. Within the cucurbit family is the genus *Cucurbita*, which contains all of the squash and pumpkins. *Cucurbita* is further subdivided into five species. Four of these species contain the most common squash, pumpkins, and decorative gourds grown in the U.S. They are *Cucurbita pepo*, *C. moschata*, *C. maxima*, and *C. mixta*. Most summer squash are *C. pepo*.

Summer squash should be of particular interest to both commercial and non-commercial growers. A Rutgers University survey of farmers markets found that both zucchini and squash of



all kinds were among the top ten consumer vegetable purchases. A 2009 survey conducted by the National Gardening Association found that roughly one-third of gardeners grow summer squash, making it the sixth most popular home-grown vegetable in America.

While summer squash is widely consumed in America today, its popularity is recent. In *The Compleat Squash*, Amy Goldman writes that, a century ago, zucchinis were virtually unknown, with starchy roots and grains the predominant fare of "vegetable lovers."

One of the most interesting things we discovered was the great variation in summer squash fruit. Supermarkets rarely sell anything but a few popular forms of summer squash, such as green zucchini and yellow straightneck. There is much more variation, but you need to investigate heirloom varieties to find them.



The 2009 Summer Squash Trial: Location and Methods

Kerr Center's summer squash demonstration was planted on the Cannon Horticulture Plots - a five-acre site that began the three-year transition to certified organic status in 2008. The site features a loam soil with moderately poor drainage, about 3.1% native organic matter, and a pH range from 6.5 to 7.0. Phosphorus and potassium levels are low and medium, respectively.

In 2008, the field was planted to a season-long cover crop of sorghum-sudangrass to smother bermudagrass and build the soil. This was followed with a winter cover crop of grain rye, common vetch, and crimson clover, which was mow-killed April 7. We used the mowed residue as mulch. The stand was thin, however, and we needed to supplement the mulch with old hay from the Kerr Center's ranch.

We planted 14 heirloom varieties. All were direct seeded into hills on April 30 when soil temperatures reached 67 °F. We applied the mulch over the next 10 days. Several weeks of cold heavy rain followed, which resulted in slow and spotty emergence. Many hills were replanted on May 18. Replants grew swiftly as temperatures warmed and eventually, there was no observable difference between the earlier and later planting dates.

Both bush and trailing/vining summer squash varieties were included in the trial. Bush varieties were thinned to one plant per hill;

hills were spaced four feet apart with six feet between rows. Vining varieties were thinned to two plants per hill; hills were spaced six feet apart with six feet between rows.

We seeded buckwheat between the rows on June 8 to encourage pollinators and other beneficial insects. Adjacent areas of the field were also planted to purple-hull peas and sunflowers, which also support beneficial insect populations.

All plants received a split sidedress application of organic fertilizer on April 30 and May 18. We applied, in pounds per acre, a total NPK equivalent of 30-10-14 to the bush varieties, and 20-7-9 to the vining varieties. We sprayed all varieties five times with dilute foliar sprays made predominantly from soluble fish, seaweed, humic acids, and trace minerals.

Summary of the 2009 Squash Trials

VARIETY	TYPE	RELATIVE YIELD	1ST HARVEST
ZUCCHINI LUNGO BLANCO	Bush	High	15-Jun
ZUCCHINI DARK GREEN	Bush	Medium	15-Jun
ZUCCHINI GOLDEN	Bush	Low	15-Jun
STRAIGHTNECK	Bush	High	15-Jun
ZUCCHINI, GREY	Bush	Medium	15-Jun
ZUCCHINI BLACK BEAUTY	Bush	Medium	17-Jun
MAYERAS	Trailing	V.V. High	17-Jun
YELLOW SCALLOP	Bush	Low	19-Jun
EARLY CROOKNECK	Bush	Low	19-Jun
ZUCCHINO RAMPICANTE	Trailing	V. High	19-Jun
MANDAN	Trailing	V.V. High	19-Jun
COCOZELLE ITALIAN	Bush	Medium	22-Jun
KAMO KAMO	Trailing	High	26-Jun
TRAILING GREEN MARROW	Trailing	V. High	29-Jun



We provided drip irrigation sparingly, it being a relatively wet year and the plants well mulched. When needed, hand hoeing provided supplemental weed control, though little was needed due to mulching and cover crops.

There was little insect pest damage. The first squash bug (*Anasa tristis*) egg masses were found by scouting on June 19. Squash vine borer (*Melittia cucurbitae*) attacked two plants on June 23. One plant recovered after hand removal of the worm. Spotted cucumber beetles (*Diabrotica undecimpunctata*) appeared in good numbers, but did no apparent harm. There were no other pests that bothered our planting. It was an easy year! Labeled amounts of Garlic Barrier® were applied June 30 and July 8, but we credit beneficial insects and distance from other cucurbit plantings for the limited damage sustained.

Discussion

The Kerr Center trial was small and not replicated. Therefore, our observations are, necessarily, limited. For example, we do not report measured yields, and only rank varieties. Our observations and conclusions are much more general.

The bush varieties typically began producing fruit one to two weeks earlier than the trailing varieties. All varieties continued to produce fruit well into the fall, though we stopped weighing the harvest by mid-August. This was a bit surprising as several local gardeners advised us that summer squash harvests are usually short-lived, as the plants succumb to pests and diseases. This suggests a benefit from at least minimal efforts at pest management.

It is pleasing to point out that all of the varieties tested yielded well, though some clearly produced much more fruit. We based our final

judgment on per-hill yields, which may not tell the whole story. Grey Zucchini was reduced to a single hill by the end of our trial. One hill was lost to squash vine borer and another to disease. This might suggest that Grey Zucchini is “less survivable” than the other varieties, but our trial is too small to allow that conclusion.

All of the trailing varieties produced more fruit than even the best-performing bush varieties. But as experienced gardeners know, one can easily be overwhelmed with summer squash and total yield may not be nearly as important as taste, marketability, or other characteristics. The rambling growth of the trailing types made harvesting difficult. However, the trailing growth habit confers an interesting survival advantage we wanted to test - one that circumvents squash vine borer. By placing shovelfuls of soil over squash and pumpkin vines at intervals, the plants can be encouraged to root at those locations. Thus, if squash vine borers destroy the main plant, the newly rooted stems can continue to grow and produce fruit. While we did not lose any main plants to squash vine borer, all stems we covered with soil did produce adventitious roots, suggesting that the strategy would probably work!



TRAILING GREEN MARROW SQUASH



More about the Varieties...

Zucchini, Lungo Blanco

According to Goldman, this bush variety is related to Cocozelle and is popular in Italy. Cocozelles, also known as Italian vegetable marrows, are more closely related to the other vegetable marrows than they are to the zucchini types. One difference, however, is that marrows are usually trailing, while cocozelles grow as a bush. According to Vilmorin-Andrieux, cocozelle fruit is elongated, 20 inches or more in length, with a diameter of 3 to 4 inches. They are furrowed by 5 ribs, which are most prominent near the stem where the fruit diameter is narrowest. Lungo Blanco produces cream-colored fruit that is long like zucchini, but much fatter. The taste is mild.

Zucchini, Dark Green

A standard type of zucchini with mottled dark green fruit and pale green flesh. According to Goldman, zucchinis can be distinguished from cocozelles and vegetable marrows (all *C. pepo*) in this way: "A Zucchini is uniformly cylindrical with little or no taper; its length to greatest width ratio equals or exceeds 3.5 and usually tops out at 5.0. Shorter is better when it comes to good eating."

Zucchini, Golden

Slender, bright-yellow, attractive fruit. Unfortunately, our plants often produced "twin" fruit - two individual fruit fused together. This did not affect flavor, but could impact marketability. Goldman writes that these malformations are associated with the bicolor gene B, which causes the bright yellow coloring.



ZUCCHINO RAMPICANTE SQUASH

Straightneck

Also known as Early Prolific Straightneck. This is a yellow-fruited traditional type of summer squash, as commonly found in supermarkets, as well as at farmers markets.

Zucchini, Grey

As indicated, this zucchini has grayish-green mottled skin. Southern Exposure Seed Exchange reports that the harvest season is spread out through the season. Their catalog also mentions "excellent flavor and texture." Fruit quality was good in our trial, but few plants survived.

Zucchini, Black Beauty

The Baker Creek catalog indicates that this variety was introduced to U.S. markets in the 1920s and became common in seed catalogs in



the 1930s. The fruit has a traditional zucchini shape, but is very dark in color. The Southern Exposure Seed Exchange catalog indicates that this variety is especially attractive to squash bugs and is sometimes used as a trap crop.

Mayeras

Mayeras fruit resembles spaghetti squash in size and shape, but is gray-green in color. Very high yielding.

Yellow Scallop

Scallop squash are also referred to as “patty-pan,” “cymbling,” “cymling,” or “custard marrow” squash. They have an interesting and very attractive star or sunflower-like shape. These are considered a very old, pre-Columbian type of squash.

Early Golden Summer Crookneck

According to the Baker Creek catalog, this is also one of the oldest types of squash, dating back to pre-Columbian times. It has been commonly grown in Appalachia and remains quite popular there and elsewhere in the U.S. The fruit is golden yellow, with a curved neck and creamy white flesh. It is a traditional type, not uncommon in supermarkets and farmers markets. According to Goldman, cucumber beetles are less fond of Summer Crookneck than of Zucchini.

Zucchini Rampicante

Also called Zucca D'Albenga, this squash belongs to the *C. moschata* species. The fruit is long and slender with a flat bulb at the bottom; it can grow quite large. It is a good tasting summer squash, but can be stored and used as a winter squash, also.

Mandan

The Sand Hill Preservation Center catalog describes the fruit as small, round, and flattened - a “Native American type,” with average quality but great insect tolerance. It exhibits a variety of green, orange and cream colors - very unconventional for a summer squash. Mandan was one of the best producers in our trial. Goldman describes two strains of Mandan, which she recommends more as a decoration than as an eating-quality squash. Grown by the Mandan tribe and stored like winter squash, it is perhaps one of the oldest kinds of squash.

Cocozelle Italian

Also called Cocozelle di Napoli. The fruit is long and cylindrical with attractive greenish-yellow and dark green striping. According to Goldman, forerunner selections of cocozelle are described in horticultural literature going back to the 1600s.

Kamo Kamo

Also called Kumi Kumi, it is one of the more unique varieties. The Baker Creek catalog describes it as an heirloom pumpkin of the New Zealand Maori peoples. Fruit is green speckled, ribbed, and pumpkin-shaped, with a thick, hard skin. Popular gardening websites talk about using an ax to cleave it. Kamo Kamo is reputed to store as well as winter squash. Despite its differences, it is still classified as *C. pepo*.

Trailing Green Marrow

Also called Long Green Trailing Vegetable Marrow. We were told this would be the last variety in the trial to produce. The prediction proved accurate. Fruit are large and striped; they remain edible for a long time. It was highly productive.



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Seed Sources for the 2009 Trial

Yellow Scallop, Early Golden Summer
Crookneck, Lungo Blanco Zucchini,
Black Beauty Zucchini, Zucchini
Rampicante, Kamo Kamo:

Baker Creek Heirloom Seeds
2278 Baker Creek Road
Mansfield, MO 65704
417.924.8917
www.rareseeds.com

Cocozelle Italian, Dark Green Zucchini,
Golden Zucchini, Straightneck, Trailing
Green Marrow, Mandan, Mayeras:

Sand Hill Preservation Center
1878 230th St.
Calamus, IA 52729-9659
563.246.2299
www.sandhillpreservation.com

Grey Zucchini:

Southern Exposure Seed Exchange
P.O. Box 460
Mineral, VA 23117
540.894.9480
540.894.9481 (FAX)
www.southernexposure.com

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