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GROWING squash and pumpkin

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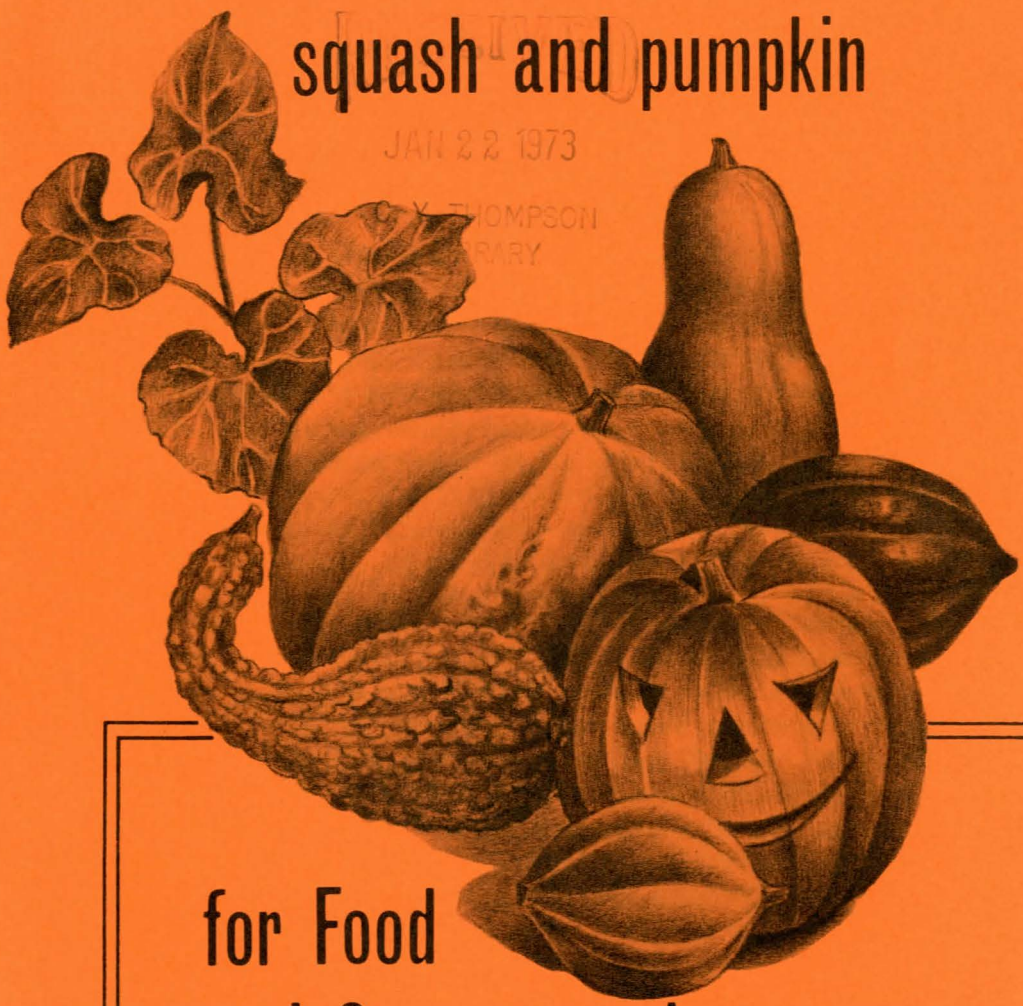

for Food and Ornamentation

Extension Service
University of Nebraska-Lincoln College of Agriculture Cooperating with the
U. S. Department of Agriculture and the College of Home Economics
E. F. Frolik, Dean J. L. Adams, Director

EC 72-1227

Growing squash and pumpkin for food and ornamentation

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Pumpkin and squash are American members of the plant family *Cucurbitaceae.* Cucumbers, originally from India, cantaloupe from the Middle East and watermelon from Africa are other members of this important family of vine crops. Squash, like corn, was domesticated by Indians of Central America and spread to the 48 contiguous States of the United States before the arrival of Columbus. Squash was one of the first vegetables to be planted in Nebraska.

USES

Squash and pumpkin have many uses. The quick-growing, tender-skinned summer squash that are harvested and used when immature are delicious when steamed and buttered or sliced and baked with onions, bacon, tomato sauce and Italian seasoning. Long, dark green "Italian" summer squash varieties may be used raw like cucumbers in salads. Smaller, hard-skinned winter squash varieties are good when cut in half, baked and served in the shell after salting and buttering or with brown sugar. They are also delicious as a main dish when baked with sausage, diced onion and bread crumbs in the seed cavity.

Pumpkin usually has finer textured flesh than squash and is better for pies or custard. Squash or pumpkin pulp is a good ingredient for preparing moist quick breads. The large male blossoms of squash or pumpkin are tasty when dipped in egg batter and fried.

Male blossoms are more numerous than the female blossoms that have a minature fruit at the base of the flower. These male blossoms eventually dry up and fall off so no damage is done when they are removed—if a few are left to supply pollen for fertilizing miniature fruit.

Weight concious people will be pleased to learn that squash has only 14-38 calories per 100 grams (additional calories are added with butter and sugar).

Although pumpkin and squash are primarily grown for eating, attractive "tropical" appearing foliage, large showy yellow blossoms and interesting shapes and beautiful colors of fruit are ornamental values giving them dual purpose usefulness.

The mound-shaped plants of summer squash and bush type winter squash and pumpkin provide a temporary quick growing 1½ to 3 foot tall border. They also may serve as accent plants for the corner of a house trailer, patio or garden. The creamy-colored, scalloped fruit of the mature Patty Pan summer squash, the brilliant yellow, warted fruit of the mature crookneck summer squash and the brightly contrasting orange, green and white variegations of the unusual shaped Turks Turban squash are decorative centerpieces in the fall.

The pumpkin's prominent role in fairy tales, American legends and Halloween make it of special interest to children. Its seed is large and germinates quickly. Squash and pumpkin are relatively free of pests and easily grown by children and other beginning gardeners. New bush type plants are available for planting in the limited space available in urban home lots.

Culture

Pumpkin and squash are "summer" warm-season crops and subject to damage from frost. The seed does not germinate well below 60^0 F so planting should be delayed until after the first week in May in eastern Nebraska, mid May in central Nebraska and the last week of May in the Panhandle. If soil moisture is adequate the seed should emerge five to seven days after planting when frost hazard is low.

Pumpkin and squash can be successfully grown on most Nebraska soils but they do not tolerate wet or poorly aerated conditions. In most years, the eastern half of Nebraska receives sufficient rainfall for growing these crops. Supplemental irrigation usually is required in the western half and may be helpful in the east in certain years.

Varieties

For scientific classification, botanists have divided the members

of plant families into a category called genus which is further subdivided into species. For example, cucumbers and cantaloupe belong to the genus *Cucumis* but to different species names *Cucumis sativue* L. and *Cucumis melo* L. respectively.

Classification of pumpkin and squash is more confusing since the words "pumpkin" and "squash" are popular names given to three plant species in the genus *Cucurbita* which contains pumpkin and squash. Botanists have named these three closely related species *Cucurbita pepo* L., *Curcurbita maxima* Duchesne *and Cucurbita moschata* Duchesne.

What we commonly call "pumpkin" and "squash" are found in each of these species. Part of this confusion lies in the situation that varieties in the *Cucurbita pepo* group will cross-fertilize with each other and with those in *Cucurbita moschata.* Varieties in *Cucurbita maxima* will mix with each other and may mix with varieties of *Cucurbita moschata. Cucurbita pepo* and *Cucurbita maxima* do not mix nor, as is sometimes believed, do *Cucurbita pepo, moschata* or *maxima* (pumpkin and squash) mix with cucumbers, cantaloupe or watermelon. The following discussion of varieties is primarily based upon types within groups having common usage.

Summer squash--Soft-shelled, quick-growing squash produced on bush-type plants that are first harvested immature about seven to eight weeks from planting when flesh is white and juicy and seeds are tender. Characteristics of some of the types of summer squash are presented in Table 1.

Winter squash--Hard-shelled squash with yellow to orange colored flesh requiring three to four months from planting to harvest. Winter squash may be kept several weeks when properly cured and stored. Characteristics of some winter squash varieties are presented in Table 2.

Ornamental, decorative and novelty pumpkin and squash--Most bush-type squash and pumpkin should be considered for their ornamental value as quick-growing, mound-shaped specimens or border plants as well as producing fruit for eating. These would include all summer squash, Gold Nugget and Bush Ebony winter squash and Cinderella bush pumpkin.

Table 1. Characteristics of summer squash varieties.

Type and varieties	*Days to harvest*	*Fruit characteristics*	*Remarks*
Yellow Crookneck - Golden Summer Crookneck, Early Yellow Crookneck, Baby Crookneck.	48 - 53	Bright yellow, lightly warted, 4-6" fruit with long curved neck.	Very prolific over long season when kept picked, young and immature.
Yellow Straightneck - Seneca Butterbar, Early Prolific Straightneck, Baby Straightneck.	46 - 52	Lemon yellow, smooth, 5-6" cylindrical fruit.	Delicate quality, high yield.
Bush Scallop - St. Pat Scallop, Patty Pan, White Bush Scallop.	58 - 62	Creamy white, 4" diameter, pie-shaped fruit, with scalloped edge.	Thick, tender fine-grained fruit.
Italian Type - Zucchini, Grezini, Cocozelle, Chefini.	48 - 54	Dark green, green and white striped or molted gray, 5-8" cylindrical fruit.	Excellent cooked or used raw in salads like cucumbers.

Table 2. Characteristics of winter squash varieties.

Variety	*Days to harvest*	*Average fruit weight (lb.)*	*Fruit per hill*	*Remarks*
Royal Acorn, Table Queen, Ebony*	80-90	1-3	6-8	Dark green, heart-shaped fruit with hard ribbed shell and fine, orange colored flesh.
Butternut, Waltham Butternut	90	2-4	8-10	Nearly cylindrical fruit with smooth, thin, tan skin and deep orange flesh, high quality.
Kindred	100	4-5	5-8	Turban-shaped fruit with bright reddish gold, hard, tough skin. High quality golden yellow flesh that keeps well.

**A new semi bush-type, Ebony is recently available.*

Buttercup	100	2-4	4-6	Turban shaped, dark green squash with lighter stripes or flecks. Deep, thick, dry sweet, yellow gold flesh.
Delicata	100	1-2	5-8	Oblong, cream and green striped fruit, 6-8" long. Keeps well.
Moregold	90	4-5	6-8	Thick-meated, bright orange fruit with salmon-colored stripes. Very productive.
Golden Nugget	95	1-2	12-16	Red-orange, round-oblate fruit with very hard shell to keep well. Thick, high quality flesh. Bush-type plant ideal for small gardens.
Golden Delicious	100	8-10	2-4	Heart-shaped fruit with red-orange shell. Thick, dry medium-textured flesh with good quality.
Green Delicious	105	5-7	2-4	Fruit top-shaped with thin but hard dark green rind. Very thick, bright yellow-orange flesh of good quality.
Green Hubbard	115	10-14	1-3	Heavily warted, dark green squash with thick hard shell. Good yield and quality. Keeps well.
Golden Hubbard	100	5-8	2-4	Beautiful salmon-orange fruit tapered at each end. Smaller but more prolific than Green Hubbard.
Blue Hubbard	110	12-16	2-4	Similar to other Hubbards but having the blue-gray color. Flesh is sweet. Fruit keeps well.
Pink Banana	105	15-30	1-3	Smooth, pink colored, long cylindrical fruit with thick hard rind that keeps well.

Bush pumpkin and bush squash require less space than the vining type and fit better into the small urban lot. Mature crookneck, straightneck and Patty Pan summer squash produce colorful and interesting shaped fruit having decorative value. These fruit do not keep as long as harder-shelled winter squash but they are attractive.

A list and comments regarding other varieties with decorative or novelty value is presented in Table 3. A list of some of the seed companies supplying a wide selection of pumpkin and squash varieties is in Table 4.

Table 3. Pumpkin and squash having decorative or novelty value.

Type and variety		Remarks
Decorative Fruit - Turks Turban	100 days	Brilliant colored 8-10" diameter fruit consisting of a bright orange flattened base displaying 3 prominent nodes with contrasting red, white, dark green, cream and orange colored stripes in the shape of a turban. Makes a beautiful longlasting specimen.
Halloween Carving - Connecticut Field	110 days	Large, yellowish-orange fruit weighing 15-25 pounds. Fruit flattened at both ends, smooth and slightly ribbed.
Halloween	110 days	9 x 12" oblong fruit weighing about 10 pounds.
Jack O'Lantern	110 days	8 x 10" smooth, bright yellow fruit for easy carving.
Spookie	110 days	7" diameter 5-6 pound fruit with smooth hard shell. Fruit has more round shape than Halloween or Jack O'Lantern.
Cinderella	100 days	Smooth bright orange 7-pound fruit on bush-type plant. Fruit does not keep well, especially in warm weather, so it should be planted later than vine-type pumpkin. Ideal for small garden.
Sugar Pie	100 days	Small round but flattened pumpkin 8-10" in diameter. Good keeper but smaller fruit and harder shell is more difficult to carve by small children.

Novelty - large fruited - Big Max	100 days	Huge, bright pinkish orange fruit that may grow to 30-inch diameter and weigh 100 or more pounds. Skin slightly rough but may be easily carved into giant jack o'lantern.
Hungarian Mammoth	120 days	Giant squash with large heavy vines that commonly grow in excess of 100 pounds. Skin color varies from dark green, cream, buff to orange. Best chances for exhibiting largest fruit at fairs with this variety.
Mammoth King	120 days	Very large heart-shaped salmon-orange fruit that may grow to 100 pounds. Shell is harder and meat thicker than Big Max but color is not as bright.

Table 4. Seed companies supplying pumpkin and squash.

Burgess Plant and Seed Co.
P. O. Box 218
Galesburg, Michigan 49503

D. V. Burrell Seed Growers Co.
Rocky Ford, Colorado 81067

W. Atlee Burpee Co.
Clinton, Iowa 52732

De Giorgi Seed Co.
Council Bluffs, Iowa 51501

Henry Field Seed and Nursery Co.
Shenandoah, Iowa 51601

Farmer Seed Co.
Faribault, Minnesota 55021

Gurneys' Seed and Nursery Co.
Yankton, South Dakota 57078

Joseph Harris Co.
Moreton Farm
Rochester, New York 14624

Earl May Seed and Nursery Co.
Shenandoah, Iowa 51601

Northrup-King and Co.
1500 Jackson Street N.E.
Minneapolis, Minnesota 55413

L. L. Olds Seed Co.
722 Williams Street
Madison, Wisconsin 53701

R. H. Shumway
P. O. Box 777
Rockford, Illinois 61101

Stokes Seeds
Box 548
Buffalo, New York 14240

Otis S. Twilley
Salisbury, Maryland 21801

Soil Preparation and Fertilizer

Most pumpkin and squash roots grow laterally from a taproot that may extend five feet deep. The lateral roots nearer the surface are much longer and extensive so the upper 6 to 8 inches of soil should be well prepared and fertilized. Compared with other vegetables, these vine crops require a moderate amount of nitrogen, high amount of phosphorus and very high amount of potassium.

Most Nebraska soils are well supplied with potassium so 400 to 600 pounds per acre (1 to 1½ pounds or 2 to 3 cups per 100 square feet) of 10-20-0 or equivalent fertilizer worked into the soil before planting will assure adequate nutrition for the rapidly extending roots of the vining varieties. Bush-type varieties should receive 2 to 4 tablespoons of this fertilizer per hill area of about six square feet (2′ x 3′).

Well-rotted manure or compost will help produce nice plants and large specimen fruit. As with most garden crops it is best if the manure is broadcast and plowed under in the fall. If only a limited quantity is available it should be thoroughly mixed into the hill area ahead of planting. Do not use strong caustic poultry or sheep manure or other manure in the hill unless it is well decomposed.

Planting

Pumpkin and squash are warm weather crops so planting should be delayed until spring temperatures average 60^0 F. Latest planting should allow sufficient time for fruit to set and mature before frost.

Compared to winter squash fruit the softer-shelled pumpkin does not hold up as well in the field when maturing during hot weather. It is better to sow seed of these varieties later in the planting season. Suggested planting dates for varietal groups in different regions of Nebraska are in Table 5.

The season in eastern Nebraska is long enough for a second planting of quick-growing summer squash. Earlier harvest of summer squash can be obtained by starting transplants 10 to 15 days in advance of the first field seeding date. Since squash do not transplant well if the roots are disturbed, transplants should be grown in decomposable peat pellets or peat pots or containers that can be

Table 5. Suggested planting dates of pumpkin and squash in different regions of Nebraska.

	Earliest planting			Latest planting		
	East	*Central*	*Panhandle*	*East*	*Central*	*Panhandle*
Summer squash	May 7	May 15	May 20	July 12	July 7	July 2
Small fruited winter squash	May 7	May 15	May 20	June 12	June 7	June 2
Large fruited winter squash	May 7	May 15	May 20	June 5	May 28	May 23
Halloween pumpkin	May 25	May 20	May 20	June 5	May 30	May 30

easily removed at transplanting.

Squash and pumpkin are usually planted in hills but may be drilled in rows for later thinning. Spacing depends upon the type and vigor of the plant. Vigorous, large-fruited vining varieties are best spaced with hills 10x10 feet. Summer squash and bush-type winter squash and pumpkin can be planted much closer at 2 x 3 or 3 x 4 foot spacing. Smaller-fruited, less vigorous vining winter squash such as Butternut, Acorn, etc., are planted at 5 x 6 or 7 x 8 foot spacing.

One packet of summer squash or bush-type winter squash or pumpkin seed will plant about eight hills or 15 to 20 feet of row. Three to 4 pounds will plant one acre. One packet of winter squash will plant 4 to 6 hills. Two to 4 pounds will plant one acre. Plant 4 to 6 seeds per hill 1 inch deep, and thin to two vigorous plants when well established. Avoid disturbing roots of remaining plants in the hill by cutting off rather than pulling out excess plants. When drilled in rows thin plants 18 to 24 inches apart.

Diseases

Bacterial wilt, fruit rot and powdery mildew are among the more common vine crop diseases in Nebraska. Bacterial wilt is transmitted by small yellow and black striped and spotted cucumber beetles which begin to feed as the emerging seedling first breaks through the soil. Developing bacteria plug up the plant's water conducting tissue, causing what appear to be healthy plants to suddenly wilt and die. Bacterial wilt is best prevented by controlling the cucumber beetles

with Thiodon, Sevin or Methoxychlor when the plants first break through the soil.

Serious fruit rot damage may be prevented with a crop rotation which avoids planting vine crops in the same area more than once in three years. If this is not possible spraying with maneb, zineb or captan at 7-to 10-day intervals when the fruit begins to develop will give some control.

Powdery mildew first appears as white powdery spots on the upper leaf surfaces and, under favorable conditions, may cover the entire leaf. It is usually most prevalent toward the end of the season when vine growth hampers spraying but fortunately when most of the fruit are near maturity. Karathane or mildex applied at first sign of mildew, with a second application in 10 to 14 days, should give control on bush-type plants.

Weed Control

Good seedbed preparation and timely cultivation are the best methods for controlling weeds in small gardens. Cultivate shallow to avoid injury to roots near the surface and only when necessary to destroy weed growth. Effective herbicides are available for use in large plantings that provide control of warm-season grasses and weeds that tend to germinate after developing vines hamper or prevent cultivation.

Vegiben (Chloramben) at a rate of 3 to 4 pounds of active chemical per acre applied as a preemergence material at or immediately after seeding has given good results against most grassy and broadleaf weeds. Alanap (naptalam sodium salt) at a rate of 2 to 4 pounds per acre applied over the row within two days after seeding is also effective if the soil is moist when applied. Butternut squash may be sensitive to Alanap so its use should be restricted to other varieties.

Insects

Cutworms, cucumber beetles and squash vine borers are insects that may attack squash and pumpkin. Cutworms are more common when these vine crops are planted after sod. Toxaphene applied to

the soil before planting or Sevin applied after the plants emerge are materials for control.

Larvae hatching from the eggs of the squash vine borer enter the stems of the plant just above the soil. With severe infestation the stem may be girdled, causing the plant to wilt. Spraying the base of the plant with Thiodon, Sevin or Methoxychlor at weekly intervals when vining first begins will help destroy larvae before they enter the plant.

Harvesting and Storage

Depending on variety, summer squash may be first harvested about 50-60 days from planting when the fruit are small and seeds are immature and soft. Varieties with elongate fruit should be harvested when 2" to 3" diameter and up to 6" to 8" long. The bush scalloped squash Patty Pan is best harvested when the fruit is 3" to 4" in diameter.

Summer squash skin should be soft and easily dented with the thumbnail. Flesh should be white. For best quantity and yield, plants should be harvested two to three times per week. If present, any over-mature fruit should be removed. Summer squash will keep for about two weeks if kept at high humidity in a refrigerator at 32-40^0 F.

Winter squash or pumpkin may be harvested when the fruit is fully sized and well colored and the skin sufficiently hard to resist denting by the thumbnail. Fruit will resist damage by light frost that may damage the vines but it should be removed from the field before a hard freeze is imminent. Slight cuts and bruises will heal with corky callous tissue but fruit should be handled with care to avoid bruises or excessive damage.

The soft bulbous stem of certain squash may drop off during harvest or handling but the scar will heal over. Fruit cured 10 days at 80-85^0 F and high humidity can be kept 10 or more weeks if stored between 50 to 60^0 F.