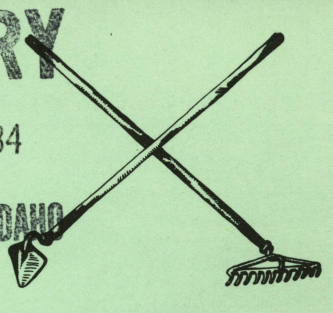
University of Idaho
College of Agriculture

Cooperative Extension Service
Agricultural Experiment Station

Current Information Series No. 723



Gardening

Growing Squash and Pumpkin

W. M. Colt, R. G. Beaver, W. R. Simpson, G. F. Gardner and L. E. Sandvol

Squash and pumpkin are popular warm weather vegetables some of which are commonly grown in Idaho home gardens. The many types of squash and pumpkin produce an amazing display of fruit color, shape and size. The home gardener will discover how interesting and rewarding growing several varieties can be. The gardener will also observe differences in growth habit and fruiting characteristics of these versatile vegetables.

Pumpkins, in addition to being used as Jack o' lanterns at Halloween, are grown for pies, custard, butter, bread, cookies and soup. The flowers may be dipped in batter and fried as a delicacy. The small, immature (before the seed develops) pumpkin fruit may be eaten raw with dips for snacks. Also, they may be steamed or boiled and served as a buttered vegetable or sliced, dipped in batter and fried. The seeds of "naked-seeded" varieties such as 'Lady Godiva,' do not have seed coats and can be roasted in the oven or sautéed for snacks.

Winter or fall squash may be steamed, baked or made into pies. They are frequently used in place of Irish potatoes or rice. Squash blossoms may be dipped in batter and fried in the same manner as pumpkin blossoms.

Winter or fall squash differs from summer squash in that it is harvested and eaten as mature fruit. The fruits of most varieties can be stored for use throughout the winter. 'Table Queen' ('Acorn'), 'Hubbard' and 'Butternut' are popular winter-type squash.

Summer squash usually grows on bush-type plants that do not spread like plants of fall and winter squash and pumpkin. Two to five plants will produce enough fruits for a family for the season. Popular, summer-type squash include 'Zucchini,' 'White Bush Scallop,' 'Summer Crookneck' and 'Yellow Prolific Straightneck.'

Squashes and pumpkins are members of the vine crops called "cucurbits." The name is derived from their botanical classification as *Cucurbita* (C.). The varieties within a botanical species (whether they are referred to as pumpkins or squash) will cross-pollinate. For example, Zucchini will cross with 'Connecticut Field' pumpkin or Acorn squash (a winter squash) because they are all members of the same botanical species (C. *pepo*). Cross-pollination, however, will not affect the taste, shape and color of the fruits unless the seeds are saved and grown the following year. Table 1 shows the common varieties of pumpkins, squashes and gourds belonging to the botanical species C. *pepo*, C. *maxima*, C. *muschata* and C. *mixta*. Not all of these varieties will do well in all parts of Idaho.

Seed Bed

Squash and pumpkins grow best on fertile, well-drained soil supplied with organic matter. Seed bed preparation should start when the soil has sufficient moisture to form a ball that will crumble into medium-sized fragments. Cultivation should incorporate crop residues and organic matter into the top 7 to 8 inches of soil, should destroy current weed growth and should provide a small, granular-type bed for transplanting. Overcultivated soil becomes powdery and has a tendency to crust. The ideal pH for squash and pumpkin growth is from 6.0 to 7.5, but they do well in southeastern Idaho's soil that ranges from 7.0 and 8.0.

Seed Time

The best time to seed squash and pumpkins is 3 weeks before transplanting. Sow in peat pots or other containers, and transplant when soil temperatures are 65°F or above and when night temperatures are expected to average above 55°F. They may also be seeded directly into the garden soil when the soil temperature is 65°F or above.

The variety of squash or pumpkin planted should permit early maturity and be adapted for the weather conditions in that area. Maturing should be reached in 50 to 60 days for summer squash, 85 to 120 days for winter squash and 70 to 110 days for pumpkins after transplanting. Pumpkins are killed by even light frosts. Pumpkins thrive in warm soil, and the use of plastic mulches is common.

Fertilizer

One pound of a 20-20-20 fertilizer should be used as a preplant fertilizer for each 100 square feet. One week after blossoming begins, sidedress with 1½ ounces of ammonium sulfate per plant. The amount of fertilizer applied can be based on a soil test report from the University of Idaho Soils Laboratory or a private testing laboratory if desired.

Planting Specifications

	Summer squash	Winter squash	Pumpkin
Seed per foot	4 to 6	1 to 2	2
Row width (inches)	26 to 60	72 to 120	72 to 120
Germination (days)	3 to 12	6 to 10	6 to 10
Seed depth (inches)	1	1	1 to 1½

Table 1. Common varieties of pumpkin, squash and gourds.

	Pumpkin	Summer squash	Winter squash	Gourds and ornamental squash
C. *pepo* botanical species	'Big Tom' 'Cinderella'* 'Connecticut Field' 'Early Sweet Sugar' 'Funny Face' 'Halloween' 'Howden's Field' 'Jack O'Lantern' 'Jackpot' 'Luxury' 'Small Sugar' 'Spirit Spookie'* 'Sugar Pie' 'Tricky Jack' 'Youngs' Beauty' **Naked seeded** 'Eat-All' 'Lady Godiva' 'Triple Treat'	**Green elongated** 'Caserta' 'Cocozelle' 'Zucchini'* **Yellow elongated** 'Butterbar' 'Crook Neck'* 'Eldorado' 'Goldbar' 'Golden Girl' 'Golden Zucchini' 'Straight Neck'* **Flat shaped** 'Green Tint' 'Pattie Pan'* 'Scallopini'* 'White Scallop'	**Acorn** 'Ebony' 'Table Ace' 'Table King' 'Table Queen' 'Vegetable Spaghetti'	**Gourds** 'Apple' 'Bicolor' 'Crown of Thorns' 'Miniature' 'Miniature Bottle' 'Nest Egg' 'Orange' 'Pear' 'Spoon' 'Warted'
C. *maxima* botanical species	'Big Max' 'King of the Mammoths' 'Mammoth Chili' 'Mammoth Prize'	'Baby Blue' 'Banana' 'Boston Marrow' 'Buttercup' 'Delicious' 'Emerald'* 'Gold Nugget' 'Golden Turban'* 'Hubbard Hybrid' R 'Kindred Marblehead' 'NK 530' 'NK 580' 'Sweet Meat' 'More Gold'*	**Ornamental squash** 'Aladdin' 'Turk's Turban'	
C. *moschata* botanical species	'Cheese' 'Dickinson Field' 'Golden Cushaw' 'Kentucky Field'	'Butternut' 'Hercules' 'Hybrid Butternut' 'Patriot' 'Ponca' 'Waltham'		
C. *mixta* botanical species	'Green-striped Cushaw' 'Japanese Pie' 'Tennessee Sweet Potato' 'White Cushaw'			

*Does well in eastern Idaho.

Cultivation

Cultivation to remove weed competition too close to the plants will destroy much of the root system and reduce yield and quality. If cultivation becomes necessary, penetrate the soil no deeper than 1 inch. Squash and pumpkin plants provide good ground cover and will shade out most weeds as they mature.

Watering

Squash and pumpkin root depth is shallow, and their stress points are 60 percent of the total water-holding capacity (WHC). At 60 percent WHC in clay loam soils, a handful of soil can be formed into a firm ball. Finger marks will imprint on the ball, and the hand will feel damp but not moist The soil will not stick to the hand, and the ball is pliable. When broken, the ball will shatter or fold into medium-sized fragments. Adjustments to this test must be made for lighter or heavier soils.

Insects and Diseases

The following insects may be a problem; Aphids, cucumber beetle, leafhopper, slugs, spider mites, squash bugs and wireworms. See CIS 226, *Garden Vegetable Insect Controls*, for control recommendations.

Several disease problems occur on squash and pumpkin in Idaho. Not all are a problem every year, but the gardener should be aware that they may appear at any time. Table 2 lists the diseases and general control measures.

Harvesting

Summer squash can be harvested anytime the fruits reach a desired size but before the squash forms hard seeds or rinds. Break fruit from the vine, leaving a piece of stem with the fruit.

Pumpkins can be harvested anytime after their rinds are hard and their skins have turned to gold in color. Harvest before they are injured by hard frost. When pumpkins are cut from the vine, leave 3 or 4 inches of stem attached to the fruit since pumpkins without stems do not store well.

Winter squash is harvested when fully mature. Indications of maturity are hard rind and a solid exterior coloring. The acorn types are harvested when a yellow-orange color has developed on the fruit where it is in contact with the soil. In southeastern Idaho, the growing season is short at best, and most winter squash are harvested when the vine has been killed by frost but before a hard frost. To harvest, cut the stem with a knife 2 inches from the fruit.

Curing

In the case of pumpkins and squashes, "curing" refers to a natural process of healing cuts and scratches. Formation of protective corky layers over injuries takes place most rapidly at warm temperatures and a high humidity. Ten days at a temperature of 80° to 85°F, with a relative humidity of about 80 to 85 percent, is ideal. These conditions can be created in a small enclosure

Table 2. Diseases common to pumpkin and squash varieties.

Disease	Caused by	Symptoms	Control measures
Damping-off	Fungus	Seedlings fail to emerge or fall over at ground level shortly after emerging.	Use treated seed, and keep soil moist but **not** saturated during seed germination and early seedling growth.
Cladosporium rot and leafspot	Fungus	Dead tissue produced in patches on leaves or a moldy growth in patches on fruits.	Spray entire plant with Dithane-M22, Copper sulfate or Benlate.
Powdery mildew	Fungus	White, thin, powdery growth on leaves. May be seen first on underside of leaves.	Use resistant varieties. Sprays containing sulfur may be used with caution. Sprays containing Benomyl or zinc are also effective.
Fusarium root rot	Fungus in soil	Unthrifty appearance of plant followed by wilting. Root system rotted.	Rotate crop. Soil fumigation. Resistant varieties.
Fusarium wilt and verticillium wilt	Fungus	Similar in appearance to bacterial wilt.	Rotate crop. Soil fumiation. Resistant varieties.
Bacterial wilt	Bacteria	General unthrifty appearance of plant followed by wilting and death.	Use resistant varieties. Rotate planting area from year to year.
Curly top	Virus	Yellowing of newer leaves, stunting of growth, small fruit and poorly formed leaves.	Use resistant varieties, and control leaf hoppers. Destroy diseased plants.
Cucumber mosaic	Virus	Mottling of the leaves and dwarfing of new growth.	Use resistant varieties, and control aphids. Destroy diseased plants.
Bacterial soft rot	Bacteria	Slimy rot of fruits or other parts of plant.	Keep plant parts dry, and prevent splashing soil during watering. Sprays containing copper may help.
Storage rots	Many fungi and bacteria	General rotting of fruits in storage.	Store only clean disease- and damage-free fruits. Keep fruit surfaces dry. Immediately remove any diseased fruits.

such as a cabinet or closet or possibly in a temporary container made of clear plastic. Provide heat with a thermostatically controlled electric heater or light bulb. You should equip the enclosure with a fan to maintain uniform distribution of the heat and humidity.

Storage

All pumpkins and hard-shelled winter squashes usually cannot be consumed by the end of the growing season, so you need to keep some of these vegetables in good condition until Christmas or later. This is possible if a few recommendations are kept in mind. Pumpkins and squashes deteriorate rapidly if stored at temperatures below 50°F. The best storage temperature should average between 50°F and 55°F. At lower temperatures, chilling injury will occur; at higher temperatures, shrinkage results. A moderate relative humidity of about 75 percent is satisfactory.

One of the most important things to remember during storage is to keep the surface of the fruit dry to retard the growth of decay fungi. Circulating air helps to prevent free moisture from forming on pumpkins and squash.

Any dry place where the proper temperature and humidity can be maintained is suitable for storage. Pumpkins and squashes keep best when placed one layer deep. The preferred method is to provide shelves where they can be placed with a small space between the fruits. Do not store pumpkins and squashes on a cold concrete floor. Promptly discard any fruits that show signs of decay.

Most varieties of pumpkins cannot be stored as long as squashes. Such varieties as 'Jack O'Lantern' and 'Connecticut Field' will not stay in usable condition for more than 2 or 3 months. 'Table Queen' squash can be stored 3 to 6 months but becomes stringy after long storage. 'Hubbard,' 'Sweetheart,' 'Silver Bell' and 'Turban' squashes store well. 'Butternut' can be stored for 2 to 3 months.

The Authors

W. Michael Colt is an Extension horticulturist, R. Gary Beaver is an Extension potato and onion specialist and research horticulturist, and W. R. Simpson is an Extension plant pathologist. These three are at the Southwest Idaho Research and Extension Center at Parma. G. F. Gardner is the chairman of the Bannock County Extension office in Pocatello. L. E. Sandvol is an Extension entomologist at the UI Research and Extension Center at Aberdeen.

Other College of Agriculture publications you will want to get on home gardening are:

CIS 226	Garden Vegetable Insect Control	35 cents
CIS 427	Gardening — Vegetables for Freezing or Canning	35 cents
CIS 446	Onions, Leeks, Shallots, Chives and Garlic for the Home Garden	35 cents
CIS 658	Gardening — Growing Beans and Peas	25 cents
CIS 659	Gardening — Growing Peppers	25 cents
CIS 660	Gardening — Beets, Carrots, Radishes and Other Root Crops	35 cents
CIS 661	Gardening — Growing Cole Crops	25 cents
CIS 662	Gardening — Growing Sweet Corn	35 cents
CIS 667	Gardening — Tomatoes for the Home Garden	35 cents
CIS 686	Gardening — Growing Garlic	25 cents
CIS 691	Gardening — Growing Lettuce, Spinach and Swiss Chard	35 cents
CIS 700	Gardening — Preventing and Controlling Diseases	35 cents
CIS 719	Gardening — Growing Rhubarb	35 cents
EXT 617	When To Harvest Vegetables	50 cents

You can get copies of these publications from your University of Idaho Cooperative Extension Service county office. Or, you can order directly from:

Agricultural Communications Center
Agricultural Publications Building
University of Idaho
Moscow, Idaho 83843

Please list publications by title and number on your order. Make your check payable to **Agricultural Communications Center.**

Issued in furtherance of cooperative extension work in agriculture and home economics, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, H.R. Guenthner, Director of Cooperative Extension Service, University of Idaho, Moscow, Idaho 83843. We offer our programs and facilities to all people without regard to race, creed, color, sex or national origin.

1500 2-84

35 cents per copy