

can lead to a serious damage. These insects attack any summer or winter squash plant, along with cucumbers and pumpkins, boring into the main stems at the base of butternut squash plants, sucking out the sap and eating the plants themselves, which are signs of their presence.

There are several products on the market that will prevent vine borer infestation. It is important to apply these products before butternut squash plants become infested. Products that contain Diazinon are very effective against squash vine borers. Most of these insecticides can be applied soon after the seedlings first emerge.

Squash bugs are a common pest, and can cause butternut squash diseases. They are usually grey or brown in colour, although some are almost black. Squash bugs are usually about the size of a ten-cent piece and travel in packs. They also suck the sap from the plant and usually attack the squash itself, although they usually lay their eggs on the underside of the leaves.

Many of the same products that prevent vine borers and cucumber beetles will also prevent squash bug infestations. To be effective the seedlings have to be sprayed soon after the seedlings emerge. Keeping a garden free of weeds and other plant debris is one of the used cultural methods.

The most common butternut squash problems are caused by cucumber beetles. The striped cucumber beetle has black-and-yellow spots on its back. The spotted cucumber beetle has a yellow back with black spots. They feed by chewing on young butternut squash leaves and stems. Cucumber beetles also carry wilt diseases from plant to plant. Fortunately, these pests can be controlled with common insecticides, including sprays and dust. Diazinon and Malathion are common chemicals that will kill cucumber beetles. Most can be applied soon after the seedlings emerge and throughout the growing season. Organic products, including soap sprays are also effective.

Harvesting

The crop differs from summer squash in that it is harvested and eaten in the mature fruit stage, when the seeds within have matured fully and the skin has hardened into a tough rind. At this stage, most varieties of this fruit can be stored for use during the winter.

Winter squash can be harvested whenever the fruit has turned a deep, solid colour and the skin is hard. Most of the crop is harvested in September or October, before heavy frosts hit the planting area. When cutting squash from the vine, five centimetres of stem should remain attached, if possible. Cuts and bruises should be avoided when handling. Fruit that is not fully mature, has been injured, has had the stems knocked off, or has been subjected to heavy frost does not keep well and should be used as soon as possible or be composted (watch out for seedlings in the compost).

REFERENCES

Squash Production guide, PCARRD. Information Bulletin No.156/2000

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Cucurbita moschata (Winter Squash)



BACKGROUND FOR SQUASH

Winter squash is a warm season crop that is relatively easy to grow but also requires a long season to produce a marketable crop

ORIGIN AND DISTRIBUTION

Butternut squash (*Cucurbita moschata*) also known in Australia and New Zealand as butternut pumpkin, is a type of winter squash.

It has a sweet, nutty taste similar to that of a pumpkin. It has yellow skin and orange fleshy pulp. When ripe, it turns increasingly deep orange and becomes sweeter and richer. It grows on a vine.

SOIL AND CLIMATIC REQUIREMENTS

Winter squash is a warm-season crop that is relatively easy to grow but requires a long season to produce a marketable crop. Most varieties require 85 to 120 days from sowing to reach market maturity. Pumpkin and winter squash should be direct seeded after all danger of



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frost is past. Soil temperatures should be between 21°C and 32°C for optimal seed germination.

With proper care, winter squash can be grown on most soils. Too low and poorly drained soils are not best for growing these crops. Planting in well-drained, sandy loams with high levels of organic matter and a pH of 6,0 to 6,5 is recommended for good-quality produce.

USES

Butternut squash is a fruit that can be roasted and toasted and be puréed (to make a soup) or mashed into soups, casseroles, breads, and muffins. In Australia it is regarded as a pumpkin, and used interchangeably with other types of pumpkins and it is also commonly used in South Africa. It is often used in soup or can be cooked on a grill. Grilled butternut is normally either seasoned with spices such as nutmeg and cinnamon or the deseeded centre stuffed with other vegetables for example spinach and Feta before being wrapped in foil and then grilled. The grilled butternut is often served as a side dish to braais (barbecues) and the soup as a starter dish.

It is a good source of fibre, vitamin C, manganese, magnesium and potassium. It is also an excellent source of vitamin A and vitamin E.

PREPARATION

The fruit is prepared by removing the skin, stalk and seeds, which are not usually eaten or cooked. However, the seeds are edible, either raw or roasted and the skin is also edible and softens when roasted. One of the most common ways to prepare butternut squash is roasting. The squash is cut in half lengthwise, lightly brushed with cooking oil and placed cut side down on a baking sheet. It is then baked for 45 minutes or until it is softened. Once roasted, it can be eaten in a variety of ways as outlined above.

CULTURAL PRACTICES

Soil preparation

The land must at least be prepared in time to insure good establishment of a uniform stand. This is done by turning the soil several months before planting so that crop residue can fully decompose. Early land preparation also allows time for weed seeds to germinate, allowing for early cultivation to destroy young weeds.

Planting

Because squash is a frost-tender vegetable, the seeds do not germinate in cold soil. Most squash seed require a minimum soil temperature of 15°C to germinate. They are also easily destroyed by frost. It is therefore necessary to plant after the soil is thoroughly warmed and all signs of frost have passed.

Butternut squash should be planted no earlier than 2 weeks after the last expected frost within an area. They can be planted up until 12 weeks or so before the first expected frost in autumn. The seeds germinate best when the soil temperatures are around 18°C.

When planting butternut squash in a traditional vegetable garden, the soil should be well tilled down to a depth of 20 cm. Loosening the soil gives roots plenty of room to develop an expansive root system. Nutrient rich soil also helps the plant to grow large, which will allow it to produce better quality squash. Growing organically, an addition of compost or well-rotted manure is usually the best in butternut squash.

Tilling the soil is normally required. Hills or heaps of dirt should be about 30 cm across and 8 cm to-10 cm high. When planting bush varieties, the mounds must be spaced 1 m apart (for vining varieties, allow 2 m between heaps). Squash requires plenty of direct sunlight—at least 6 to 8 hours per day.

The holes should be about 2 cm deep and a few centimetres apart and this is done by making a hole in top of each heap with the end of a hoe. When the seedlings reach 5 cm tall, one plant should be thinned per heap, keeping the best looking seedling. Thinning is necessary to make sure the plants have plenty of room to grow and slows competition of plants for valuable water and nutrients.

Fertilisation

Butternut squash plants feed heavily to produce lots of high-quality squash. The first time for fertilising butternut squash plants is when the seedlings are a few centimetres tall. A dose of fertiliser at this stage will help the plant to get as large as possible. Larger plants mean bigger, better formed squash. Once the plants start to take off and get bigger, adding more fertiliser until after the blossoms appear should be avoided. This encourages the plant to focus its energy on producing squash. After the blossoms appear, another dose of fertiliser can be applied to maximise fruit production.

A granule type of fertiliser causes the plants to burn when coming into contact with it. Scattering the granules on the ground around the plant is the best used method and irrigation should follow. Application of 40 to 50 kg N/ha must be used at 3 weeks after germination. Molybdenum deficiencies are common at some of the production areas in South Africa (Western Cape and Lowveld areas)

Irrigation

Butternut squash plants need about a centimetre of rain per week for best results. A long, slow soak is best when watering squash plants. Slowly water the soil until flooding reaches the root system. High water pressure irrigation will erode away the soil that covers the roots so this should be avoided. Concentrating water at the base of the plant does the trick. Watering the tops of the plants encourages disease and pest problems. Wet leaves are a breeding ground for fungal infections. It is best to water in the early morning hours. When irrigating in the early hours of the morning, direct any excess water to evaporate in the afternoon sun.

Weed control

For better weed control, select locations with low weed populations or no perennial weed problems, such as nut sedge. Use mechanical cultivation between rows, and employ production practices which encourage rapid development of pumpkin and winter squash. When using mechanical cultivation, cultivate the soil only 2 cm to 5 cm deep because pumpkin and winter squash are shallow rooted and sensitive to root pruning. Some hand weeding may be needed. Consider using polyethylene mulch as part of your weed control strategy.

Pest control and disease control

To avoid potential soil-borne diseases and nematode problems, winter squash should be planted in soils that have not grown a crop of watermelons, muskmelons (cantaloupes), summer squash, or other member of the Cucumber family in the past 2 to 3 years.

Most butternut squash diseases are caused by three main insects:

- Vine borers
- Squash bugs
- Cucumber beetles

Vine borers are a common garden pest and when ignored