

Origin and distribution

The plant is a biennial, belonging to the Apiaceae (Umbelliferae) or parsley family, it is said that parsnips originated in the Mediterranean area. The crop is grown as an annual and the thickened, cream-coloured root is the edible portion. It is a long season crop (~ 100 days) and thrives best in cool growing climates.

Soil and climatic requirements

The optimum temperatures for growing parsnips are 16 to 20 °C. The crop may be scorched above 30 °C. Roots are not harmed by frost, but cold weather may result in losses of roots owing to flowering or 'bolting'. Well-drained, deep soils are required for parsnips with a loose, sandy texture without stones to enable optimal development of the root. Compared to carrots, parsnips are more sensitive to acidic soils and ideally require a pH between 6,0 and 6,8. Parsnips do not need exposure to full sun and can be grown in lightly shaded plots. Be aware that parsnips have a long growing season and may occupy the soil for almost a year.

Uses

Tender, young parsnips can be grated and eaten without cooking. Parsnips can be used as a carrot substitute in just about any cooked dish. They are popular steamed and mashed, often mixed in with potatoes. When adding to soups and stews, wait until the final 20 to 30 minutes of cooking, because they soften quickly. Parsnips really shine as a roasted vegetable, sprinkled with fresh herbs.

HUMAN HEALTH BENEFITS AND CONCERNS

This biennial root is closely related to parsley and carrots and is very popular in healthy diets as it is high in dietary

fibre, manganese and vitamin C and B but low in saturated fat, cholesterol and sodium.

Cultural practices

SOIL PREPARATION

Parsnips are grown successfully on both mineral and clay soils. Clay soils are among the easiest to work and yield high quality-roots. Parsnips are also ideally suited to loam soils. Heavier soils, where moisture cannot be controlled, are not the best for parsnips because it is more difficult to establish a good plant stand on because of soil crusting. The soil depth should be at least 45 cm to facilitate the development of straight roots. Shallow soils may lead to forked or bent roots. Good soil drainage is essential because water logging can result in crop failure.

On mineral soils, a major problem in parsnip production is stand establishment. Careful attention should be given to preparing the seedbed.

The soil should possess a fine tilth and be free of clods and debris. Soil obstructions make seedling emergence difficult, thereby leading to a more variable plant stand and, possibly, misshapen roots.

PLANTING

Parsnips are grown from seed. Sowing can take place between February and May, but seeds are often slow to germinate with early sowings. More uniform germination will be achieved by sowing after the last risk of frost. Parsnips are sown in rows with a width of approximately 40 cm apart. With an interval of 15 to 30 cm, about three seeds are sown per station at a depth of 0,6 to 1,2 cm. Pelleted seed is available for a mechanised sowing process. The spacing depends on the variety, the smaller the variety, the closer the spacing should be. Root development also depends upon the spacing: smaller roots de-

velop in narrow gaps, the root will expand more when sown at a wider spacing. Spacing should be determined in relation to the variety sown and desired size at harvest. Only fresh seeds should be used as their viability declines rapidly.

TRANSPLANTING

It is difficult to transplant parsnips, because disturbing their roots causes the roots to fork.

FERTILISATION

It is best to sow them after a crop which was well-manured. Parsnips have relatively high potash requirements, but otherwise are not a nutrient-hungry crop. One frequent problem with parsnips is magnesium deficiency, of which yellow leaves are an indication.

IRRIGATION

Parsnips are not tolerant to drought or high temperatures. The crop needs steady and relatively large volumes of water for optimal growth. On light textured soils approximately 25 mm of water (irrigation or precipitation) is required weekly. On heavier textured soils, 40 to 60 mm of water every 10 to 14 days is needed for optimum yields and quality. If high temperature conditions exist when seedlings are just emerging, irrigation will prevent serious damage (heat canker) of the young plants. Irrigation can be used very effectively to overcome heavy soil crusting, which can reduce the plant stand. Roots should not be allowed to dry out, but watering should be reduced for six to eight weeks after the development of the first leaf, to encourage the roots to grow deeper.

WEED CONTROL

Weeding is an essential operation during the first month after emergence. During early development parsnip seedlings are quite vulnerable to being crowded out by

invading weeds. If hand or mechanical methods are employed for weed control the cultivations should be kept shallow or damage to developing feeder roots may result.

PEST CONTROL AND DISEASE CONTROL

Wireworms can occur with parsnips. The 2,5 cm long, brownish shiny larvae feed on the roots and they are especially present following grass and on ill-maintained fields. Symptoms are regular holes in the roots and the appearance of the larvae themselves.

Carrot fly (*Psila rosae*) is not as frequent with parsnips as it is with carrots but they can cause economic damage. The flies are attracted by the smell so for small production it might be advisable to plant garlic or onions close by. For organic production, physical barriers such as fine mesh can also be used for protection.

There are several insecticides available but good crop rotation management will also help to minimise soil-borne pests and diseases. Scouting is also important. Care has to be taken when planning the crop rotation system as there are some pests which attack several species of the Apiaceae family. These crops should not follow each other within the rotation cycle.

Canker is caused by a fungal infection (e.g. by *Itersonilia pastinacae*) and will affect the crop, especially in rainy years or on wet soils and often follows physical damage as the spores can penetrate through the damaged tissue. There are different forms but black canker is the most common form. Symptoms include dark patches on the roots and light-green spots on the foliage.

Harvesting and handling

Traditionally, harvesting starts after the first frost (about mid-October) and goes on until April (depending on de-

mand). Nowadays parsnips are harvested as early as June. Crop yield varies depending on the variety used as well as sowing densities and can range between 15 to 30 tons/ha or even more. For harvesting, special parsnip harvesting machines are available but adapted potato or carrot (top picker) harvesters can be used as well. If they are dug by hand, gloves are advisable as the foliage can cause severe skin irritations.

Traditionally, parsnips were kept in the soil as they tend to shrivel and lose weight quite easily. Another advantage of keeping them in the soil over winter is the improvement in taste which occurs when exposed to frost as it turns the starch into sugar. Parsnips harvested before the first frost can be stored for at least 2 weeks in a cool place (at 0 °C) to get the sweet taste. If they are stored indoors, cut off the foliage and ensure they are in a dark, cool place, stored in sand without touching each other. At 0 °C and 90% humidity they can be stored for up to 6 months.

REFERENCES

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Parsnips (*pastinaca sativa*)



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