D.P.I. HORTCULTURE NOTE: NO. 10

CARROTS

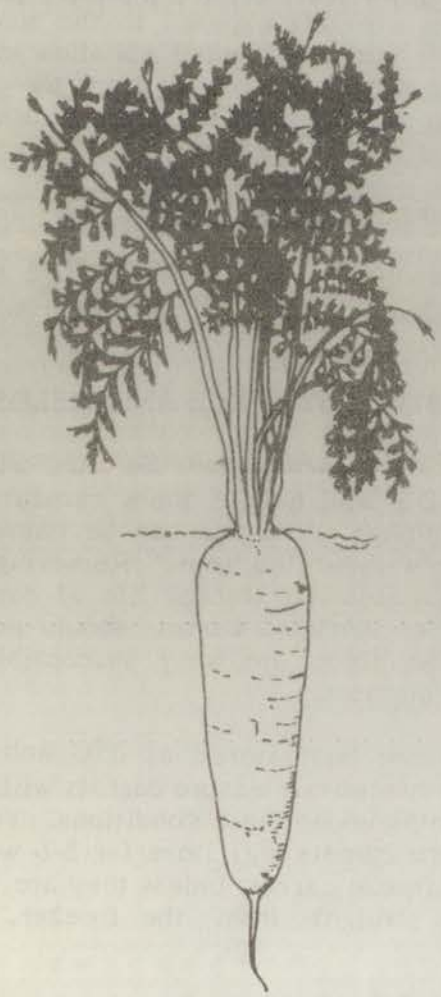
By P.B. Bull*, Senior Horticulturist, D.P.I., Laloki

Common Name: CARROT

Botanical Name: *Daucus carota*

WHAT THE PLANT LOOKS LIKE

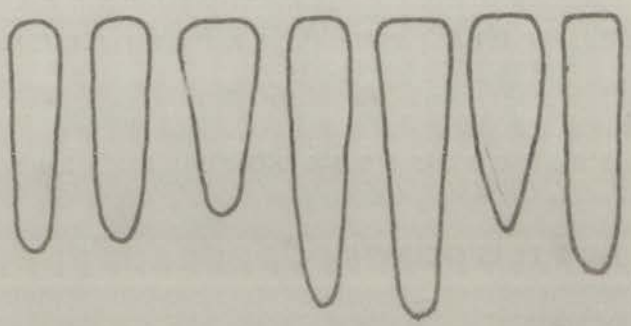
Carrots are grown for their long orange roots. These roots can grow up to 25 cm long and they vary in shape. The leaves are light green, feathery and look a bit like ferns. They have a similar smell to the leaves of Oenanthe (Tok Pisin: Nase).



A carrot plant, showing root and leaves

WHERE IT GROWS

The best quality carrots, those with long, deep orange-coloured roots, are produced when the maximum soil temperature is less than 24°C. When the maximum soil temperature is between 24 and 30° carrots still grow, but the roots are short, and pale yellow in colour. In Papua New Guinea carrots grow better above an altitude of 700 m. Carrots are frost resistant.



Shapes of carrot roots, one third natural size.

SOILS AND FERTILIZER

Carrots grow best in light, sandy, loam or pumice soils. A good content of organic matter is needed to give a good bright colour. The organic matter should be well broken down.

Carrot seeds are very small and they germinate best when sown very shallow in these light soils. Because carrot seedlings are quite weak, they do not grow well in silty or heavy soils which form a crust over

---

* *Present address: Yates Research, P.O. Box 587, Pukekohe, New Zealand.*

the germinating seedling. Also, in light soils, the roots grow longer and more evenly.

Soil pH should be between 5.5 and 6.8.

In new gardens, fertilizer will not be needed for carrots. On ground that has been cropped before, apply 25 kg of nitrogen and 25 kg of phosphorous per hectare. This is obtained from an application of 50 kg urea plus 125 kg trifos per ha, before sowing.

Do not use fresh animal manure on carrots, because it causes the roots to fork.

VARIETIES

The recommended variety for lower altitudes is:

New Kuroda (Takii)

Popular varieties in the highlands include:

Manchester Table (Yates, N.Z.)
Topweight (Yates, N.Z.)
Western Red (Yates, Australia)

Other varieties are also grown.

HOW IT IS GROWN

Seed

To sow 0.1 ha with carrots, you need 200 g of seed. Carrot seed is available from local shops.

Sowing

Seed is sown directly into the field, either with a seed drill or by hand. If a seed drill is used, make sure that the correct setting for carrot seed is used. If the seed is sown by hand you can mix it with sand. This helps prevent sowing it too thickly. Seeds should be covered with fine soil to a depth of 1 to 1.5 cm.

Planting and spacing

Prepare beds 1.5 to 1.7 m wide. Sow three rows 50 cm apart on a bed. Closer row spacings can be used if mechanical or chemical methods are available for weed control.

Thinning

If the seed has been sown too thickly by hand, the plants may need thinning out when they are about 5 cm high. Thin to about 3 cm between plants in the row.

Irrigation

In dry areas or seasons, irrigation every two days is needed for good germination. Once the crop is growing it should be watered every week.

Weeding

Carrot seedlings grow slowly, so the crop should be weeded regularly, especially during the early stages of growth.

With some varieties, the shoulders of the carrots grow out of the ground. If the shoulders are left exposed to the sunlight they turn green. If you put a shallow mound of soil along the row during the final weeding, this will keep the roots all orange.

TIME TO MATURITY

From sowing, carrots take from 10 to 15 weeks until they are ready for harvest.

HARVESTING, STORAGE AND YIELDS

The mature carrots can be dug with a fork. Dig and handle them carefully to avoid damage. Carrots can be harvested with or without the tops. Removing the tops increases the storage life of carrots. Bruised or damaged carrots should not be stored as these are very susceptible to storage diseases.

Carrots are best stored at $0^{o}C$ and high relative humidity. Mature carrots will keep 3-4 months under these conditions. Young, immature carrots will store for 3-6 weeks. Do not freeze carrots unless they are to be cooked straight from the freezer. The

carrots should first be 'blanched', - that is partly cooked by boiling for 2 minutes, - then cooled quickly in iced water, before freezing. The higher the temperature in the freezer, the shorter the storage life.

Carrot yields range between 5 tonnes per ha to 30 tonnes per ha.

HOW CARROTS ARE USED

Both the leaves and the roots of carrots can be eaten, but it is the roots that are marketed. The roots are very rich in Vitamin A. They are best eaten raw, but can also be cooked. Cook until soft to bite - about 10 mins boiling. Do not overcook. Carrots taste good chopped up in a meat stew.

INSECT PESTS

Cutworm (*Agrotis ipsilon*) sometimes causes damage. (See Entomology Bulletin: No. 7).

DISEASES

Alternaria leaf blight causes the plants to lose their leaves, particularly under hot humid conditions. To control this disease, spray with 20 - 25 g of Copper oxychloride in 10 litres water. As the disease can be carried in the soil, do not plant carrots on ground which has previously grown carrots. Some varieties, for example, Topweight, are more tolerant of this disease.

Bacterial soft rot will infect carrots, particularly in poorly drained soils in the wet season. The best prevention is to plant on beds or on well drained soils. This disease is discussed in Plant Pathology Note No. 18.

Root knot nematodes cause galls (small lumps) on the roots of carrots. This pest is discussed in Plant Pathology Note No. 5.

FURTHER READING

Anon (1980). Plant Pathology Note No. 5. Root knot nematode. *Harvest* 6 (3): 154-156.

Farming Note No. 10. *Vegetables.* Department of Primary Industry, Port Moresby. Revised 1983.

Thistleton B. M. Recommendations for the Control of Pests. *Technical Report* 83/4, Department of Primary Industry, Port Moresby, 1983.

Tomlinson, D. (1982). Plant Pathology Note No. 18. Bacterial soft rot of vegetables. *Harvest* 8 (3): 141-144.

FURTHER INFORMATION

For further information and advice on fruit and vegetable growing, contact the Area Horticulturist in your region. The addresses for the Area Horticulturists are as follows:

New Guinea Islands Region
Lowlands Agricultural Experiment Station
P.O. Keravat, E.N.B.P.
Tel: 926251 or 926252

Momase Region
Bubia Agriculture Research Centre
P.O. Box 73, LAE
Tel: 424933

Papua Region
D.P.I. Laloki
P.O. Box 417, KONEDOBU
Tel: 281068

Highlands Region
Kuk Agricultural Research Station
P.O. Box 339, MOUNT HAGEN
Tel: 551377

Copies of this Horticulture Note can be obtained from: The Publications Officer, Publications Section, P.O. Box 417, KONEDOBU