

# BEETROOT

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## CLIMATE

Optimum temperatures for growth and development are 15°C to 18°C, with mean minimums of 5°C and mean maximums of 24°C. Although beetroot is a cool-season crop, it is fairly tolerant to high temperatures, provided that soil moisture is adequate. The plant can withstand moderate frosts, but growth will be affected. Bolting to seed in spring can be induced if the crop is exposed to prolonged periods of low temperatures during the winter months.

## SOIL REQUIREMENTS

Beetroot can be grown on a wide range of soils, but best results are obtained on well-drained sandy to loamy soils, with optimum pH 6 to 8. Hard, compacted soils should be avoided, as they impede seedling emergence and symmetrical root development. Beetroot is moderately tolerant to brack conditions, but fairly susceptible to boron deficiencies.

## CULTIVARS

Crimson Globe, Detroit Dark Red, Red Ace, Star 1102.

## GROWING PERIOD

The time period is 75 to 90 days in summer, and 105 days to 120 days or longer in winter.

## SOIL PREPARATION

The seeds are generally sown direct in the field, and the soil must therefore be prepared thoroughly. Good stands and yields will be obtained only if the soil bed has a good tilth and is level. Before planting, the soil should be ploughed, harrowed and levelled.

## SOWING TIMES

Cold areas	(heavy frosts)	August to March
Warm areas	(light frosts)	All year
Hot areas	(frost-free)	February to September

## SOWING

Beetroot is usually sown direct into the field to a depth of 15 mm to 20 mm. The "seed" is actually a fruit capsule containing 2 to 6 seeds. "Seeds" are spaced 25 mm to 50 mm apart in rows drawn 200 mm to 400 mm apart. The soil should be lightly firmed after covering, to aid even germination. Should plant emergence be good, excess plants should be thinned out at an early stage, to a final in-row spacing of 50 mm to 70 mm.

Thinnings may be transplanted to fill gaps in the row. A mass of 6 kg to 10 kg seed per hectare is generally used for direct seeding. Beetroots are occasionally sown in seedbeds for transplanting later. However, transplanting delays crop maturity slightly, and quality of roots is sometimes poorer than with direct seeding.

## FERTILIZATION

Undecomposed compost or manure should not be applied to this crop, as such material enhances the development of multiple and hairy roots. Phosphorus, potassium and lime requirements should be determined by soil analysis. Soils with a pH of less than 5,0 should be limed. The total nitrogen requirement of the crop is about 100 kg N per hectare. On fertile soils, 400 kg 2:3:4(30) applied at planting, followed by two dressings of 100 kg to 150 kg LAN at 4 weeks and at 8 weeks, should be sufficient for one hectare. On less fertile soils, 800 kg 2:3:4(30) should be applied per hectare, followed by two dressings of 50 kg to 100 kg LAN each.

## IRRIGATION

Beetroots have shallow roots. The effective rooting depth is only about 300 mm. Frequent irrigation (possibly twice a week during hot, dry weather) is necessary to keep the root-zone moist, and obtain good yields and quality. An adequate moisture supply is particularly important once the roots start enlarging.

## WEED CONTROL

Early weed control is very important to reduce weed competition with the small tender seedlings. Mechanical and hand-weeding is normally practised. Later the plant's leaf cover helps to suppress weed growth.

The pre-emergent herbicide chloridazon, sold as Pyramin, is registered for use on beetroot to control a range of annual broad-leafed weeds. Apply to damp soil after sowing, but only during cool to moderate temperature conditions.

Propaquizafop (Agil 100), is registered for post-emergent use against young annual grasses. Haloxyfop-R-methyl ester (Gallant Super or Verdict Super) may be used post-emergent for the control of annual and perennial grasses. Label instructions must be meticulously followed, when using any chemical.

## PESTS

Nematodes (control by soil fumigation) and cutworms (use cutworm baits or spray with a pyrethroid insecticide) are the most serious pests. Other pests include aphids, red spider mite and various leaf-eating insects, but no chemicals are registered for their control on beetroot.

## DISEASES

No chemicals are registered for the control of beetroot diseases. *Cercospora* leaf spot is common in beetroot. The disease may become a problem during warm, humid conditions. Use good quality, disease-free seed and practise crop rotation and sanitation to reduce the disease incidence. Avoid growing the crop during the months when the disease causes problems.

## YIELDS (t/ha)

Conservative	Average	Good
14	18	25

## HARVESTING AND MARKETING

Harvesting usually starts when the beetroots are between 3 cm to 5 cm in diameter. The first harvest is merely a "thinning out". Most beetroots are lifted when they are 5 cm to 7,5 cm in diameter.

The crop is lifted by hand, cleaned of dead leaves, washed and bunched with 3 to 6 beetroots to a bunch, which is then ready to be marketed. An alternative is to cut off leaves and pack the beetroot in pockets. Often, where beetroot is grown on a large scale, the leaves are cut off mechanically and crates or cartons are used for packing and marketing the beetroot.

**Table 11.**

Total tonnage sold on Durban National Market per year from 1993 to 1997, and mean annual prices (R per ton obtained).

	1993	1994	1995	1996	1997
Tons sold p.a.	557	402	579	399.6	476.7
Ave R/ton	409	612	480	627	702