

# Rhubarb

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## Introduction

Rhubarb is a member of the Polygonaceae (the buckwheat family). *Rheum rhaponticum* is an herbaceous perennial, the underground portion consists of fleshy and woody rhizomes and a fibrous root system. The petioles (stems) of the leaves are used for food. Botanically rhubarb is a vegetable but in its domestic use it is considered to be a fruit. It is a native of Central Asia. It was first grown for its root which was used for medicinal purposes (approximately 5000 years ago in China). It was being grown in Europe in the 1700's but not until 1778 was it definitely recorded as a food plant by 1820 a method of forcing in the dark had been developed. Rhubarb plantings can remain productive for up to 5 years.

Rhubarb crown and rhizomes are resistant to cold and dry conditions. A dormant period does not seem to be essential since the crop will grow continuously under irrigation in California. The vegetative parts of the plant are killed at -3°C. At relatively low temperatures the stalks develop pink color while at higher temperatures green coloration is more prominent. It thrives best in regions having cool moist summers and winters cold enough to freeze the ground to a depth of several inches. Forcing of Rhubarb cannot occur until dormancy is broken. Dormancy is broken by exposing crowns to a period of low temperatures. The duration of the low temperature depends on the cultivar. Gibberellic Acid may be used to substitute for part of the "cold units". Cold units are calculated on a 10°C basis taken at a 10 cm depth at 9am beginning on October 1st. All degrees below 10°C are noted each day to come up with an accumulated cold unit figure.

Rhubarb requires deep well drained sandy loam to loam soil with a good supply of organic matter. Heavy soils are satisfactory if they are well drained but the structure should be improved with manure or other forms of organic matter. Early field production requires light soils with a southerly exposure and a well sheltered field.

This vegetable crop is either field grown or forced inside sheds. Forced rhubarb is produced for the winter fresh market, field rhubarb is produced for the spring, early summer fresh markets, and the processing market. Field yields depend on the vigour and age of the stand and range between 15,000 and 40,000 kg per hectare. Forced yields would be 15,000 – 20,000 kg per hectare of field root. (2kg to 3 kg per root). Only the red stalked cultivars are suitable for fresh or forced rhubarb. These cultivars yield less than green stalked cultivars.

Presently rhubarb is grown in small quantities for the early fresh market and a sizable amount is grown for processing (frozen) pack. Some markets exist for the forced product if it can be produced economically. This depends on the cost of capital facilities and labor.

**Nutrient Content:** Contains several nutrients including Vitamins A and C, thiamin, riboflavin, niacin, potassium and phosphorus. 250 mL (1 cup) raw rhubarb contains 20 kilocalories. 125 mL (1/2 cup) sweetened, cooked rhubarb has about 150 kilocalories.

## Crop Establishment

**Seeding/Planting** – Rhubarb is not propagated from seed since seedlings are not true to type. Divisions for starting new plantings are sometimes available commercially. However, if propagation is necessary, select vigorous, disease-free plants the summer before divisions are to be made and mark them with stakes. Dig the selected plants while they are dormant, either in the fall or early spring. Store in a cold place and protect from successive freezing and thawing, drying out and damage to buds. Close to planting time in the spring, cut each plant into as many divisions as possible - each with one or two well developed buds and as large a piece of the adjacent root material as possible. Protect divisions from drying out before and during planting. Each parent plant will produce from 4 to 20 divisions.

Rhubarb is normally planted as early as possible in the spring since growth begins when soil temperatures are still well below 10°C. Plants are spaced 1m by 1m apart (10,000 divisions per hectare). Set divisions deep enough to cover the root piece but leave the tip of the bud just visible at the soil surface. Planting on the square allows cultivation in two directions. In general higher plant populations result in increased yield per hectare but less yield per plant. To produce roots for forcing, spacing in the field may be adjusted to 75 cm between rows and plants (17,220 plants per hectare) without any loss of yield or quality.

## Crop Management

**The first growing season** – Cultivation should be as shallow as possible and throughout the growing season. Hand hoeing will probably be required. Flower stalks should be cut out as soon as they appear. One or two side dressings of nitrogen may be necessary. No crop should be harvested the first sea- son. In the fall well-rotted manure should be applied to the soil surface.

**Following years** – Cultivate occasionally to keep weeds in check but be careful not to cultivate too deep or close to the crown and fleshy roots. A small two week harvest period may be made the second year if the previous season's growth has been good. Stalks should not be harvested until late in the season. The stalks are pulled from the crown during harvest, they are not usually cut. Generally harvest is not for more than 8 to 10 weeks during the third and future seasons. If too many stalks are removed, the root cannot build up enough carbohydrates for next year's production and the plants will produce thin leaf stalks. Flower stalks are removed during crop harvest for processing rhubarb. For fresh market rhubarb, flower stalks are removed when they show up in the field. This helps keep plants vigorous. In 6 to 8 years crowns often become rather crowded and produce small stalks. It is advisable either to replant the bed or reduce the number of buds on the crown by pruning.

**Forcing Rhubarb** – Plants are grown in the field for two years. Forced yields depends on the size of the root used for forcing. Dig plants just before the ground freezes solidly in the late fall taking as much root as practical. For late forcing, store plants in a cold place, and protect them from successive freezing and thawing, drying out and damage to buds. Severe freezing is injurious. Gibberellic acid is useful in rhubarb forcing to assist in breaking dormancy to permit early production. This may allow time to force two crops in the house. Gibberellic acid also tends to increase yields. Plants are forced in darkness, in structures where temperatures can be maintained at 11 to 13°C. At higher temperatures quality is poorer and at lower ones growth is slow. An earth floor is desirable. Place plants as close as possible (approximately 10 per square meter) and fill around the roots with soil or peat, leaving tips of buds uncovered. Water well and maintain a good water supply during forcing. Adequate ventilation is needed to reduce humidity for the control of botrytis rot. Harvest normally starts about 4 weeks after forcing begins and extends 6 to 8 weeks. Stalks are usually harvested twice a week. For continued production new beds should be started at intervals. The roots should be discarded after termination of the crop.

**Early Field production** – Clear plastic row covers will advance growth by two to three weeks when applied in early April.

## Nutrition

ALL ADDITIONS OF LIME AND FERTILIZER OR MANURES SHOULD BE BASED ON RECOMMENDATIONS FROM A SOIL TEST.

Rhubarb grows well in a highly fertile soil high in organic matter and well drained. A green manure crop is desirable the year before planting. Also in the fall 45 tons of manure per hectare may be added. An annual fall application of manure is beneficial.

**Lime** – Lime should be applied to maintain the soil pH in the range 6.0 to 6.8 (Rhubarb will tolerate soil acidity as low as 5.0 but yields and fertilizer efficiency will suffer).

**Nitrogen** – Rhubarb has a high requirement for nitrogen. Apply nitrogen at bud break along with the phosphorus and potash requirements. Apply one or two side dressings of nitrogen after harvest or on crops to be used for forcing. Applications of manure will supply part of the nitrogen requirement of this crop.

**Phosphorus** – is most important in the establishment year. Fields selected for rhubarb should be high in phosphorus.

**Potash** – is only added if soil levels are not adequate.

**Magnesium and/or Sulfur** – may be needed on sandy soils low in organic matter. Foliar sprays of Epsom salts or the use of gypsum and dolomitic lime-stone may be considered.

**Application method** – broadcast N, P & K in the spring just before applying manure (if available).

Side dress or broadcast nitrogen or apply it through an irrigation system. Cultivation between the rows will mix some of the broadcast fertilizer into the soil and control some perennial weeds.

## Pests and Pest Control

### Weeds

Control weeds well before planting. Start cultivation early in the spring. Cultivation should be shallow to avoid injury to roots and can continue as late in the season as possible without damaging the plants.

### Diseases

#### Leaf Spots - *Ramularia* and *Ascochyta* (fungi)

**Characteristics** – These fungi cause circular, or angular spots, variable in size having beige centers surrounded by a red zone. When affected tissue dies, it may drop out, leaving large ragged holes in the foliage. Fungi overwinter in infected plant debris and in infected propagation stock.

**Control** – Remove and destroy leaves following the first heavy frost. During harvest, remove stems with spotted leaves first. Apply fungicide used for Botrytis control.

#### Botrytis Rot (fungus)

**Characteristics** – May cause a leaf, stem and crown rot of forced rhubarb. Disease intensifies where there is poor air circulation and high humidity.

**Control** – Practice strict sanitation. Apply recommended fungicide at first sign of disease and at 7 day intervals.

## Insects

### Potato Stem Borer

**Characteristics** – The first stages of the insect attack only weeds, couch grass in particular.

**Control** – This pest is not a problem when couch grass and other weeds are controlled in and around the rhubarb plantation.

SPECIFIC CHEMICAL CONTROLS FOR THE VARIOUS CROP PESTS DISCUSSED MAY BE FOUND IN THE APPLICABLE PEST MANAGEMENT GUIDES ON THE PERENNIA WEBSITE

## Harvesting and Handling

Rhubarb stalks should be pulled rather than cut. Do not harvest the first year. A small harvest may be made the second year if growth has been good. In the third and subsequent years, the harvest season can be extended to 8 to 10 weeks if stalks are of satisfactory size. Harvest can be longer than this if the planting is to be abandoned.

## Storage and Conditioning

Store only fresh stalks in good condition. Store at a temperature of 0°C, and a relative humidity of 90 to 95%. Stalks can be held 2 to 3 weeks under these conditions. Provide ample air circulation on all sides to prevent hearing.

## Bibliography

**This document was originally part of the Vegetable Production of Atlantic Canada Guide Produced by the APASCC Advisory Committee on Vegetable Production. It was reformatted and updated by Perennia in 2017.**

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