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FORCING RHUBARB

by

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Forcing rhubarb during the winter and early spring months is often a commercial practice of rhubarb growers who supplement their supply of outdoor grown stalks with those that are grown under artificial conditions during the months of the late fall, winter, and early spring. The forcing of rhubarb during this period is of interest and value, also, to farmers and home gardeners who can thereby provide for the use of the family a supply of rhubarb of unexcelled quality and flavor during a period of the year when fresh vegetables are comparatively scarce.

The forced stalks differ from the outdoor grown crop in that they have an attractive pink or red color with no green pigment as is commonly found in the outdoor crop. The stalks are tender and brittle and have an excellent flavor, freedom from acidity and stringiness. The appearance and quality, as a whole, are much superior to the stalks of the outdoor crop.

For a number of years this perennial vegetable has been commercially forced in considerable quantities in the state of Washington, and to a less extent in Oregon. Washington shipped about 150 cars of forced rhubarb in 1932 as well as marketing the product in l.c.l. shipments in the Northwest.

The Forcing Place

Any cellar, basement, shed, or specially constructed house may be used for forcing rhubarb, depending on the place available and the extent of the operations. When rhubarb is being forced for home use, the cellar or some small out-house may be employed. It is desirable to have a dirt floor for the roots to be placed on, and light should be excluded from the cellar.

Commercial rhubarb forcing houses vary in size and type of construction, but usually the houses are moderately low and long as in the Washington forcing houses, some of which are 200 feet long by 25 feet wide. Other houses are shorter and wider. Fairly cheap construction is used in building these houses. There are no windows because of the necessary exclusion of light, but if possible, the forcing place should be wired for electricity to provide light for the workers and equipped for watering the plants. In a small cellar, lanterns may be used for light when harvesting the stalks. The interior of the forcing house consists of beds in which the rhubarb roots from the field are placed close together, and between the beds are narrow walks permitting the harvesting of the stalks from either side of the beds.

In view of the necessity of keeping the temperature of the forcing house at approximately 60 degrees, it is necessary to install some form of heat, the common practice in commercial houses being to have stoves with hot water coils which are located on the sides of the house. The number of pipes needed would, of course, be dependent upon the amount of area to be heated. In smaller houses, a stove at one end of the house with the pipe leading to the chimney at the other end may furnish sufficient radiation to keep the forcing place at the desired temperature.

Plants for Forcing

In this discussion when the term "roots" is used, it is intended that this shall mean the whole plant which is dug from the field for forcing. This plant is a large rootstock having a fibrous root system and dormant buds or crowns which later develop into the edible stalks.

In some cases, rhubarb roots are grown in the field especially for forcing during the winter. In other instances plants are forced as a supplement to the growing of the field crop; that is, a portion of the plants supplying the spring crop are dug each fall to provide stock for forcing. If an old field of rhubarb has been producing for a number of years and is to be replaced with new plants, the older plants may be used for forcing or for dividing for the purpose of making new plantations. In the case of the home gardener, a few plants should be started anew each year to replace those that are dug in the fall for forcing. Half a dozen plants of good size may be sufficient to be forced to provide a good supply of rhubarb for an individual family. More, of course, can be dug and forced if desired.

Concerning the age of roots for forcing, if the roots are grown exclusively for forcing and not for an outdoor field crop, two-year-old roots may be used; that is, such roots would be dug for forcing at the end of the second season of growth. When an old plantation is being used, roots five, six, or more years may be forced. In experiments carefully conducted with roots of various ages forced under identical conditions, the indications are that the yields of stalks increased with age of roots up to three years, but were practically uniform after that age. In some instances, outdoor rhubarb growers replace a plantation that has been bearing for five or six years with new plants, in which case the older plants may be dug to provide stock for forcing purposes. In some infrequent cases one-year-old plants have been used for forcing, but they produce lighter colored stalks and smaller yields than the two-year-old roots which have the advantage of a heavier yield and better color to offset the increased cost of the roots. If the roots are older than five, six, or seven years, and yet show signs of considerable vigor and good size of stalk, such plants would make desirable material for forcing.

Preparing Roots for Forcing

Preparation should be made to dig roots several weeks before expecting the first harvesting of stalks, inasmuch as the time between digging and harvesting will be taken up by the time required for the roots to freeze, then a short rest period, if possible, and later by the length of time for the stalks to develop to a marketable size after the roots have been bedded. Under a temperature of 58 to 60 degrees F. from 26 to 36 days may elapse from the time that the roots are bedded until the first harvesting. The number of days elapsing, however, may depend upon factors other than the temperature.

On a commercial scale, rhubarb roots in the field are plowed and rolled out of the ground so as to be handled later to be hauled to the forcing place. In the home garden, the roots may be dug with particular care to get all of the rootstock possible without injuring the crowns. These large clumps will often measure over a foot in diameter each way, and may weigh from 50 to 100 pounds.

To obtain the most rapid growth and largest yields in the forcing house, it is essential that rhubarb roots be frozen after digging. A light freezing at a temperature of 20 degrees F. for several days is desirable. The roots do not freeze at 25 degrees F. On the other hand, a severe freezing at a point below zero is injurious and reduces the yield. Recent investigations have shown that a brief dormancy or rest period, after the freezing, is an important factor in increasing yields. Apparently the longer the rest period after the freezing the more rapid the growth of the stalks and the greater the yields in the forcing house. During this so-called rest period, the roots should be in a place where they are at a temperature of approximately 32 degrees. If the roots have not been dug early enough to be given the rest period after the freezing, by all means aim to have the roots frozen before they are bedded. Roots which are to be bedded in December, therefore, should be dug during November; those that are bedded in January should be dug in December, and so on. One should figure that if the first harvesting of stalks is to take place January 15th, it would be necessary to dig the roots about December 1st or so, bedding about the middle of December.

Home gardeners should observe the fact that the undivided roots should be used for forcing, and there should be no cutting or dividing of the rootstock.

Temperatures for Forcing

Numerous experiments have been carried on in regard to the best temperatures for forcing rhubarb. It is evident that the best yields, color, quality, and texture are obtained when the temperature is from 58 to 60 degrees F. At 59 degrees F., maximum yields of well colored stalks have been obtained. At temperatures lower than 50 degrees F., the growth of the stalks is too slow and the color is undesirably dark. On the other hand, an earlier crop with an inferior color and lighter yields can be produced at temperatures above 65 to 70 degrees F.

Experiments with varying soil and air temperatures in the house indicate that with a soil temperature of 56 to 58 degrees F. and an air temperature of 60 to 65 degrees F., 65% of the crop will mature within six weeks after planting. With a soil temperature of 50 to 53 degrees F. and an air temperature of 56 to 58 degrees F., 50% of the crop matured in the same time. Temperatures of 48 to 52 degrees F. were too low. Where the temperature was kept at 51 to 52 degrees F., only 19% of a plot was harvested at the end of 40 days.

The color of the stalks will be determined by two factors, the temperature in the house, and the heredity of the strain of rhubarb. If the strain is good, a good color will be developed despite the temperatures; but if the strain is poor, the same color will not develop even in lower temperatures. It is evident from tests of various temperatures, however, that the most desirable color is obtained at temperatures varying five degrees either side of 60 degrees F.

Plants and stalks will, of course, not be injured in any way, should the temperature in the forcing place fall as low as 40° F. or below. The growth of the stalks will be delayed as opposed to the normal growth at the desirable temperatures stated previously.

Maintenance of the Beds

Besides keeping the temperature at the desired degree as stated before, it is also necessary to have the plants uniformly moist during the forcing season. It has been shown from careful experiment that the plants should be watered at intervals in order to keep the soil from becoming dry, and that watering at the proper time has in every case increased the yield very materially and has not in any way diminished the color of the stalks. As in watering any other forced crop, it is best to water thoroughly at the time the watering is done rather than to frequently sprinkle. The watering, also, should be done preferably during rising temperatures rather than otherwise.

Harvesting the Stalks

In view of the tenderness and brittleness of the forced stalks, it is necessary that they be pulled carefully to avoid breaking them. The stalks should be pulled so that they separate directly from the rootstock and not be broken above it. They will usually measure from 12 to 16 inches in length, not including the small, light green leaf blade which is removed before packing the stalks in the fifteen pound boxes which are commonly used in selling this crop. These boxes measure approximately 5 7/8 by 11 5/8 by 19 1/2 inches, outside dimensions. Stalks which are of a good diameter and length, approximating 14 to 16 inches, will weigh approximately four ounces. In market rhubarb there are commonly three grades--Extra Fancy, Fancy, and Choice. Extra Fancy stalks are straight at least 3/4 red, at least 5/8 inch in diameter, and free from bruises or defects. Length not less than 14 inches. Fancy stalks must be at least 12 inches long, 1/2 inch in diameter, with at least half the length showing red, and the stalks free from serious defects. Choice stalks may be smaller than 1/2 inch, but must have good color. Stalks too short to grade Fancy are included in Choice. These grades have a tolerance of 5%.

The crop is usually first marketed during early January and continues to the latter part of March. The price drops rapidly toward the latter part of January due to heavier supplies. There is usually a difference of from 25 to 50 cents between Extra Fancy and Fancy and about the same difference between the second and the third grade. Early in the season the prices are about $2.00 to $2.50 for Extra Fancy, with prices approximating a $1.25 to $.80 toward the middle of the season. There are usually from four to six weeks of harvest from the plants, at the end of which time the production is exhausted, and the forced roots are discarded.

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