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## PLANTING AND SUCCESS GUIDE

**READ BEFORE  
PLANTING!**

If you read it,  
they will grow!



# NOURSE

Growers of the Finest Berry Plants Since 1932

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# Seven important elements for growing plants successfully

- 1. A sunny, weed-free location.** Plants should have a minimum of a 6-8 hours of sunlight exposure. Early morning sun is preferred. Use appropriate weeding techniques to keep plantings weed-free.
- 2. Well drained soil.** All berries, asparagus, and rhubarb grow well in a wide variety of soils. However, the soil should have at least 2%-3% organic matter for best growth and if the soil is not well drained, planting in raised beds may be necessary.
- 3. Soil pH.** Nutrient and pH requirements are not the same for all plants. You should have your soil tested before planting to know your current soil pH and fertility. Contact your local Cooperative Extension office for information on taking soil samples, and for assistance in interpreting test results. Specify the crop that you plan to grow.
- 4. Rotation of land.** Avoid planting strawberries or raspberries in soils where previous crops have included strawberries, raspberries, potatoes, tomatoes, eggplants or peppers. These crops may harbor the soil pathogens *Verticillium*, *Phytophthora* and nematodes that may negatively affect your new plants.
- 5. Soil depth and compression.** With any planting method, plants will fail to flourish if planted too deep or too shallow, and if soil is not pressed firmly around the roots. **Please read the planting information in this guide before you plant.** Call us or your local extension office if you have planting questions.
- 6. Irrigation.** Maintain proper moisture levels throughout the season, and most importantly, during the establishment period. Please note: if you are planting in raised beds it is imperative that you provide drip irrigation. Overhead irrigation is not sufficient to maintaining proper moisture. Natural Spring rains are great for helping to get your plants off to the best start. Plants should receive 1"-3" of water each week. Water 1-3 times per week rather than every day.
- 7. Location preparation.** It is best to have the site prepared and ready for planting prior to receipt of your plants so that you can plant them upon arrival.

Snow or an occasional frost will not hurt the newly planted plants (except for green tissue-culture plants, see page 15). It is important to plant as early as possible in the spring.

Fall planting of small fruit plants is not recommended for the majority of the Northeast and the Midwest.

## Receiving Instructions

Thank you for ordering your quality plant stock from Nourse Farms! Check your plants immediately upon receiving them. If you have any questions or problems please call us right away. Please read the appropriate sections of this planting guide *before* you plant.

- **Planting should be done as soon as possible after you have received your plants.** If your local conditions are not suitable for planting please call as soon as possible to delay your plant shipment.
- These plants are dormant, and a light frost will not hurt them. If you cannot plant right away, it is important to keep roots moist, (except asparagus roots) not soaked, and cool without temperature fluctuations until you plant.
- When your plants arrive, check the roots for moisture. Lightly sprinkle them with water if needed, close the bag or box.  
**DO NOT FREEZE!** Small orders can go in the crisper of your refrigerator. Large orders should go into a cooler set at 28°-32° F.
- Do not store more than seven days, the sooner you plant the more successful your planting will be!
- All plants need adequate soil moisture once planted. Water plants well when you transplant and water them well once more within the planting week. Continue weekly watering (unless it rains) until your new plants begin growing. Maintain good moisture until plants are established and throughout the growing season.
- If your order contains green or dormant tissue culture plants, see the special instructions provided on page 15.
- Snow or an occasional frost will not hurt the newly planted plants (except for green tissue-culture plants—see tissue-culture section). Natural spring rains are the best aid in getting your plants off to the best start. Irrigation, if available, will help with late spring plantings. Fall planting of berry plants is not recommended for the majority of the Northeast and the Midwest. With any planting method, two factors are critical: depth of planting and soil compression. Plants will fail to flourish if roots are too deep or too shallow and if the soil is not packed firmly around the roots.



Bare Root Raspberry Stock

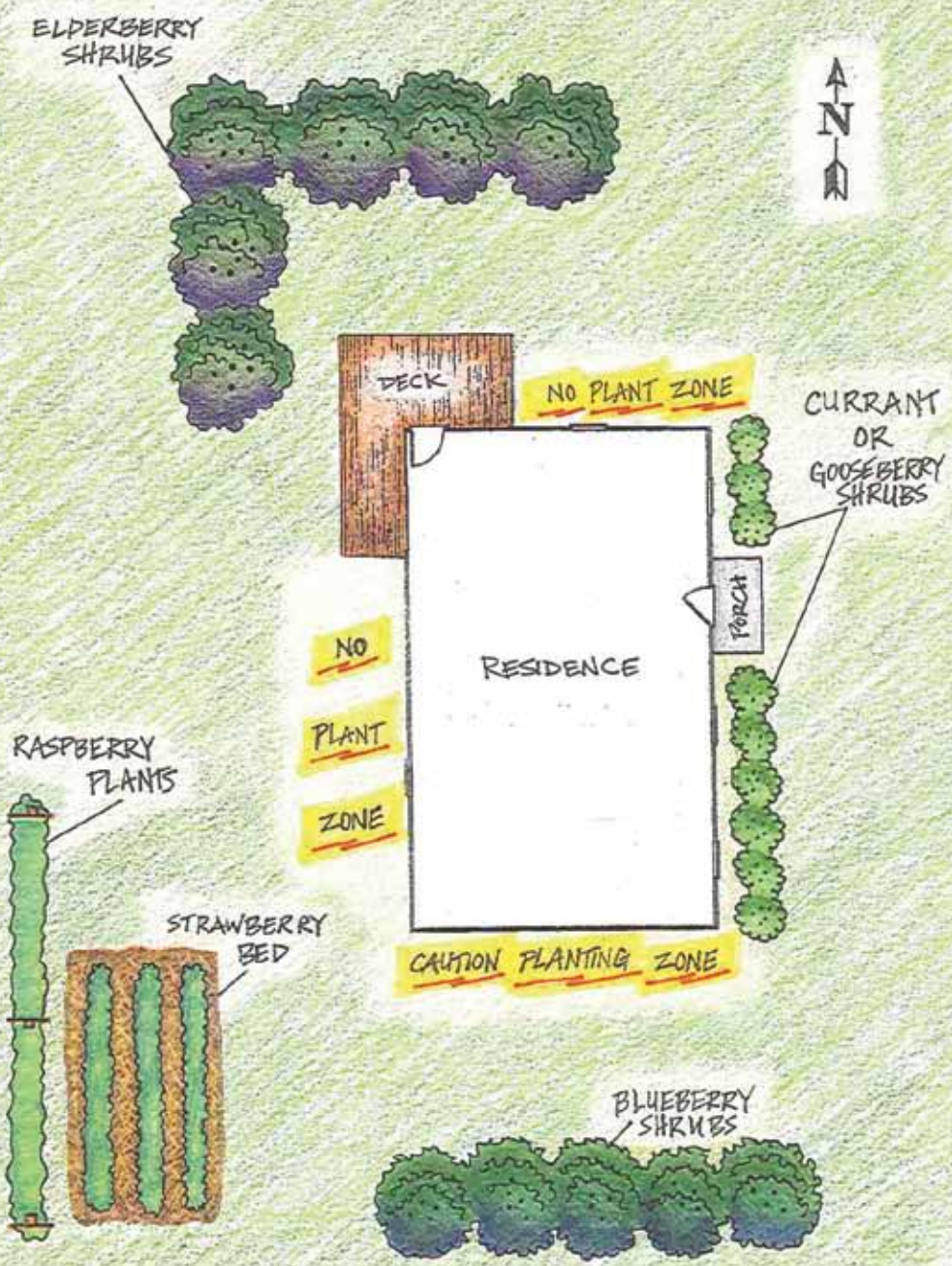


Bare Root Strawberry Stock

**Viterra Agri-gel™** is a product we use when planting to help maintain moisture and establish plants with little stress. We have been using this product for several years with excellent results, and carry Viterra Agri-gel™ in our accessories product line.









## Locally Grown Starts at Home!

How to add beauty, interest, and an abundant supply of delicious and colorful fruit to your landscape.

**Growing berries is not just a way of assuring an abundance of fresh, delicious and colorful fruit; it's also an easy way to add beauty and interest to your landscape. Since each variety of plant has its own distinct growth habit, the benefit of planting berries offers both aesthetic and practical rewards.**

- Cane plantings such as blackberries and raspberries will climb fences and trellises and become a lovely ornamental hedge; they will also burst with color in the spring just before bearing their fruit.
- Blueberry bushes, excellent for beginners, develop into 4'-6' tall shrubs that turn a brilliant red in the fall. Some varieties have golden or orange fall foliage!
- Currants and gooseberries provide an excellent low border, and gooseberries thorns will keep out unwanted pests. Strawberries make a perfect ground cover. Planting a few varieties will produce berries all season long.
- Elderberry bushes are fast growing and hardy. They typically grow quite large and full with clusters of tiny white flowers in late spring followed by clusters of berries in late summer.
- The **No Planting Zone** is a guideline for all of our plants. Planting in areas that see little or no sun will lead to plants that will struggle to survive. If plants do survive, the small crop produced will have a lot of disease pressure.
- The **Caution Zone** is a place where plants will struggle during high heat months. Because of extra protection from wind and cooler temperatures, plants and fruit can get an overdose of sun and heat.





## Avoid Common Planting Mistakes

- Plants will fail to flourish if roots are too deep or too shallow.
- Take care that soil is packed firmly around the plant roots.
- Do not plant near wild plants or near plants whose origins are unknown.
- **Water well 1-3 times a week, not every day!**
- We advise you to plant all the roots of the plant without cutting the roots.
- All of our plants prefer full sun and will not thrive in shady spots. A half day of sun or more is necessary to ripen your berries.
- We recommend a 10-10-10 fertilizer for all of our plants (blueberries need our 17-6-6 or Ammonium Sulfate).

### Strawberries

- Avoid planting strawberries in soils where previous crops have included strawberries, raspberries, potatoes, tomatoes, eggplants or peppers. These crops may harbor soil pathogens which may affect your new plants.
- Do not mulch using materials like decayed or wet leaves that tend to mat down and can smother plants.
- Do not renovate day neutral strawberries.

### Brambles

- Caution should be taken to prevent the roots from being planted too deep.
- Plant green tissue culture plants only after danger of frost has passed.
- Do not mulch brambles beyond the first year.
- Do not mow down summer-bearing raspberries; they fruit on 2 year-old canes.
- You only need to cut-back the canes which bore the previous year.

### Asparagus

- Be careful not to damage emerging spears when cutting below the soil surface during harvest.
- Asparagus require very sweet soil—be sure that soil pH is at 7.0-7.2.
- Do not add compost to soil until plants are growing.
- Do not soak prior to planting.

### Blueberries

- Blueberries require an acidic soil with a pH between 4.5-4.8. **A pH of 5.0 or higher is too high!**
- Do not use leaves or excessive sawdust as mulch. Either can limit or prevent rains from reaching the soil and plant roots.
- Excessive sulfur can be toxic. (See page 22 for application rates)
- Do not apply fertilizer at planting or in late summer or early fall. This could lead to new, succulent growth that is susceptible to winter injury and may lead to entry points for disease.
- Blueberries can be adversely affected by potassium chloride. Do not use fertilizer that contains it.
- We do not recommend Aluminum Sulfate. Use elemental sulfur instead.



## Additional Resources

You have local resources wherever you are, and no one knows your area's planting needs better than a local! Local extension offices often publish their research on web sites and in pamphlets. Check with your local extension office for any recommended publications that may help you with planting in your region.

A complete USDA listing of extension offices is located online at:  
[www.csrees.usda.gov/Extension/index.html](http://www.csrees.usda.gov/Extension/index.html)

Or write to request information:  
United States Department of Agriculture  
Cooperative State Research, Education, and Extension Service 1400 Independence  
Avenue SW, Stop 2201  
Washington, DC 20250-2201

Below is a brief list of regional extension services that specialize in berry research; for a more extensive list, please check out our list of *Commercial and Home Garden Resources and Links* online at [www.noursefarms.com](http://www.noursefarms.com).

### **NORTHEAST**

Cornell University's Berry Resources and Pest Management Guidelines  
[gardening.cornell.edu](http://gardening.cornell.edu)

### **MIDWEST**

Ohio State University  
[ohioline.osu.edu/lines/fruit.html](http://ohioline.osu.edu/lines/fruit.html)

### **MIDATLANTIC**

Pennsylvania State University Small Scale Fruit Production  
[extension.psu.edu/gardening/fphg](http://extension.psu.edu/gardening/fphg)

### **SOUTH**

Southern Region Small Fruit Consortium  
[smallfruits.org](http://smallfruits.org)

### **WEST COAST**

University of California Agricultural Natural Resources  
[ucanr.edu](http://ucanr.edu)

### **TROUBLESHOOTING**

Cornell Berry Diagnostic Tool – If your berry plants look sick  
[fruit.cornell.edu/berrytool/index.html](http://fruit.cornell.edu/berrytool/index.html)





# STRAWBERRIES

## ATTENTION!

Avoid planting strawberries in soils where previous crops have included strawberries, raspberries, potatoes, tomatoes, eggplants or peppers.

These crops may harbor soil pathogens, which will affect your new plants.

## AT-A-GLANCE

**pH:**  
6.5 - 6.8

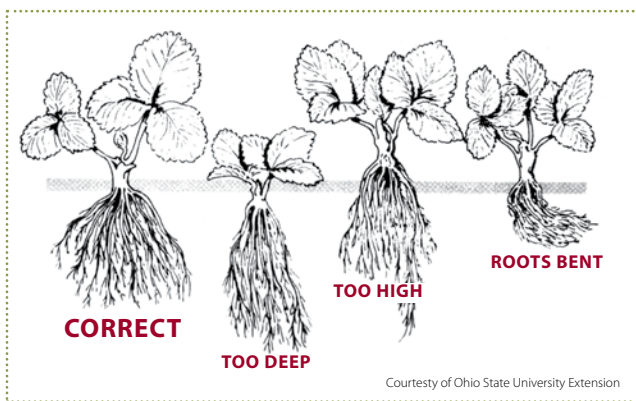
**Spacing:**  
12" - 18" in the row  
3' - 4' between rows



## Planting

Plant as soon as possible in the spring. Planting at the correct depth is very important. Dig a hole in the soil so that you are able to lower the plant into the ground without bending or cutting the roots. Set plants in the ground with the roots straight down. Make certain that the plants are set with the middle of the crown level with the top of the soil. Be sure not cover the crown. Within a week or so, the soil will settle and the soil line should be even with the bottom of the crown.

We advise not to cut any of the roots off your plants. Take care that soil is packed firmly but not hard packed around the plant roots. Avoid covering crowns with soil while you hoe, weed, and cultivate throughout the season.



Courtesy of Ohio State University Extension

## Irrigation

Water thoroughly after planting. Maintain good moisture throughout the season. Strawberries do best when they get 1"-2" of rainfall or equivalent irrigation each week, depending on soil type. If irrigation is not available, select a site with good water-holding capacity (but avoid wet soils). Strawberries do poorly under drought conditions.

## Fertilization/Soil Preparation

Avoid fertilizer burn. Do not fertilize until your plants are established (about six weeks after planting). Applying fertilizer near the planting date leads to burning of plant leaves and roots. Being too generous with fertilizer will also be detrimental. Mix ½ lb. of 10-10-10 per 100 square feet into soil at least 2-3 weeks prior to planting. Fertilize again with ½ lb. 10-10-10 per 100 square feet again in July and in August.



### Weed Control

Prepare your site prior to planting. Remove weeds throughout the growing season. After planting, weekly cultivation removes weeds when they are small so they do not have a chance to compete with your plants. A scuffle hoe works well for this type of work. Strawberry roots are shallow. Be careful not to damage the roots while you are removing weeds. You may want to control weeds BEFORE they start, with a granular herbicide, such as Strawberry and Fruit Tree Weeder. Check with your local agricultural extension before using chemicals. Proper mulching aids in weed control.

### Preparing for Winter

Mulching is necessary in most northern states for winter protection of the crowns. A mulch prevents the quick freezing and thawing and thus mitigates fluctuating temperatures which cause crown damage that affects plant survival and crop yield. Mulch also keeps fruit clean, conserves moisture, keeps down weeds, and adds humus to the soil.

Mulch with any loose, acid-free and weed-free material such as salt hay or straw, approximately 4", after plants have started to go dormant or after 6-10 hard frosts—usually in early to late November. Avoid decayed or wet leaves, which can smother plants. Remove the mulch in early spring before new growth starts. You can move the mulch to between the rows to keep weeds at bay and keep mud from splashing onto the fruit.

### Renovation

See details for June-Bearing or Day-Neutral.



### June-Bearing Strawberries

(Such as Jewel and Darselect)

#### Establishment Year

Pinch off all the flower buds in the first year of growth. This allows the plant to put its energy into becoming established and will yield a larger crop the first bearing year. It also will encourage runner production and support winter survival. Fill in the rows of your strawberry plants by allowing some runners to take root. In mid to late July, set 2 or 3 daughters on each side of the mother plant by lightly pressing the plantlets on the runners into the ground and tamp the soil down around the plantlet. Cut off any additional runners that form during the season. Over-crowded beds will produce small berries and can have more disease problems.

# STRAWBERRIES

## June-Bearers succeeding years

Apply 1 lb.-1½ lbs. of 10-10-10 per 100 sq. ft. at renovation. Side-dress in July and August, as in the establishment year. For most efficient use of fertilizer, apply about  $\frac{2}{3}$  that rate at renovation and  $\frac{1}{3}$  in September. Continue to maintain adequate moisture throughout the remainder of the growing season.

## Renovation

A process called 'renovation' is performed on June-bearing strawberry beds immediately after the harvest that helps to keep plants healthy and productive over the years. Follow these simple steps:

As soon as all the berries have been harvested, mow off the leaves or clip them to about 3" tall. Use your lawn mower set at the highest setting and collect the clippings in the mower bag or rake them off to help reduce disease. Take care not to cut or injure the crowns!

Rototill the edges of the beds to narrow the bed width to 12"-18". Remove some plants to leave 3"-5" between remaining plants. Try to retain strong runner plants and remove the mother plants when they are 3-4 years old.

## Everbearing Strawberries (Such as Evie-2 and Seascape)

### Establishment Year

Pinch off all the flowers for 6 weeks after setting out your plants. We recommend that you remove all the runners during the first year. This will allow the plants to become well established. You can let the plants develop fruit midsummer through October. We suggest  $\frac{1}{2}$  lb.-1 lb. of 10-10-10 fertilizer per 100 sq. ft. be worked into the soil at least 2-3 weeks before planting. Side-dress with  $\frac{1}{2}$  pound of 10-10-10 per 100 sq. ft. in July and again in August, compensating for wet periods that leach away nutrients.

Day-neutral varieties can be planted in single rows with 5"-9" between plants or in double rows, staggered with 10"-20" between plants. Your rows should be about 42" apart.

It is important to note that hot weather will impact strawberry production. With day-neutrals, the impact can be tempered with good watering practices. The cooler temperatures of autumn will bring a return of berry size and yield. Do not renovate day-neutral strawberries!

### Succeeding Years

Side-dress with 1 lb.-1½ lbs. of 10-10-10 fertilizer per 100 sq. ft. in the spring.

Side-dress in July and August the same as in the establishment year.

You can expect a bed of day-neutral plants to be productive for one to two years.



# BRAMBLES

RASPBERRIES, BLACKBERRIES, & TISSUE CULTURE PLANTS

## AT-A-GLANCE

**pH:** 6.5 - 6.8

### In-row spacing:

12"-18" Red & yellow raspberries

20"-24" Black raspberries

3'-4' Blackberries

### Between rows:

8'-12' depending on machinery

## ATTENTION!

*Avoid planting raspberries in soils where previous crops have included strawberries, raspberries, potatoes, tomatoes, eggplants or peppers. These crops may harbor soil pathogens, which will affect your new plants.*

## Planting

Plant **nursery matured** plants 1" deeper than they were in the nursery. The soil line around the stem will indicate their nursery depth. Care should be taken so that the hole is wide enough to allow the entire root system to be covered. When planting **bare-root plants**, use a hoe to make a trench 2" deep the length of the bed. Spread the roots out in the trench and set at about 2" deep. Caution should be taken to prevent the roots from being planted too deep. The fine root system should not be allowed to dry during the planting process. This can happen very quickly on a warm day. For **Tissue Culture plugs** ("TC" on your packing slip and order confirmation) go to page 15.

We suggest soaking the plants for up to 2 hours prior to planting and keeping the plants in the pail of water as you plant. We also suggest the use of a product such as Agri-gel™ to prevent roots from drying. Spread roots along the bottom of the trench and cover immediately. Take care while planting to keep roots at the 2" level. This will promote suckers to develop from the roots. **Do not soak plants more than 3 hours.**

## Planting Year

New growth on raspberries may not appear for 4-6 weeks. The cane portion of the plant may never leaf out. Check for root development by gently digging 2"-3" out from the cane of the plant.

## Irrigation

Water thoroughly after planting. Maintain good soil moisture until plants are well established. Do not water every day. One to three times per week is sufficient. The plants should receive 1"-2" of rainfall or the equivalent each week throughout the season.

## Fertilization

For optimum growth and production, thoroughly incorporate light amounts of fertilizer at least 2 weeks prior to planting. Do not fertilize new transplants until well established. Home gardeners should incorporate ½ lb.-¾ lb. of 10-10-10 fertilizer per 100 sq. ft. Commercial growers should use 500 lbs. per acre of 10-10-10 or make applications according to soil tests. Additional applications may be necessary according to weather and/or leaching conditions. An additional 1 lb. of 10-10-10 per 100 sq. ft. can be applied again in July or August, and in following years, in the early spring.



# BRAMBLES

RASPBERRIES, BLACKBERRIES, & TISSUE CULTURE PLANTS

## Weed Control/Mulch

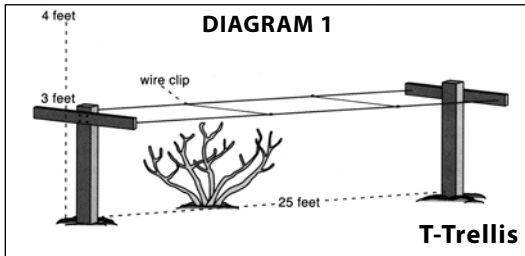
Regular cultivation around plants is necessary during the growing season. Because raspberry root systems are shallow, be careful not to cultivate more than an inch deep. Mulching during establishment can also help control weeds. Do not mulch brambles beyond the first year.

## Trellis and Training

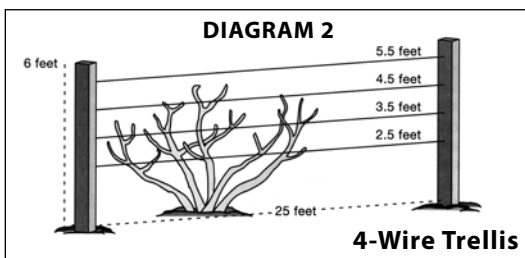
We suggest all brambles be supported by a trellis. A trellis keeps canes upright and fruit off the ground, makes picking much easier, and maintains good aeration throughout the planting which helps with disease control. We have been successful using a T-bar trellis for raspberries that supports 2 wires 12" apart at 3'- 4' above the ground (Diagram 1, below). Some varieties which are taller such as Taylor, and Lauren might benefit from a T-trellis with two T-bars — one at 3' and one at 4'. Blackberries and black raspberries are best trained to a four-wire trellis (Diagram 2, below). Attach the main stems to the wire with a clip or a slightly loose twist tie.

Please consult your local extension service for chemical control recommendations .

### Summer Raspberry Trellis Top wire 48"-52" tall



### Black Raspberry & Blackberry Trellis



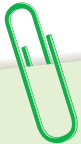
## Trellis Instructions

### Everbearing Raspberry

Trellis can be temporary to help facilitate the mowing of the plants in the spring. We suggest metal fence posts about 6' long. You can bolt on a 12"-18" long piece of angle iron to create the T-trellis. Drill holes on each end of the angle iron to hold the twine. Posts are spaced 25' apart in the row. Installation is usually done sometime in July after the raspberries produce the first flowers. Install posts with a 3 lb. hammer. The posts should be 1½'-2' into the soil. The twine needs to be ¾ the height of the plant. Poly twine comes in many sizes, we recommend #450 1-ply. We remove twine and post after plants have seen 2 freezes.

### Summer-Bearing Raspberries, Blackberries, Purple Raspberries and Black Raspberries

Rows longer than 100' should use a pressure treated 4" x 4" end post and pressure treated 2" x 4" or metal fence post every 25 feet. Blackberries should have a 4" x 4" for every post. The T is made by thru bolting a 12"-18" two-by-four. Monofilament trellis line should be considered instead of twine. We use nursery clips to attach each cane to the wire. Self-locking clamps are used to hold the line to the end post or it can be tied off.



### Apple Raspberry Crisp

4 large apples  
3 teaspoons lemon juice  
1 cup flour  
¾ cup brown sugar  
2 cups fresh raspberries

1 teaspoon grated lemon rind  
½ teaspoon salt  
5 tablespoons butter

#### DIRECTIONS

Peel and slice apples into a 9x9 inch baking pan. Spread berries over apples; sprinkle fruits with lemon juice and grated rind. Combine flour, brown sugar, salt and butter. Stir half of flour mixture into fruit; pour remaining flour mixture on top. Bake at 400 degrees for 35-40 minutes or until apples are done. Serve with cream or ice cream.

# BRAMBLES

RASPBERRIES, BLACKBERRIES, & TISSUE CULTURE PLANTS

## Pruning

### Summer-Bearing Raspberries

These varieties carry one crop of berries on the over-wintering canes during the summer months. For best yields, prune out the canes that carried fruit directly after harvest. Thin remaining new growth to 6-8 strong, healthy canes per running foot of row.

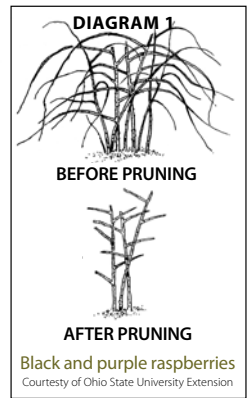
### Fall-Bearing (primocane-bearing, Everbearing)

These varieties can produce two crops. The largest is borne in the late summer and fall on the tips of canes that grew throughout the summer. A second crop is carried lower on those same canes early the next summer. To have two crops, the planting must be pruned as a summer bearer.

Most ever-bearers will produce the best crop if not allowed to fruit in early summer. To treat these plants as fall-bearers, mow off all the canes after the canes have lost their leaves in very late fall, or wait until early spring in colder areas. Be sure to cut the canes as closely as possible to the soil surface, leaving as little stub as possible above the ground. The new, strong canes that grow that summer will bear an abundant fall crop.

### Black Raspberries and Purple Raspberries

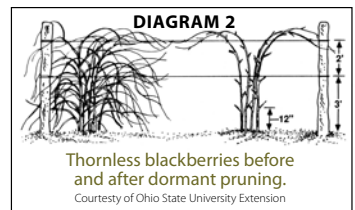
Black raspberries and purple raspberries break buds from their crown region in the hill and send out few, if any, suckers. Prune plants to 4-6 canes per hill. Both of these types of raspberry plants respond well to a process called tipping, whereby the 1-year old canes are pinched back as they reach a height of 5'-6' in July or August. This practice encourages fruiting lateral branches to break from the main cane and keeps plant height in check. Laterals, in turn, can also be headed back in the late Fall to 10"-15". Pinching back laterals can help increase berry size and increase winter hardiness.



### Blackberries (Thornless & Semi-erect)

Some type of trellis support is recommended (see diagram 2). A 3-wire or 4-wire trellis works best for this type of plant. Tip 1st year canes when they reach 5' high in midsummer. Canes that fruited can be removed anytime after they have been harvested. Thin the remaining canes to 6-8 canes per running yard of row. If grown in a hedgerow, thin canes to 6-8 canes per hill. Laterals should be cut back to 12" in late November.

Sometimes thornless blackberries are managed by tying them to a stake. In the staked-hill system, the canes are wrapped around a stake 2" in diameter, tied in 2 to 3 places, and cut off to the height of the stake at 5'- 6' above ground level. The plants are set 5'- 8' apart in every direction and restricted to a clump. This is an easy to maintain system and can be an attractive addition to the home garden landscape. A trellis or staking is highly recommended for the semi-erect, trailing blackberries in order to keep the fruit clean and minimize canes breaking.





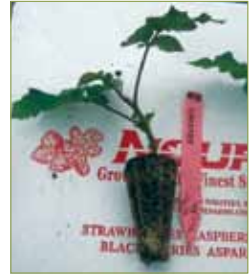
### Care and Handling of Tissue Culture Bramble Plants

Our tissue culture plug plants will be either green with leaves (right from the greenhouse) or dormant without leaves (dormant TC plants that have been put through a chilling and a hardening off period and have since been stored in our cooler, they may have a few small leaves).

#### Green TC Plants

Upon receiving your plants:

1. Open the box and open the plastic liner.
2. Check the moisture: cells should be moist before planting.  
If not planted immediately:
  1. Cut the box top off and cut holes in the bottom of the box.
  2. Check the moisture—maintain good moisture but don't over water, the plastic liner can hold in moisture.
  3. Hold in a bright, well-lit, cool area.
  4. Do not store in refrigeration.



Green Blackberry TC plug

**Important:** Plant green tissue culture plants only after danger of frost has passed. Water regularly once planted until a new root system has formed or the plant is well established. A new root system will develop in 4-6 weeks.

#### Dormant TC Plants

These are *not sensitive to frost damage* and can be planted at the same time as dormant bare-root stock. In addition, they are much less sensitive to water stress. Dormant TC plants can be held at 30°-32° F until planted.

#### Planting all Tissue Culture Plants

- Plant so that the soil plug is well covered with ½"-1" of soil using the same spacing as used for bare root plants.
- Use care when applying herbicide on TC plants. We have had good results using 4 lbs. per acre of Devrinol 50W. In our experience, other herbicides will damage these plants.
- Fertilize TC plants the same as bare rooted plants, using ½ lb.-¾ lb. 10-10-10 per 100 sq. ft. incorporated prior to planting. Once well established, side dress with 10-10-10 to maintain vigorous growth.
- Maintain good moisture levels until the plants are well established or for 4-6 weeks.

**Note:** Foliar applications of soluble fertilizer have proven successful in establishing green plug plants. Two or three applications every 3-4 days using 5-7 lbs. per acre of actual Nitrogen will provide enough nutrients to establish the plants quickly.

If you have any questions regarding handling, planting or caring for tissue culture plants, please contact us at (413) 665-2658 or [info@noursefarms.com](mailto:info@noursefarms.com).

You may use any soluble fertilizer (such as Calcium Nitrate or Miracle-Gro™) that you would use on your houseplants. Once plants are established, side dress as usual.

# ASPARAGUS



## **Asparagus— A long term investment!**

*A well prepared, well  
cared for asparagus bed  
can be productive for  
ten years or more!*

### AT-A-GLANCE

**pH:** 7.0 - 7.2

**In-row spacing:**  
12"-14" between plants  
6'-8' for Purple Passion

**Between rows:** 3'

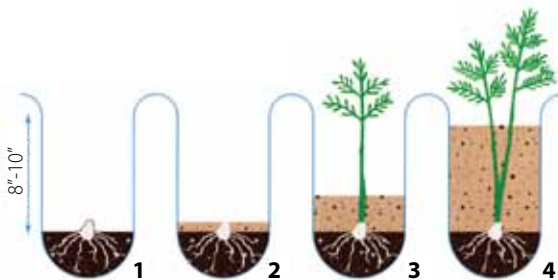
## Planting

Asparagus does not like to be transplanted once established. Choose a permanent, sunny location with well-drained soil. Don't plant too early because a frost will kill new shoots.

It is best if you prepare the site a year in advance by removing all perennial weeds. At least 2-3 weeks prior to planting, incorporate 5 lbs. of 10-10-10 per 100 sq. ft. in the early spring. Have a test done to check that the soil is in the correct pH range and that it contains high levels of phosphorous. Application of lime may be needed to adjust the pH.

Dig a furrow 8"-10" (the same depth and width as your shovel) deep. For heavier, clay-like soils 8" is recommended. (See diagram below, stage 1) We recommend bone meal (½ lb. per 10' row) or super phosphate and lime spread thoroughly at the bottom of the planting furrow. Lay roots along the bottom of the furrow with the crown facing up and cover with 2"-3" of soil. Do not add compost until plants are growing (See diagram below, stage 3).

As the spears grow up through the soil, above ground level, and expand into fern, gradually fill in the trench, using up to 50% compost with soil. Using this method helps to limit small weeds. Within six weeks, the furrow should be completely filled. (See diagram below, stage 4)



### PLANTING CROWNS

- 1.** Set crowns upright in wide furrows, 8" - 10" deep, with roots spread.
- 2.** Cover with 2" of soil. Do not add compost!
- 3. and 4.** gradually fill the furrows adding up to 50% compost to soil as the plants grow.

## Irrigation

Plants need a well-drained site. Lighter soils may require more frequent watering than heavier soils, which retain moisture better. Maintaining moisture during establishment year is very important.

## Fertilizing

In the establishment year: Do not add compost or fertilizer until plants are growing. In addition to the Spring fertilizer application, side-dress in early August with 1 lb. of 10-10-10 (or equivalent) per 100 sq. ft. and lightly work into the top 2" of soil.

In succeeding years: use 2 lbs. 10-10-10 per 100 sq. ft. in early spring, and again following harvest. Use of lime, bone meal, and super phosphate helps maintain ideal soil.

## Weed Control/Mulching

Ferns will die back naturally in the fall. Mulching the dried ferns with a mower in the spring will reduce weed pressure. Check with local extension before using chemical products. If tilling the soil, only till ½"-1" of the soil surface. Deep tilling can damage your crowns and stir up weed seed.

## Bed Maintenance

In the early spring of the 2nd year, cut the old ferns down to ground level. Control weeds all season and irrigate as needed. Be on the lookout for asparagus beetles. These insects can cause considerable damage to an established bed. Aphids and the asparagus miner are additional pests to check for. For chemical weed and pest control recommendations, contact your local Cooperative Extension office.

In early Spring of each succeeding year, follow the same routine but increase the fertilizer to 2 lbs. of 10-10-10 per 100 sq. ft. Side-dress again after harvest with 2 lbs. of 10-10-10 per 100 sq. ft. Test your soil pH every 3-4 years to maintain a pH of 7.0-7.2. Broadcast lime according to the soil test results and recommendations.

## Harvesting Spears

Research shows that you can begin to harvest asparagus the year after establishment, cutting all the first spears that appear for a period of 7-10 days. (Once spears begin to get spindly, stop harvesting.) The second season is similar, except that you can harvest all the spears that appear for a period of 3-4 weeks. By the third year, you can cut for the full season, which is usually 6-8 weeks long.

**TIPS:** During harvest, asparagus roots need 2"-3" of water per week and before the soil gets too dry. If frosted, tips become brown. Remove the spear immediately to prevent further set back of planting.

Be careful not to damage emerging spears when cutting below the soil surface. An alternative to cutting is to snap the spears. Make sure you snap stalks off close to the soil surface so as not to leave stubs of asparagus. Stubs can be potential entry points for pests and diseases. Always maintain good growing conditions after harvest, keeping the planting weed and insect free. Do not remove any ferns. They will die back naturally in the fall with freezing temperatures. Use the dried ferns in early spring as a mulch to reduce weed pressure. With a little care you should enjoy an asparagus bed for many years.





# HORSERADISH

## **ATTENTION!**

*The size and diameter of the horseradish root does not determine the ultimate size of the plant.*

## **AT-A-GLANCE**

**pH:** 6.2 - 6.7

**In-row spacing:**  
10"-12"

**Between rows:** 3'



## **Planting**

Plant horseradish in a well prepared, weed free bed. Place the root piece at a 45° angle in the soil with the flat (larger) end up and the slanted end down. The flat end should be 1"-2" below the soil surface. Five to ten plants are usually sufficient for a home garden.

## **Irrigation**

Keep soil moist throughout the establishment period.

## **Fertilization**

Horseradish does not need a lot of fertilization, fertilize in spring with 5 lbs. of 10-10-10 per 100 sq. ft.

## **Weed Control & Mulching**

Regular, manual weeding is recommended. Consult a local extension before using chemical products.

## **Harvest**

You may harvest horseradish roots anytime from midsummer on, but for the best flavor, wait until after the first frosts or in late fall, when the leaves have died back. Dig around the roots with a pitchfork and pull the roots out of the soil. Take the large, main root and as much of the secondary root system as possible. Wash and dry the roots. Use the largest pieces for your recipe. Save the side roots that are  $\frac{3}{4}$ " in diameter and about 8" or longer for planting. They will provide your next year's crop. If not harvested, the roots will need to be divided every year or two.



Bottom/slanted cut



Top/flat cut

Horseradish is a vigorous grower! With a small amount of attention, it will flourish in almost any garden setting. They may take over your garden. Be careful not to plant too close to your favorite flowers.

## **Here is an easy recipe to try:**

Wash, peel, and dice horseradish roots. Place them in a grinder or blender with a small amount of water and a couple of ice cubes. Cover tightly and grind until desired consistency is reached. Vinegar or lemon juice stops the enzyme process that gives horseradish its bite. Add 2-3 tablespoons of vinegar or lemon juice and  $\frac{1}{2}$  teaspoon of salt per cup of horseradish sauce. Add immediately for a mild sauce; wait up to 3 minutes for a hot sauce. Store in a covered glass jar in the refrigerator or the freezer.

(Adapted from a University of Illinois Extension Bulletin.)

# R H U B A R B



## AT-A-GLANCE

**pH:** 6.0 - 6.8

**In-row spacing:** 3'

**Between rows:** 5' - 6'

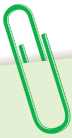
*Rhubarb (Pie plant) is easy to grow and makes a wonderful addition to strawberry pie and as the base for many jellies, desserts, sauces, and condiments.*

## Planting

Plant divisions in the early spring in a well prepared, weed-free soil. Set divisions in the ground so that the buds lie 1" below the soil surface. You will find this year's buds nestled in a protective layer of husks surrounding the outside of the division. Place plants in the ground with buds pointing up. Cover the buds and tamp down firmly. Do not leave air pockets around the division or the division will dry out.

## Special Considerations

Do not harvest rhubarb the first year. You may harvest lightly (a few stalks per plant) the second year. By the third year you can expect to harvest all stalks that are 1" and larger in diameter for a period of 6-8 weeks. Leave the smaller stalks to make food for the crown and next year's production. The harvest season for rhubarb extends from early May to early June. Some harvesting in the fall is acceptable. Harvest stalks by snapping the stalk off at the base. **Seed stalks that appear should be snapped off immediately.** After 3-5 years divide plants to maintain petiole or stalk size and production. A rhubarb patch will last several years with some attention. **Warning!** The only edible portion of rhubarb is its stalks. Leaves are Poisonous – Do Not Eat! Do not harvest rhubarb after frost, it can make you sick if you eat it.



## Strawberry-Rhubarb Jam

2 lbs strawberries, (4 cups mashed)  
2 lbs rhubarb (8 cups 1/2" pieces)  
6 cups sugar

### DIRECTIONS

Wash fruit. Cut rhubarb into 1/2" pieces. Cover rhubarb with 1/2 the sugar and let stand 1-2 hrs. Crush berries and mix with remaining sugar and combine with rhubarb. Place mix over low heat until sugar is dissolved, then boil rapidly, stirring frequently to prevent burning. Cook until thick. Pour into sterilized jars to within 1/4" of the top. Cap, and screw band firmly tight. Process in boiling water bath 10 min. Yield: 10 8oz jars



# BLUEBERRIES

## ATTENTION!

*Blueberries must have a soil pH between 4.5 and 4.8. Have your soil tested. If the pH level is outside the specified range, begin amending it right away. Excessive amounts of sulfur can be toxic to your plants.*

## AT-A-GLANCE

**pH:** 4.5 - 4.8

**In-row spacing:**  
4' - 5'

**Between rows:**  
10' - 12'



Blueberries are a tasty and nutritious fruit borne on a plant beautiful enough to grow as an ornamental. A well-prepared site, planted properly, will pay dividends of a lifetime of fruit. They are easy to grow and relatively pest-free.

## Soil pH

Soil pH should be between 4.5 and 4.8. A pH of 5.0 is too high! For best results amend pH levels BEFORE planting. However, by following our planting instructions you can establish plants successfully without prior pH adjustments. Addition of sulfur may be necessary to adjust the pH. Regular garden sulfur is the best material to use to reduce pH. Regularly measure and maintain pH levels for optimum success.

Consult your local Cooperative Extension service for advice on how to test your soil.

## Planting

Plant your new blueberry plants slightly deeper than they were grown in the nursery. Be sure to cover the top of the plug with ½" - 1" of topsoil. Be careful not to plant too deeply, and do not let the roots dry out during the planting process.

Do not apply fertilizer at planting. Dig a hole 1' x 1' x 1' and scarify the sides and bottom. Mix aged wood chips into your soil at a ratio of 30% -40% wood chips to 60% -70% soil. At this point, also mix in the appropriate amount of sulfur required (see page 22). If you are planting more than a few plants, spread 3" - 4" of aged wood chips over a 3' - 4' wide row. Mix the wood chips into the top 6" - 8" of soil with the appropriate amount of sulfur indicated by your soil test.

If you use peat moss, make sure that it is thoroughly saturated with water before mixing it with loam. Place this mixture around each plant. Make sure the peat/soil mix is thoroughly covered with ½" - 1" of plain soil after backfilling the hole if you use peat in the mixture. **Any peat not covered with soil will wick moisture away from the plant and cause the roots to dry out rapidly.**

**Warning!** Shavings or sawdust with manure has too much nitrogen for first year plants.

## Irrigation

Because of blueberries' shallow, fibrous root system, they require frequent watering. Maintain moisture, and do not allow roots to dry out. Water 1-3 times per week, not everyday.

## Planting Tip

Instead of removing or rototilling sod, apply Roundup™ to a 2'-3' wide strip when the grass is 4"-6" tall. This will be the row for your plants.



### Fertilization

**First Year:** Wait 4 - 6 weeks after planting before fertilizing to avoid burning the roots.

Apply 1 oz. ammonium sulfate in a circular band around each plant.

**Subsequent Years:** 2 oz. per plant at bloom time, and again a month later. Do not fertilize after July, this puts the plant at risk of winter injury and diseases. Avoid fertilizers containing potassium chloride.

Blueberries can be adversely affected by potassium chloride. Do not use fertilizer that contains it. We also do not recommend aluminum sulfate.

### Weed Control/Mulching

A heavy mulch is good for water retention and improves plant health. Apply 3" - 4" of aged wood chips. Avoid treated or colored wood chips or mulch. Do not use Cedar or Black Walnut chips. Avoid using leaves, or an excessive amount of sawdust, as both can mat down and prevent moisture from reaching the plant's roots. Regular manual weeding will be necessary. Maintaining a good depth of wood chips all year is conducive to healthy blueberry roots. We recommend using drip irrigation placed under the mulch. Then you are able to apply water at your convenience and know the water is getting to the root zone where it is needed.

### Pruning

Remove all flowers during the first year. Do not allow berries to develop. For the first 3 years, no pruning is needed. After the first three years, blueberries should be pruned annually during the dormant period. Your goal is to eventually have 12 canes per plant. Older, heavy branches in the center should be removed to allow air and sunlight to penetrate. Remove the lower, weak and damaged branches and branches less than 6 inches long. These branches will never fruit and can serve as an entrance point for disease.



### Blueberry Muffins

1 $\frac{3}{4}$  cups flour

3 tsp baking powder

$\frac{1}{2}$  tsp salt

$\frac{1}{4}$  cup margarine

$\frac{1}{2}$  cup sugar

1 egg

$\frac{3}{4}$  cup milk

1 tsp vanilla

1 cup frozen blueberries

#### DIRECTIONS

Preheat oven to 400F. In a large bowl, put the first three ingredients (flour, baking powder and salt) and stir. In a second bowl, squish the butter and sugar together (we used our fingers) until they are mixed. Beat in the egg, milk and vanilla until it's quite smooth. Pour into the first bowl. Stir until it's just mixed (it will still be a bit lumpy). Don't stir too much. Fold your blueberries gently into the batter (try not to crush them). Grease your muffin tin (or spray with Pam). Fill about  $\frac{3}{4}$  full. Bake for 25 minutes until just nicely brown. Makes 12 to 16 muffins

# BLUEBERRIES

New wood produces the largest fruit. Canes should be a mix of different ages and any canes over 2" in diameter should be removed. For detailed pruning information, we highly recommend Oregon State University's how-to video: A Grower's Guide to Pruning High bush Blueberries, available from Nourse Farms. Rutgers University also publishes a Blueberry Bulletin, which is very informative.

## Additional Information Regarding Soil pH

The term pH refers to the acidity or alkalinity of soil. The pH level is important to know because it affects a plant's ability to obtain nutrients from the soil and each type of plant has different soil pH requirements.

Contact your local Cooperative Extension (see page 7) for advice on the proper procedure and materials to test and lower the soil pH, using amendments such as sulfur, sawdust, aged wood chips, old leaves or finished compost. A combination of the above materials gives the best results. It is important to get a soil test for an accurate pH reading so you know the right amount of sulfur to apply.

Desired  
pH value for  
blueberries  
is 4.5

PRESENT SOIL pH	Amount of Sulfur in Pounds per 100 Square Feet Required to Lower Soil pH for Blueberries		
	SAND	LOAM	CLAY
4.5	0.0	0.0	0.0
5.0	0.4	1.2	1.4
5.5	0.8	2.4	2.6
6.0	1.2	3.5	3.7
6.5	1.5	4.6	4.8
7.0	1.9	5.8	6.0
7.5	2.3	6.9	7.1

Source: Midwest Small Fruit Pest Management Handbook, Bulletin 680

**Example** 6 plants spaced 5' apart requires a space 35' x 4', or 140 sq. ft. If your soil pH tests at 6.5, and your soil is a loam soil, it would require 4.6 pounds of sulfur per 100 sq. ft. or 6.4 pounds of sulfur for the 140 sq. ft. The formula: 140 sq. ft. divided by 100 is 1.4, 1.4 multiplied by 4.6 pounds is the amount needed for 140 sq. ft. ( $1.4 \times 4.6 = 6.44$ )

The amount of sulfur to be applied varies according to the soil type: sand (light), loam (medium), clay (heavy), as well as the present pH level of your soil.

## Blueberry Trouble-Shooting

Yellow leaves on blueberries can be quickly corrected with a foliar application of one tablespoon iron chelate per gallon of water sprayed over the leaves. You should see greener leaves in a few days. However, the underlying problem may be that the soil pH is too high. Have your soil tested and amend as directed above. After 1-2 years of establishment, you should be getting 12"-18" of new growth each year. If not, recheck your soil pH and/or use a little more fertilizer.

# CURRANTS & GOOSEBERRIES



## AT-A-GLANCE

**pH:** 6.0 - 6.5

**In-row spacing:** 3' - 4'

**Between rows:** 6' - 8'  
Black currant "Titania" should be spaced 4-5' apart in the row.

*Admired for generations in Europe for their adaptability as plants and their versatility as food, currants and gooseberries, known collectively as ribes, are growing in popularity in this country.*

## About Currants and Gooseberries

Currants and gooseberries are small fruits that were well known in this country earlier in the last century and are now making a comeback. These are ideal fruits for those sections of the country with a minimum of 1000 hours of winter chilling (zones 3 to 6). You can expect to harvest currants and gooseberries during late June and July. Well cared for plants may fruit well for 10-15 years. They are rounded shrubs that grow approximately 3'-4' tall and 3'-4' wide.

## Restrictions

Today's currant and gooseberry varieties have been bred for disease resistance, and the varieties Nourse Farms carries are either highly resistant or immune to White Pine Blister Rust disease. Check with your local Cooperative Extension office or Department of Agriculture for any restrictions to growing Ribes in your area. **NOTE:** We cannot ship these plants to Massachusetts residents without a permit. Some Massachusetts towns do not allow Ribes of any variety. We can ship out-of-state.

## Planting

Choose a sunny location, but avoid southern exposure and southern facing slopes since intense sun may injure the plants. Plant currants and gooseberries in good, well-drained soil that contains at least 2%-3% organic matter. Planting on a slight slope will facilitate air circulation. Plants should be set slightly deeper than they were in the nursery.



## Irrigation

Maintain adequate moisture levels especially immediately following planting. Plants should receive 1" - 2" of rainfall or the equivalent per week throughout the growing season. Gooseberry fruit will sunburn more easily if soil is too dry. Planting on a slope facilitates water drainage.

## Fertilization

None is needed during the planting year. In following years, apply 5 oz. of 10-10-10 per plant. Apply the fertilizer in the spring, or apply half the amount (2½ oz.) in the spring and the balance during the summer.

## Weed Control/ Mulching

Cultivation by scuffle hoe or regular manual weeding is necessary. Use of mulch helps inhibit weeds. Straw, or wood chips can be applied at 2"- 4" depth. Avoid treated or colored wood chips or mulch. Do not use Cedar or Black Walnut chips. Avoid using leaves, or an excessive amount of sawdust, as both can mat down and prevent moisture from reaching the plant's roots. Contact a local extension before using any chemical products for weed control.

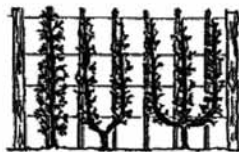
## Pruning

Black currants have different pruning needs than other currants and gooseberries. Currants (not black) and gooseberries fruit most heavily on the spurs (short branches) that occur on 2-3 year old branches. Your pruning task will be approximately the same for both groups of plants, so they will be described together. You can grow currants and gooseberries in a shrub form or as a 'cordon' against a trellis.

Prune dormant plants early every spring before new growth begins. Remove any canes that are damaged or droop to the soil and canes that shade the center of the shrub. This prevents accumulation of too much old wood and encourages production of strong new growth.

## Cordon

Growing currants or gooseberry plants as a cordon or espalier is common, especially if you do not have a lot of space for gardening. The plants are trained to grow flat against a trellis (as shown in diagram below) and pruned so they have 1-3 strong shoots or branches. This shape also makes harvesting easier.



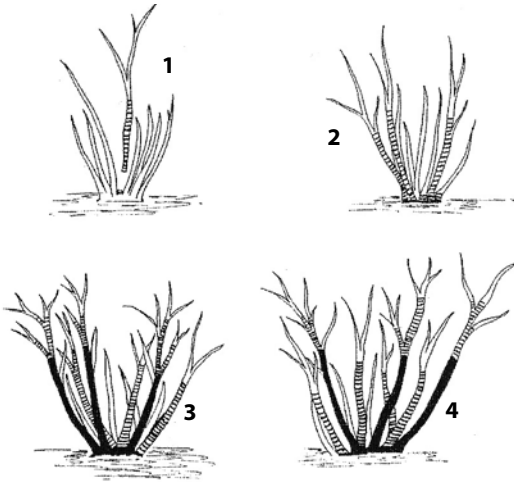
## Single-Trunk Shrub

Growing currants or gooseberry plants as a cordon or save one vertical shoot from the first year's growth. Cut shoot back to 10"-12" or half of its length (whichever is longest). The second year, select three or four strong side shoots near the top of the main shoot that are spaced evenly around the main shoot. Cut these side shoots back to half their length to an outward facing bud. In the third year, select two or three leaders from each of the side shoots that are facing out from the center at different angles.

Cut back all other growth to one or two buds. Maintain growth habit by cutting back leaders to half their length and all other laterals to one bud. Remove any lateral growth or suckers below the soil line. Cut out old or diseased wood.

Single, double, or triple cordons can be used for tighter spacing and easier harvesting. Cut back the first year growth to one





## TRAINING RED AND WHITE CURRANTS, AND GOOSEBERRIES AS FREESTANDING BUSHES

1. At the time of planting, remove all two-year-old and older wood. Leave six to eight one-year-old canes.
2. During the first dormant season, remove all but three or four two-year-old canes. Leave four or five vigorous one-year-old canes.
3. During the second and subsequent dormant seasons, leave three or four each of one-, two-, and three-year-old canes. Remove all canes four years old or older.
4. Before pruning your mature Ribes plant, use this drawing to determine the age of your canes.



© Courtesy of Danny L. Barney, PhD and Kim E. Hummer, PhD and Food Products Press®  
*Currants, Gooseberries, and Jostaberries: A Guide for Growers, Marketers, and Researchers in North America*

main branch. The second year, cut back a single cordon by  $\frac{1}{2}$  its new growth. Double cordons require that two strong shoots be tied down during the second season to a horizontal position. Triple cordons have two horizontal shoots and one central, vertical shoot. Winter prune the horizontal shoots to an upright bud and the central shoots to  $\frac{1}{2}$  their growth. Cut any side shoots back to one bud and remove any low growth or suckers. The third year, cut back vertical cordons by one-half of their growth and trim side shoots back to one bud. Many other variations can be developed from the basic cordon theme.

Pick currant fruit clusters when fruit has reached peak color, and are slightly soft.

## Black Currants

Since black currants crop most heavily on one-year old wood, pruning is meant to stimulate new growth and take out older growth. With this objective, in subsequent years, prune back three or four of the oldest branches to strong new growth, or to the base of the branch. Your objective is to have 6-8 good branches per plant that are continually renewed.



As soon as your new plants are in the ground, each branch should be pruned so that two buds show just above the soil. Do not leave any branches to bear fruit because this will delay plant development. At the end of the first year, two or three branches and some smaller, weaker shoots should have developed. Prune out all the new, weak shoots and branches so that you are left with one or two main branches.

## Special Consideration — Cross Pollination

It is recommended that two different varieties of black currants be planted to facilitate cross-pollination and a larger crop. Gooseberries are self-fruitful.

# ELDERBERRIES

*The elderberry makes a great wine or jam and is prized for its medicinal qualities. The flowers can also be used to make syrup and other recipes.*

## AT-A-GLANCE

**pH:** 6.0 - 6.8

**In-row spacing:**  
3' - 6'

**Between rows:**  
10' - 12'



## About Elderberries

Elderberries are popular for their unique taste in pies, sauces, jellies, and jams and they are occasionally used in winemaking. They are attractive, easy to grow, and are great in landscape plantings. They can grow up to 12' tall. Plants can be pruned to maintain a smaller size.

## Samdal

This is one of several newer varieties from Denmark. Plants are vigorous, producing long shoots from soil level each growing season and bearing fruit the next. These are removed after bearing and replaced by the current year's growth. This makes the plant easy to prune and manage as a shrub. Large fruit clusters ripen in August each year. Berries have very high anthocyanin content....very good for you!

## Planting

Plant at same depth as grown in the nursery, all roots should be well covered.

## Irrigation

Keep soil moist throughout the establishment period. From flowering through harvest, be certain the plants receive 1" of water via rain or by hand per week.

## Fertilization

No fertilizer should be applied in the planting year. In succeeding springs, spread 1 cup 10-10-10 per plant in a circle around the plant. Apply manure or compost only after plants begin to grow.

## Weed Control/Mulching

Thorough manual weeding is necessary, but do not cultivate deeply. Roots are fibrous and shallow and injure easily. Use a combination of hand weeding when weeds are small, mowing and mulching. Generally, once established a thick planting will suppress weeds on its own. Compost or straw mulch will help.

## Harvest

Berries are generally harvested late August through early September. Remove the entire cluster from the shrub and strip the berries from the cluster for use. Use the fruit as soon as possible or keep it cool for later use.





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