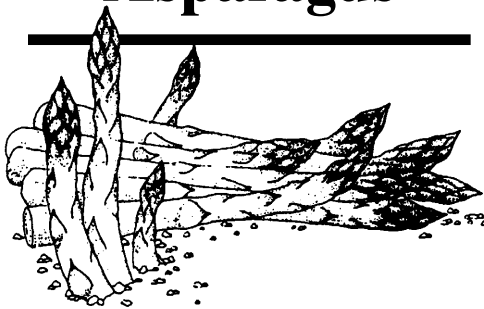


# CULTURE AND CULTIVARS

FOR THE GARDENER,  
BEDDING PLANT GROWER,  
GARDEN CENTER SUPPLIER,  
AND DIRECT MARKETER

## Growing Asparagus



### CULTURAL PRACTICES

Asparagus is an attractive and delicious perennial vegetable that can thrive for 25 years or more. The lacy, green foliage grows 6 to 8 feet high and can be used as an ornamental summer screen. Plant it along a fence, if there is plenty of sun, or on the north or east side of the site where it will not shade other vegetables or low-growing fruits.

Low in calories and high in flavor, a serving of four asparagus spears (60 grams) contains 10 calories, 1 gram of protein, 2 grams of carbohydrates, and only traces of fat. High in vitamin A and riboflavin and a very good source of thiamin, asparagus will produce its fine spears year after year once it is established.

### HOW ASPARAGUS GROWS

The underground root system of asparagus is an extensive network of fleshy storage roots with small feeder roots that absorb water and nutrients. Storage roots are about the diameter of a pencil and may reach a length of 5 to 10 feet in good soil. They are attached to an underground stem called a rhizome. Together, storage roots and a rhizome are commonly referred to as an asparagus crown. The crown is purchased for starting plants.

When the soil is warm and moisture is favorable, buds arise from the rhizome. Using carbohydrates and other nutrient reserves from the storage roots, they grow into edible spears. If not harvested, spears continue to develop into attractive, green, fernlike stalks (brush). Photosynthesis in the brush of the mature plant produces carbohydrates and other essential nutrients that are moved down to the storage roots, where these reserves supply energy for spear production in the following growing season. For these reasons, it is important to allow the brush to grow and to protect it from insects, diseases, and other injury before natural maturity and frost stop plant growth in late fall. At that time, remove the brush.

### CULTIVAR SELECTION

The following cultivars are suggested for Pennsylvania:

- 'Jersey Giant'\*<sup>DM SA</sup> (F, R; highest green spear productivity and quality in Pennsylvania)
- 'Jersey Knight'\* (F, R)
- 'Jersey Supreme'\* (F, R)
- 'Purple Passion'\*<sup>DM SA</sup> (highly productive, sweet, purple spears that turn green when cooked)

Codes: \* = F1 hybrid; <sup>DM SA</sup> = also recommended for direct market and sustainable agriculture enterprises since it has high yield potential, pest resistance/tolerance, and very good eating quality; F = fusarium resistant or tolerant; R = rust resistant or tolerant

Washington types are no longer recommended because they are not as resistant or productive as the cultivars listed above.

Seeds and, occasionally, crowns of the above cultivars are available from several prominent seed companies. Some may carry only one cultivar, while others may carry several. Some bedding plant growers may offer them as transplants. High-yielding uniform seeds or even highly selected, extremely productive crowns or transplants can be purchased at local garden supply stores. Below are two major sources of crowns:

Jersey Asparagus Farms, Inc.  
105 Porchtown Road  
Pittstown, NJ 08318  
Phone: 856-358-2548

Nourse Farms, Inc.  
41 River Road  
South Deerfield, MA 01373  
Phone: 413-665-2658

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## GROWING ASPARAGUS

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Asparagus needs a long growing season and sunny days for maximum photosynthesis. Ideal conditions are daytime temperatures between 75 and 85°F and nighttime readings of about 60°F (to minimize respiration). These conditions favor storage of carbohydrates in the root system, thus enhancing the yield and quality of spears the following season.

Asparagus grows best in deep, well-drained, sandy loam soils. In poorly drained areas or following prolonged rainfall, the plants may lose vigor, become more susceptible to root (crown) rot, and die. Maintain soil pH between 6.5 and 6.8. Check pH carefully because asparagus does poorly at pH levels below 6.0.

Adding medium-high nitrogen is best to provide a balance between top and root growth, but plants need adequate phosphorus and a relatively high amount of potassium for maximum spear production. We strongly recommend fertilizing and liming as directed by soil test results (kits can be purchased from your local county extension office or garden supply center). In the absence of a test, broadcast and turn under 7 pounds of 5-10-10 fertilizer (or equivalent) a foot or more deep per 100 square feet before digging the furrow. If lime is needed, turn it under along with the fertilizer. To improve heavy soil that crusts readily, incorporate generous amounts of manure and organic matter such as compost at this time.

Most asparagus beds are started by planting crowns. Only plant healthy, one-year-old crowns (not two- or three-year-old crowns). Commercial crowns guaranteed to be free of fusarium root rot are difficult to obtain, and fusarium root rot will permanently contaminate the soil once introduced.

One way to minimize the chance of introducing fusarium is to grow your own crowns or transplants from pathogen-free seed planted in a pathogen-free growing medium.

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## GROWING YOUR OWN CROWNS

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Crowns are produced by direct seeding a small area about two weeks before tomatoes are normally transplanted into the site. Sow three or four seeds for each crown you intend to plant in the permanent bed; sow the seeds 1 inch deep and 3 inches apart in rows 2½ feet apart. The following spring (February to April) when the plants are still dormant and the ground has thawed, carefully dig the crowns to minimize damage to the root system and immediately plant them in a permanent bed as described later in this publication.

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## GROWING TRANSPLANTS

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You may grow your own seedling transplants or you may be able to get seedlings from a commercial plant grower who specializes in bedding plants. If local garden center operators don't sell seedling transplants, urge them to do so the following season.

To grow transplants, sow the seed in pots 10 weeks before the frost-free date in your area. Use a commercial potting mixture of peat moss and vermiculite (pH 5.5 to 6.0) and sow two seeds ¾ inch deep in small pots (2-inch diameter) or in 2-inch plastic tray cells so roots pop out easily.

Germinate the seeds at 75 to 85°F and then grow the seedlings at 70°F during the day and 65°F at night. Grow the plants in a greenhouse or windowsill with full sunlight. When plants are not grown in the greenhouse, use supplementary fluorescent lights to extend the day length to 12 to 14 hours.

Apply a soluble complete fertilizer such as 15-15-15 or 15-30-15 at half the recommended rate 3, 6, and 9 weeks after sowing the seed. Avoid fertilizer injury to the tender growth by lightly rinsing the foliage with water after fertilizing. Using excessive nitrogen will promote large, tender tops and small root systems with limited food reserves in the storage roots. Quality transplants are not more than 10 to 12 inches high. Make the last fertilizer application just before transplanting, after the danger of the last killing frost.

Plant the crowns with the buds up in the bottom of a 6-inch-deep and 1-inch-wide, W-shaped furrow; cover with 1 inch of soil. Plant seedlings on small mounds in the bottom of a similar furrow and cover the buds with 1 inch of soil. Crowns and transplants should be 12 inches apart within the row and about 36 inches from other vegetables or between rows. Seedlings will require some protection from standing water and excess soil that can wash into the furrow.

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## MAINTAINING ASPARAGUS BEDS

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As the asparagus grows, carefully fill the furrow with soil but avoid covering any foliage. Furrows should be filled in by the end of the first growing season. In July, side-dress the plants with 6 pounds of 5-10-10 fertilizer and a ½-inch-thick layer of compost per 100 feet of row. Spread fertilizer and compost on either side of the asparagus and cultivate lightly into the soil. Where heavy, crusty soils are present, mulch in late October with 4 to 6 inches of straw or strawy manure to minimize heaving from freeze-thaw cycles and soil crusting and to delay early spring emergence of spears, which can be injured by frost. Before the asparagus emerges (about late March), broadcast lime as needed. At the same time, spread 3½ pounds of 5-10-10 fertilizer (or compost) per 100 square feet of bed. Rake the fertilizer and lightly lime (about 1 inch into the soil), taking care to avoid damaging the asparagus crowns. Remove excess mulch just before spears begin to emerge in spring. About every fourth year, test the soil to monitor and correct your fertility program.

Maintain good foliage growth for maximum photosynthesis. Ferns 3 years old or older should be 6 to 8 feet tall by early September. If they are not this vigorous, increase fertilizer applications, improve weed management, and make certain that crowns are getting adequate moisture during extended dry periods.

## IRRIGATION

Adequate soil moisture is especially important during the first growing season. When necessary, water sufficiently to wet the soil 8 inches deep. Using drip irrigation with some form of mulch will provide the most efficient water use and best growing conditions. Drip irrigation places the water in the root zone without wetting the foliage, which can reduce incidence of diseases. Drip irrigation kits can be purchased at most garden or farm supply centers and will come with all the necessary components and directions for installation. Once drip irrigation is installed, fertigation can be used to feed the crop via the drip irrigation system.

If using overhead sprinklers, the best time to irrigate is early in the morning on a bright, sunny day. If watering with a hose, use a rose or dramm head rather than a pistol-grip nozzle to apply water until the soil is thoroughly wet to a depth of 8 inches.

After the first growing season, asparagus plants do not require frequent irrigation because of the deep and extensive root system. Slowly applying about 2 inches of water (such as with a soaker hose) every 2 weeks during dry weather is sufficient.

## HARVESTING ASPARAGUS

It is very important that asparagus plants have two full growing seasons before their spears are picked. The plants must be allowed to develop an adequate storage root system in

preparation for the first cropping season. Harvesting or damaging the brush during the first two growing seasons stunts the plants and can permanently reduce yield.

In the third year when the first spears emerge in spring, merely snap off the upper, green, tender portion of all tight, 7- to 10-inch-long heads. Always harvest all spears that come up during the suggested harvest period.

The 2-4-8 week sequence is a good general rule for harvesting: pick for 2 weeks the third year, 4 weeks the fourth year, and up to 8 weeks the fifth and following years depending on the vigor of the bed. Stop sooner if spear thickness drops. Harvest usually does not extend past June 15. One 40-foot row of 5-year-old asparagus will yield approximately 10 to 25 pounds of spears during the average season.

When the harvest season is approximately half complete, 5 to 6 inches of soil may be carefully ridged over the row. This lowers the temperature around the crown, increases spear size, and blanches (whitens) the lower portion of the spear. Rake the ridge level immediately after the last harvest.

If the asparagus is to be consumed later or if one day's harvest is not enough for a meal, wash the spears and place the cut ends on moistened paper towels lining the bottom of a shallow pan. Refrigerate immediately. Good quality can be maintained for several days if the spears are kept at 35 to 40°F.

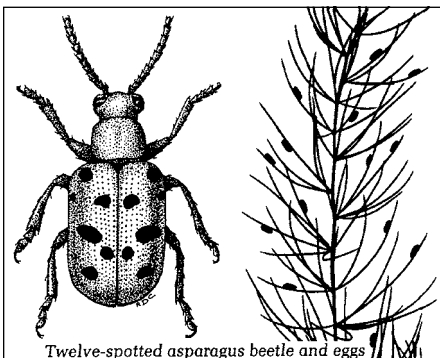
## INSECT IDENTIFICATION AND MANAGEMENT

### *Asparagus Beetle*

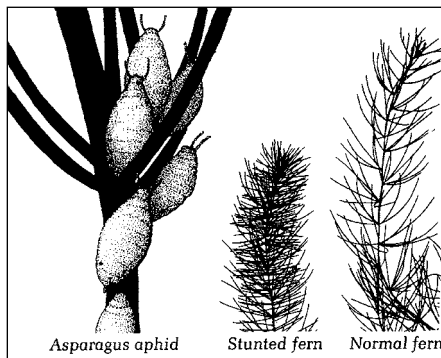
Beetles and grubs feed on young spears, ferns, and stems of the plants. Beetles are particularly problematic when they feed on the young shoots in the early spring. If you do not see the beetle but notice plant damage, check for shiny, black specks on the spear tips. Beetles are approximately ¼ inch long and the body is wider than the head. Adult beetles can be identified by their dark-orange bodies and black spots. Grubs are orange with a humpbacked shape. The best time to manage beetles and grubs is early in the fall before the first frost. Use either *Bacillus thuringiensis* (Bt), Sevin, or Malathion if extensive feeding occurs. If you use mulch around your plants, pull it away from the base of the plants in the early fall since this is where grubs overwinter.

### *Asparagus Fern Caterpillar (Beet Armyworm)*

These worms will feed on the foliage and stems of plants. They are pale green to light brown without any "hair" and range in size from ½ to 1¼ inches in length. They hatch from a cream-white egg that may be found on nearby foliage. When you have only a few plants, it is best just to hand-pick the beetles from the plants. The best time to observe and remove the insects is during the early morning when they are most active. If you have many plants and notice extensive feeding, you can select either *Bacillus thuringiensis* (Bt), Sevin, or Malathion.



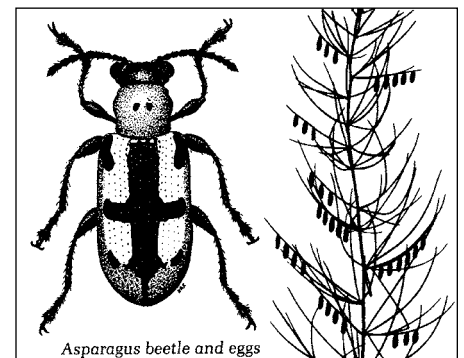
Twelve-spotted asparagus beetle and eggs



Asparagus aphid

Stunted fern

Normal fern



Asparagus beetle and eggs

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## DISEASE IDENTIFICATION AND MANAGEMENT

### **Rust**

Small pustules appear on the stems and leaves. The pustules are reddish or brownish and become dusty when they break open to release the dusty fungal spores. The discoloration can make entire plantings appear as if they've matured prematurely.

*Management:* Try to avoid starting new plantings next to old plantings. Grow recommended resistant cultivars such as 'Jersey Giant', 'Jersey Knight', 'Jersey Supreme', and 'Purple Passion'. If the disease appears, spray after harvest with mancozeb at 10-day intervals. Do not apply before harvest. Sprays may be needed in 1- and 2-year-old beds even when using resistant cultivars.

### **Fusarium Wilt and Root Rot**

In the spring, affected shoots are wilted, stunted, and sometimes dingy brown. Entire shoots on mature

plants wilt during dry periods. Roots on affected plants have reddish rotted areas.

*Management:* Start new plantings in well-drained areas never previously planted to asparagus. Plant disease-free crowns or transplants started from pathogen-free seed (soaked in sodium hypochlorite) and grown in a pathogen-free growing medium or soil. Prepare the sodium hypochlorite solution by mixing ½ tablespoon of household bleach with ⅓ cup of water. Soak seeds for 10 minutes in the solution and then rinse with clean water.

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## WEED MANAGEMENT

Weed management is an important aspect of good asparagus culture. Weeds reduce yields by competing for water, nutrients, and sunlight. Never cultivate or hoe deep enough to prune plant roots.

Since asparagus is one of the very few vegetables that not only tolerates

high-soluble salts but is salt loving (halophyte), a salt solution can be used to manage weeds. In the early part of a bright day, dissolve up to 2 pounds of salt (NaCl) in a gallon of water and wet the weeds thoroughly. Repeat as necessary. Salt brine may be sprayed or sprinkled on growing spears and mature ferns, but avoid applying it to tender seedlings or young ferns unless they are weeds from fern berries. Never use dry granules.

To maintain weed suppression, place a weed-free mulch (such as straw) around plants to reduce weed seed germination and conserve moisture. Another option is to apply spent mushroom compost or substrate (where available) to a depth of about 4 inches in the spring and never remove it.

When you rotate out of a bed where salt spray has been used, grow beets for about 2 years before growing other crops.

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