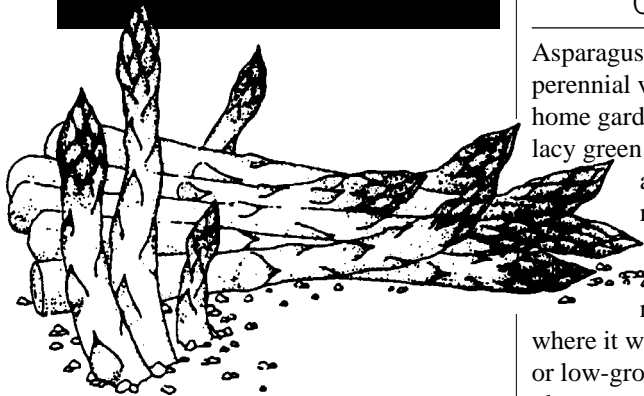


CULTURE AND
VARIETIES FOR THE
HOME GARDENER AND
BEDDING PLANT GROWER



Growing Asparagus

CULTURAL PRACTICES

Asparagus is an attractive and delicious perennial vegetable that can thrive in the home garden for 25 years or more. The lacy green foliage grows 5 to 6 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 garden where it will not shade other vegetables or low-growing fruits. Female asparagus plants produce bright red berries in late summer and fall. Foliage tops turn golden and then brown and are attractive against winter snow.

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 in the garden. A wise gardener, however, will allow plants 2 years' growth before they are harvested, and will crop them with restraint until they are mature at 5 years. Here's why:

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. The 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; taken together, storage roots and 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 protect the brush from insects, diseases, and other injury before natural maturity and cold weather stop plant growth in the fall.

Variety Selection

Spears should never be removed from plants during the first two growing seasons in their permanent location. Harvest for 2 weeks the third year and 4 weeks the fourth year. In the fifth and subsequent years, harvest from 6 to 8 weeks, depending on the vigor of the bed. Stop sooner if spear thickness drops. One usually should not harvest after June 15.

The following varieties are suggested for Pennsylvania:

- Jersey Giant* (highest productivity and quality in PA; F, R)
- Jersey Knight* (F, R)
- Jersey King* (F, R)
- Viking KB3 (probably the best nonhybrid; F, R)
- Purple Passion* (sweet purple spears turn green when cooked)

Codes: * = F₁ Hybrid; F = Fusarium resistant or tolerant; R = rust resistant or tolerant

"Washington" types are no longer recommended.

Seeds (and occasionally crowns) of the above varieties are available from at least nine prominent seed companies. Some may carry only one variety and others several. Some bedding plant growers may offer them as transplants. Two major sources of crowns are:

- Jersey Asparagus Farms, Inc.
105 Porchtown Road
Pittstown, NJ 08318
800-499-0013
- Nourse Farms, Inc.
41 River Road
South Deerfield, MA 01373
413-665-2658

In the near future, gardeners should be able to purchase high-yielding uniform seeds or even highly selected, extremely productive crowns or transplants at their local garden supply store.

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Asparagus needs a long growing season and sunny days for maximum photosynthesis. Ideal conditions are daytime temperatures from 75 to 85°F and nighttime readings in the 60°F range (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 high rainfall, the plants may lose vigor, become more susceptible to root (crown) rot, and die.

Soil pH should be maintained between 6.5 and 6.8. Check pH carefully, because asparagus does poorly at pH levels below 6.0.

Medium-high nitrogen is best to provide a balance between top growth and root growth, but the plant needs adequate phosphorous and relatively high amounts of potassium for maximum spear production. Before planting, broadcast and turn under 7 pounds of 5-10-10 fertilizer (or equivalent) per 100 square feet. 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.

In the past, most garden asparagus has been started by planting crowns. Only healthy, one-year-old crowns should be planted, not two- or three-year-old crowns. It is difficult, however, to obtain commercial crowns guaranteed to be free of *Fusarium* root rot, and once introduced, this disease will contaminate the garden permanently.

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. Crowns are produced by seeding a nursery about two weeks before tomatoes are normally transplanted into the garden. Seed is sown 1 inch deep and 3 inches apart in rows 2 1/2 feet apart. Three to four seeds are sown for each crown to be planted in the permanent bed. The following spring (February-April), when the plants are still dormant and the ground has thawed, the crowns should be carefully dug to minimize damage to the root system and then immediately planted in a permanent bed as described below.

Growing Transplants

To grow transplants, sow the seed in pots ten weeks before the frost-free date in your gardening area. Use a commercial potting mixture of peat moss and vermiculite (pH 5.5 to 6.0) and sow two seeds 3/4-inch deep in small pots (2-inch diameter) or in 2-inch plastic tray cells (roots pop out easily).

Germinate the seeds at 75 to 85°F, then grow the seedlings at 70°F during the day and 65°F at night. Grow the plants in a greenhouse or window 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 rinsing the foliage lightly with water after fertilizing. Excessive nitrogen will promote large, tender tops and small root systems with limited food reserves in the storage roots. Quality transplants are no more than 10 to 12 inches high. Make the last fertilizer application just before transplanting to the garden, after danger of the last killing frost. 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.

Plant the crowns with the buds up in the bottom of a 6-inch-deep, 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. Both 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. Incorporate compost into the bed during preparation.

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 or compost per 100 feet of row. Spread fertilizer on either side of the asparagus and cultivate lightly into the soil. Where heavy, crusty soils are present, mulch in late October

with straw or straw 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. Remove excess mulch just before spears begin to emerge in spring.

Irrigation

Adequate soil moisture is important during the first growing season. When necessary, water sufficiently to wet the soil 8 inches deep.

Drip irrigation used with some form of mulch will provide the most efficient use of water 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 supply outlets 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, do not use a pistol-grip nozzle but a rose or dramm head and 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. Thorough watering (2 inches of water) slowly applied (such as with a soaker hose) every 2 weeks during dry weather is sufficient.

During early spring of the second year, remove the old brush and overwintering weeds. Broadcast lime as needed to maintain the proper soil pH plus 2 pounds of 5-10-10 fertilizer per 100 square feet of bed. Side-dress another 2 pounds of 5-10-10 fertilizer or compost per 100 square feet in July. Asparagus is salt-loving, so it tolerates heavy fertilizer rates.

Remove brush during each succeeding spring before the asparagus emerges, and broadcast lime if needed. At the same time, spread 3 1/2 pounds of 5-10-10 (or compost) fertilizer per 100 square feet of bed. Rake the fertilizer and lime 1 to 2 inches into the soil, taking care to avoid damage to the asparagus crowns.

Maintain good foliage growth for

maximum photosynthesis. Ferns 3 years old or older should be 5 to 6 feet tall by early August. If they are not this vigorous, increase fertilizer applications, improve weed control, and make certain that crowns are getting adequate moisture during extended dry periods. Be sure that vigor is not reduced by harvesting too long.

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 heads 7 to 10 inches long. 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 the plants are in the garden, 4 weeks the fourth year, and up to 8 weeks the fifth and following years. One 40-foot row of five-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. The ridge should be raked 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 they are kept at 35° to 40°F.

INSECT IDENTIFICATION AND CONTROL

Asparagus Beetle

Both the beetle and grub feed on young spears, ferns, and stems of the plants. Beetles are a problem particularly 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 speartips. The beetle is approximately 1/4 inch long, and the body is wider than the head. The adult beetle can be identified by its dark orange body with black spots. The grub is orange with a humpbacked shape. The best time to control the beetle and grub is in the early fall, before the first frost. Use one of the pesticides listed below if extensive feeding occurs. If you use mulch around your plants, pull it away from the base of the plant in the early fall since this is where the grubs overwinter.

Asparagus Fern Caterpillar (Beet Armyworm)

These worms will feed on the foliage and stem of the plant. They are pale green to light brown without any "hair" and range in size from 1/2 to 1 1/4 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 one of the insecticides listed below.

Control:

- Bacillus thuringiensis (Bt)
- Sevin
- Malathion

DISEASE IDENTIFICATION AND CONTROL

Rust

Small pustules appear on the twigs and needles. The pustules are reddish or brownish and become dusty when they break open to release the dusty fungus spores. The discoloration can make entire plantings look like they matured prematurely.

Control: Try to avoid starting new plantings next to old plantings. Grow recommended resistant varieties such as Jersey Giant, Jersey Knight, Jersey King, and Viking KB3. 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 with resistant varieties.

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 rotted areas that are reddish.

Control: Start new plantings in well-drained areas never planted to asparagus in the past. 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 as follows: mix 1/2 tablespoon of household bleach with 1/3 cup of water. Soak seeds for 10 minutes in the solution, then rinse with clean water.

WEED CONTROL

Weed control is an important aspect of good asparagus culture. Weeds reduce crop production 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 vegetable crops that not only tolerates high-soluble salts but is salt-loving, a salt solution can be used to control weeds. In the early part of a bright day, dissolve up to 2 pounds of salt (NaCl₂) 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. Never use dry granules.

To maintain weed control, place mulch (such as straw) around plants to reduce weed germination and conserve moisture. In the fall, remove the mulch to eliminate an overwintering site for the asparagus beetle, a common pest on asparagus. Another option is to apply spent mushroom compost (where available) to a depth of about 4 inches in the spring and never remove it.

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

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