

Asparagus: Organic Production in Virginia

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<http://www.vabf.org/pubs.php>

With the introduction of hybrid varieties of asparagus such as Jersey Giant the home gardener or commercial producer can, with relatively little labor, have a plentiful crop of big, tender, succulent spears to enjoy each spring before other vegetables mature. However, to enjoy this spring delicacy careful preparations need to be made in order to avoid disappointment. After years of experience we have learned some techniques that have worked for us.

Asparagus does well in most good garden soils ranging from sandy to clayey. It thrives when provided with plenty of organic matter, particularly compost.

A number of varieties of asparagus are widely available from seed companies and nurseries. The old standard varieties such as Mary and Martha Washington are being replaced by newer hybrid varieties that yield far more heavily, often more than twice as much. Jersey Giant, one of these new hybrids, is well-adapted to this region, is resistant to asparagus rust, and consists mostly of male plants which yield more heavily than female.

How much asparagus should you plant? That will depend on your likes and needs. When your asparagus is producing at its maximum, four or five years after planting, each foot of asparagus row should yield over a half pound per season. Thus, a 25-foot row should yield at least, and probably considerably more than, 12 pounds. The usual suggestion is to plant 10 crowns per person, or up to 20 if you plan to can or freeze.

Site Selection

It is important that asparagus be planted in a location that makes weed control easy. Hence it is better not to plant asparagus next to a fence where the bed is easily invaded by grass and where there may be difficult access on one side. Since weed control is crucial to successful asparagus production it would be unwise to locate your bed in an area where you have had difficulties with a particularly pestiferous weed. Dig up any wild asparagus nearby, as it could harbor asparagus pests. At the garden scale, remove perennial weeds the year before planting. Pay particular

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attention to removing Bermuda Grass, Quackgrass, Canada Thistle, Johnson Grass, Nutsedge, Hedge Bindweed and Honeyvine Milkweed. From then until planting, keep weeds controlled by cultivating; covering the soil with a weed-smothering cover crop such as buckwheat during the frost-free season, or black plastic; or by using corn gluten as an organic pre-emergent herbicide. If your scale is too large for manual weed removal, grow and till in a series of heavy smothering cover crops. Plan to use the shade created by the asparagus ferns in the summer for cool temperature crops like lettuce.

Asparagus can also be grown from seed. To do this, grow the seedlings in a nursery bed until they are two years old, then plant out in their final home.

Preparing the Bed

Asparagus is best planted in the early spring in order to give it as much time as possible to grow and store food in the roots. The usual procedure is to plant two-year-old crowns acquired from a reputable source. Get a soil test in the fall before planting. Amend with lime if needed to give a pH of 6.0-7.5. Add potassium or phosphorus sources if needed. The best soil temperature for planting is 50°F - planting when the soil is cooler than this will encourage disease and offer

no advantage. Use a soil thermometer.

Run the rows north-south for faster drying of rain and dew. The space between rows will depend partly on the management technique. It could be as little as 18", or as much as 5' or even more, if tractor access is required. A 5' spacing allows for the unrolling of big round hay bales for mulch. Place the crowns of modern hybrids 18" apart in the row – they need more space than the 12-15" recommended for older varieties. It is no longer recommended that you plant asparagus in a deep, 15" trench. In fact, yields are heavier from asparagus planted at a depth of four to six inches. Plant at 4" in clay soil, 6" in sandy soil. Research has shown that crowns planted deeper migrate up through the soil, to settle at 4" after 10 years. Dig trenches deep enough to allow 2-4" of compost below the crowns. As you plant, keep the crowns damp, in covered buckets. Set aside the smallest crowns, and plant them next to each other – they may do better than if planted between two bigger crowns. Place the crowns 18" apart, with roots spread out, on a ridge or mound of compost in the trench, and cover with two to three inches of soil only. Some sources say crowns grow equally well if merely tossed in the trench, any way up. Do not compress the soil covering the crowns. Normally spear growth becomes visible in 1-2 weeks. Buckwheat can be sown between the rows after the last frost, and will smother weeds. It can be tilled in about 6 weeks later, when you need to partially fill the trenches (being careful not to till too close to the rows so as not to damage roots).

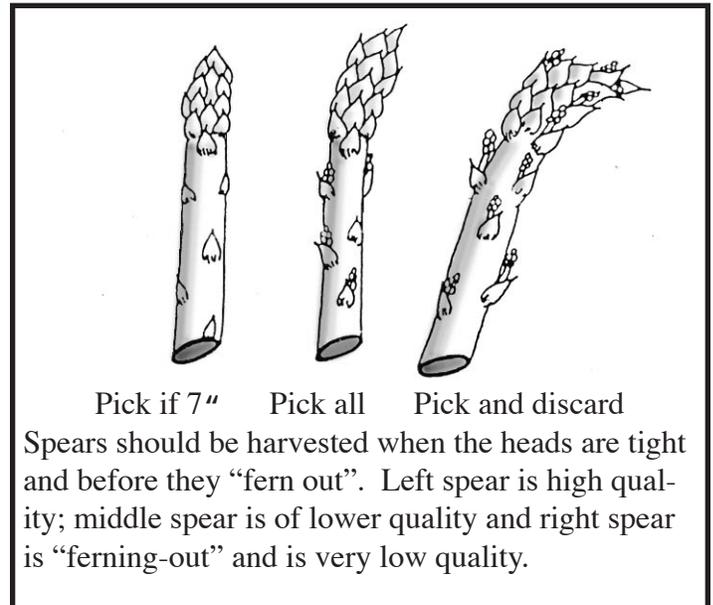
When the shoots begin to grow and are eight to ten inches tall, gently fill in the remaining soil over the crowns. A thin layer of well-rotted compost on top will help preserve moisture and provide nutrients. Mulch between rows with a thick layer of weed-free hay or straw mulch or landscape fabric. From now on, avoid deep cultivation within a foot of the plants if possible since asparagus develops many shallow feeder roots that extend out from the plants some distance.

First Year Culture

It has now been proven that asparagus yields better if it is lightly harvested in the first year after planting, so there is no need to hold back. During the growing season your crowns will send up more and more shoots that by fall, as fronds, should reach a height of four or five feet. While asparagus is rather

drought-resistant, it should be irrigated with around an inch of water per week during shortages of rain. You may also find that you can encourage frond growth with a side dressing of a complete organic fertilizer, spread in June or early July. Most important is to keep your asparagus bed weed-free, preferably by pulling the weeds while they are small rather than by hoeing. Especially do not till in the asparagus root-zone, as this reduces yield increasingly over time. Between planting and September of the first year, cultivate once a month. If berry-bearing female plants appear in your male hybrid planting, rogue them out to prevent self-seeding.

In the fall, after several hard frosts, the asparagus fronds are killed back to the ground and turn brown. After this occurs cut the fronds back to the ground and remove them from your garden. It is best to burn them or dispose of them far from your asparagus bed in order to destroy asparagus beetles and diseases that overwinter in such materials. Some growers do a controlled burn of their asparagus patch, rather than cut and haul the ferns. Asparagus is a heavy feeder. Apply compost every year in the fall or winter, at 2-5 tons per acre (100-230lbs./1000sq.ft.) unless soil tests indicate that soil P or K is excessive. Imbalance can upset plant nutrition and excess P can pollute waterways.



Harvest

When the first shoots appear, wait until they are seven to ten inches tall before picking. Harvest in the morning when the spears are more easily snapped. Don't cut the asparagus below the surface since you

risk damage to young shoots that are just about to emerge. For home use, break off shoots; by doing so you will find the whole shoot is tender and edible and you won't have to throw away any tough lower ends. For commercial purposes, carefully cut the asparagus at ground level. If you are expecting a frosty night, harvest all edible spears, regardless of size, as they will otherwise get frozen and be wasted.

Pick all the asparagus that comes up for about three weeks. In the cooler part of the season, spears can grow to 9 or 10 inches without ferning out, but in warmer weather, they will open out at a shorter height. Therefore it is necessary to harvest shorter spears in warmer weather. Harvest anything of the right length, if it's thicker than a pencil. Snap off and discard any ferning-out spears. Daily harvesting of the entire patch is recommended as a way of dealing with asparagus beetles – no ferns are left long enough to leaf out, and beetle eggs are removed from the field (on the spears) and get no chance to hatch. The eggs can be rubbed off before cooking. Discard very slender, tough stems. (Slender stems are not tenderer than large ones, quite the contrary.) Stop picking asparagus in four weeks maximum, sooner if it begins to “run out” and produce more and more small spears.

Get the harvested spears into cool temperatures of 34-40°F as soon as possible. Stand the butt ends of the spears in water or on damp clean burlap to preserve freshness.

Second year culture

The harvest season usually begins in early April. Well prior to that date you have several crucial jobs to do. First, root out any early weeds. Then fertilize with fish meal and greensand or a complete fertilizer or compost, spread over the whole bed, if you didn't do this in the fall. Aim to supply 100-150 pounds of K per year as a maximum. Then cover, to a depth of at least four inches, with composted wood chips or composted wood chip horse bedding, sawdust, straw or old hay (although hay may include weed seeds). The purpose of this is for weed control and it should be spread out two feet on each side of the bed. It will smother most weeds and make summer weeding largely unnecessary, unless weed seeds are introduced. The asparagus spears will easily grow up through the mulch.

Harvest as described above, for perhaps 5 or 6 weeks. Stop picking asparagus when the thickness of

most stems is around the size of a pencil.

If growth seems poor, mid-season fertilization may encourage more vigorous growth. By the end of the second growing season your asparagus should reach a height of six to eight feet. Cut and destroy fronds after frosts have turned the ferns brown. Water after the harvest period seems especially important for future yields, so pay attention and irrigate 1"/week if needed during the second and third years. Once asparagus is established, it is deep-rooted and has some drought-resistance, but until then it needs attention.

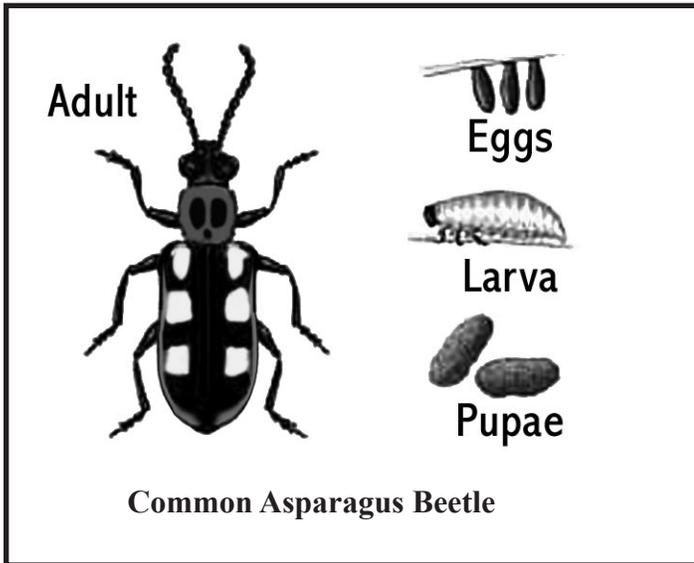
Third year and future years

Do a soil test every 3 years, and maintain a pH of 6.0-7.5 and P and K levels that are high but not excessive. If P levels are soaring you could experiment with growing legume cover crops to provide the N to the asparagus crops, rather than using compost and mulch. Skim till the aisles between the asparagus rows to control weeds. Then a few days before your last harvest of the season, sow cowpeas, or soybeans. The timing of the sowing is aimed towards getting a good growth of the cover crop before the asparagus ferns close the canopy. If K levels get too high, use wood chips or wood chip based horse bedding as mulch, rather than straw or hay. Alternating between straw and wood based mulch in successive years can bring a better nutrient balance into the soil. Repeat the same procedures in the spring as for the previous year except that you should pick asparagus for 6-9 weeks. See how your asparagus bed responds to the longer picking period. Remember, you can tell by observing that the asparagus is getting smaller and smaller in size and scantier in quantity.

By the fifth year you should hit maximum production. In addition, by picking for 8-9 weeks you are gaining control of the asparagus beetles since they are troublesome largely in the first six weeks. You should be able to enjoy a well-established asparagus bed for somewhere between 15 and 25 years. A huge reward for a modest amount of work!

Asparagus Beetles

Asparagus beetles may be a problem as they chew the spears and can do serious damage to new plantings as well as cause an established patch to deteriorate over time. Minimize the over-wintering sites by cutting and removing old ferns each year after



winter frosts turn them brown. (It is also possible to flame weed the cut stem residue in the spring, but if you have a mulch, it's probably wisest to do this after heavy rain.)

The adult beetles overwinter in garden trash and soil, and emerge in April to lay eggs which take one week to hatch. The larvae join the adults feeding on the spears or ferns. They mature through 4 instars (in approximately 8 days), then enter the soil and pupate, emerging as adult beetles in 5-10 days. Later in the season these new adults lay another generation of eggs. In Virginia there are 2 generations per year. There are two species. Adults of the Common Asparagus Beetle (*Crioceris asparagi*) are 1/4-1/3" long, slender beetles, metallic blue-black with wing covers having 3 or 4 yellow-white square spots and reddish margins. The thorax is red and usually marked with two black spots. (See drawing). The Spotted Asparagus Beetle (*Crioceris duodecimpunctata*) is more common in the West, mainly feeds on berries on female plants, and is less of a problem on the all-male hybrids. The adult Spotted Asparagus Beetle is slightly larger, about 1/3" long, orange with 12 spots on its wing covers. Larvae of both beetles are olive-green to dark gray with black head and legs. As they develop, they become plump, hump-backed larvae about 1/3" long. Eggs of both species are shiny black rods 1/8" long, attached by one end to the asparagus spears, giving a bristly appearance to badly infested plants. The eggs may be esthetically objectionable, although in themselves they are harmless. They can be removed after harvest by spraying with water, or washing or wiping.

Scout for asparagus beetles once a week from April, recording dates of emergence and egg-laying. Inspect 15-20 crowns at 4 different field locations. During the harvest period, the action level is 5-10 adults/100 crowns or 2% of spears infested with eggs. Post-harvest period, the action level is 5-10 adults/10 crowns. If control measures are not taken at these levels permanent damage to the plants will occur.

Ladybeetles and a Chalcid wasp are predators of the eggs, and ladybeetles also eat the young larvae. Encourage ladybeetles into your garden (see ATTRA publication "Farmscaping"). Sowing some buckwheat among the ferns after harvest seems to help attract beneficials that eat the Asparagus Beetle larvae or eggs. Planting sunflowers in the patch may also encourage beneficials. There is a parasitic wasp, *Tetrastichus asparagi* Crawford, which attacks the eggs, but so far this is not commercially available. Chickens run in the patch for 5 days at the end of the harvest period will eat up the beetles, but if left in the patch too long will start to expose the crowns. Handpicking in the mornings when the beetles are too cold to fly is also an option. Creep up on them – they drop to the ground if they sense a threat. Spraying with insecticidal soap can be effective. As a last resort, Rotenone or a rotenone-pyrethrum mixture can be used, but these are also toxic to other life-forms.

Other Pests

Japanese Beetles, Green June Bugs, and various species of stinkbugs can also cause problems. Katherine Smith reports from Rockbridge county that one stinkbug, *Cosmopepla bimaculata*, lurks in the leaf axils in the summer and seems to suck the stalks dry. Soap spray has been effective in reducing numbers of this pest.

Diseases

Asparagus Wilt is caused by *Verticillium* and *Fusarium* wilt fungi invading the roots and stems. It causes the spears to wilt at a few inches tall. A traditional method of control is to broadcast salt in the early spring at a rate of one pound per 20 row feet, spread to a width of 2 1/2 feet, however, this tremendous amount of salt (about 1000 lbs/acre) could have a bad impact on soil structure and cation nutrient balance. Other organic disease control measures are aimed at preventing disease rather than curing it: good sanitation, and care of the soil. Good sanitation

involves removing any diseased ferns, and removing all the dead ferns in the winter. Good soil care means ensuring enough but not too much NPK. Fusarium Crown Wilt can cause the gradual but terminal decline of the asparagus patch. Rust (*Puccinia asparagi*) appears as yellow/orange spots on the needles. Some varieties are rust resistant. Needle Blight can appear in June as buff/gray elliptical spots with a purple border. Purple Spot (*Stemphylium Vesicarium*) is another disease that appears on young spears.

Eating asparagus

Each person has his or her own preferences here but many, including me, think that asparagus is best when cooked for a short time, leaving it with some crispiness, two to four minutes in boiling water. A little butter or margarine and, voila! Asparagus does not freeze well – it becomes a stringy, soft mush. However, it makes a delicious soup that can be frozen and tastes great heated up on a winter day. Here is Joyce Abell's recipe for asparagus soup:

Joyce's Asparagus Soup (makes 4 servings)

1. Sauté 2 medium onions, cut-up, in olive oil (use the pot you plan to cook the soup in). You may also want to sauté 2-3 cloves of garlic with the onion.
2. Break up approximately 1 ½ to 2 lbs. asparagus into 1"-2" chunks, discarding tough ends, and chop in food processor. This is an essential step if you want to avoid having to strain the soup at the end. It breaks up the fibers into very small pieces.
3. Add asparagus to the pot along with about 6 c. water, vegetable broth or chicken broth.
4. Bring to boil, then simmer until tender.
5. Blend in blender, 2-3 c. at a time.
6. Add salt, pepper and herbs. Thyme seems to have an affinity with asparagus but tarragon and parsley are also good. Add lemon juice if you like the tang.
7. Additional ideas:
 - a) Blend in yogurt after soup has cooled and serve cold for a great warm-weather soup.
 - b) Thicken the soup by adding a paste of flour and olive oil, then add cumin, curry and/or coriander for a Middle Eastern soup. This is also good with yogurt - serve cold or very gently heated.
 - c) Reserve a few asparagus tips, blanched or slightly cooked, and add to soup before serving.

Resources

ATTRA publications:

Organic Asparagus Production <http://www.attra.ncat.org/attra-pub/asparagus.html>

Farmscaping

<http://www.attra.ncat.org/attra-pub/farmscape.html>

“Getting Started in Asparagus” by Carl Cantaluppi, 1994, via ATTRA. Call 800-346-9140

Virginia Co-operative Extension: for commercial production

<http://www.ext.vt.edu/cgi-bin/WebObjects/Docs.woa/wa/getcat?cat=ir-fv-vegc-asp>

for home gardeners

<http://www.ext.vt.edu/cgi-bin/WebObjects/Docs.woa/wa/getcat?cat=ir-fv-vegh-asp>

Ohio State University Extension:

Bulletin 826 “Asparagus Production, Management and Marketing ” 1993 \$5.50

<http://www.ag.ohio-state.edu/~buckpubs/hortcrop.htm>

Send orders or requests to pubs@ag.osu.edu. For inquiries call: (614) 292-1607

North Carolina State University Extension:

Horticultural Information Leaflets: Commercial Asparagus Production 2001.

<http://www.ces.ncsu.edu/depts/hort/hil/hil-2-a.html>

Nourse Farms Home Gardeners Learning Center Planting Guide:

<http://www.noursefarms.com/HomeGardeners/PlantingGuide/Asparagus.aspx>

Suppliers

Many seed catalogs supply asparagus plants or seeds for the home gardener.

Nourse Farms, Western Massachusetts.

<http://www.noursefarms.com>

Jersey Asparagus Farms, Pittsgrove, NJ.

<http://www.jerseyasparagus.com/>

Johnny's Selected Seeds, Maine. Toll Free @ 877-Johnnys (877-564-6697)

<http://www.johnnyseeds.com/catalog/subcategory.aspx?category=1&subcategory=7>

Contact Information:

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