Asparagus is a high value perennial vegetable crop harvested intensively over 6-8 weeks in late spring. A patch can produce for 15 years or more, with a 3 year lag time between initial field preparation and the first harvest.

Current growers show that premium asparagus can be grown successfully in Minnesota. As a crop that requires minimal soil disturbance and pairs well with cover crops, asparagus also presents opportunities to build soil health on vegetable farms.

This booklet outlines what is needed to get started with asparagus, with a focus on soil health. It is not intended as a complete guide. To learn more, please attend the asparagus workshops & tours offered by SFA and UMN Extension (see final page).

WHAT YOU NEED TO GET GOING

As with all crops, asparagus requires a certain set of equipment, materials, site conditions, and labor. Farms must have enough labor to hand harvest spears every 1-2 days for 6-8 weeks from May to June.

Equipment and supplies

- Crowns: 10,000 crowns per acre may be purchased in bulk for around $2500.
- Plow for site preparation and planting
- Lawn mower for inter-row management and end-of-year fern removal
- Compost, composted manure, and/or fertilizer
- Tools to spread compost/fertilizer, etc.
- Cover crop seeder (optional)
- Short-term post-harvest refrigeration

Do you have a good site for asparagus?

Asparagus patches remain long-term, so choosing the right site is critical. Identify land that can be committed to asparagus for at least 12-15 years. According to current growers, a minimum of 1/5 acre should be used for direct sales in Minnesota; but more is needed to sell in wholesale markets.

While asparagus can survive on many soil types, it performs best on well-drained, medium-textured sandy loam to loam soil.

Avoid heavy or shallow soils with high water tables, as the roots do not tolerate saturated soil. Avoid low-lying areas where frost gathers, as late spring frost damages spears.
PREPARING AN ASPARAGUS PATCH

Start preparing the soil one year before planting. Preparation may take longer if the soil is compacted, low in nutrients or organic matter, or especially weedy.

Three primary goals are to 1) develop fertile, well-drained soil; 2) minimize weeds; and 3) install irrigation if needed.

Preparing soil before planting asparagus

A soil test (0-12”) is the only definitive way to determine soil nutrient levels, organic matter, and pH. The test results will guide how to prepare your soil prior to planting.

If the soil test reveals low to moderate levels of nitrogen (N), phosphorus (P), or potassium (K), focus on bringing levels up with compost, manure, or fertilizer in the year before planting. They support fast plant establishment, and it is more difficult to replace these nutrients later on.

Asparagus prefers a pH of 6.5-7, and does not tolerate acidic soil. If the soil is below this range, apply lime according to soil test recommendations. On organic farms, calcite and dolomite can be used for liming.

Adding Organic Matter (OM): Unless OM % is already very high on your soil test report, add OM in the year before planting to support soil health and nutrient availability.

- Broadcast apply compost or manure one year before planting (spring). Disk or till to incorporate. Leaving manure on the soil surface will cause runoff and decrease N availability. Repeat on low OM soil, or if the soil is highly compacted.

- Examine the soil again in the fall. Add more OM or fertilizer if needed, to target specific nutrient deficiencies.

Weeds: Minimize weeds as much as possible prior to planting, as weed control options are limited and labor intensive after asparagus is established. On organic farms, weed control after planting is achieved by a combination of tillage, cultivation, cover crops, mulch, and hand-removal. Weed control in the year before planting often involves repeated cultivation to create a stale seedbed. However, flaming and solarization may also be used to reduce soil disturbance.

Pre-plant cover crops: Seed in the summer (summer annual) or early fall (winter annual species) after incorporating compost and manure but prior to asparagus planting. Cover crops add organic matter, reduce compaction, mulch inter-rows, fix nitrogen, or smother weeds. Select cover crop species based on the needs of the site. Do not allow cover crops to drop seeds and become weedy. For more information see cover crop resources on Page 4.

Irrigation: Soil in newly planted fields must be kept moist but not wet, to support fern growth. Mature plantings use 0.1-0.2 inches of water per day during the season. On sandy soil, irrigation will likely be necessary each year, but heavier soils may only require irrigation in the first year.

PLANTING ASPARAGUS CROWNS

Asparagus crowns (one-year old roots with buds) are planted into deep furrows, between mid-April to mid-May. The furrows are then gradually backfilled over the season as the ferns grow.

Digging furrows

Dig 8-inch deep furrows in rows 4-5 feet apart. A one-bottom plow will push soil neatly to one side, to be used for backfilling. Place the crowns 12 inches apart, with buds facing up. If soil tests reveal phosphorus (P) or potassium (K) deficiency, apply P and K to
the bottom of the furrows at this time.

Backfill the furrows with 2-3 inches of soil (1/3 the depth of the trench), or a combination of soil and compost. Keep moist, and allow ferns to grow 3-4 inches above the backfilled soil (about 6 weeks). Then backfill another 2-3 inches. Repeat until the furrow is level with surrounding soil. This should be complete by August.

Do not harvest spears in the same year as planting. This year is dedicated to developing the plant. In Year 2 (one year after planting), a small 1-week harvest may be considered.

**SOIL HEALTH IN MATURE PLANTINGS**

Support soil health by planting a cover crop between rows, limiting tillage, and only incorporating nutrients if needed. Compost and fertilizer may be applied over the rows every few years as needed; however, it may not be necessary to add nutrients very often.

Testing the soil after harvest will help determine whether nutrients are needed. A $15 soil test is more affordable than a soil amendment that turns out to be unneeded.

If adding nutrients, do this after harvest rather than before or during. Use caution when using manure, and do not apply it in the spring. For more information on manure: [https://z.umn.edu/3zj3](https://z.umn.edu/3zj3)

**Cover crops:** Growers may plant perennial or annual cover crops between the asparagus rows to maintain soil structure, fix nitrogen, block out weeds, and add organic matter. Perennial grasses like fescue or perennial broadleaf species like clover may be used in the inter-rows and maintained by regular mowing. If the inter-rows become compacted over time, a strongly rooted cover like tillage radish can help break up compaction.

**HARVESTING AND MAINTENANCE**

A small harvest (1 week) can begin in Year 2 (one year after planting). In Years 3 plus, harvest occurs every 1-2 days for 6-8 weeks, or until spear growth slows. Harvest spears at or below ground level when 6-10 inches tall, before the head opens. Cull diseased or insect-infested spears and remove them from the field.

Many growers cultivate the entire field in early spring, to incorporate fertilizer and control winter annual weeds. This must be done at least 2 weeks prior to spear emergence to avoid damaging the spears, and carries the risk of stimulating weed emergence. Be cautious if using this practice.
POST-HARVEST END-OF-SEASON TO-DO LIST

After 6-8 weeks of harvest, once spear growth slows, stop and allow ferns to grow. Healthy fern growth must be supported in order to direct energy to the roots and produce a successful crop of spears next year. Support fern growth in the following ways:

- **Fertilize:** Based on soil test, add compost or fertilizer over the top of the row if needed.
- **Maintain weed control in rows and do not let weeds produce seeds in inter-rows.**
- **Water if on sandy soil or if it is a very dry season.**

Once ferns are dry and have lost their green color, mow them down and remove them from the field. Do this in the fall to prevent asparagus beetles from overwintering. If you must wait until spring, burn the ferns to kill the beetles.

REFERENCES AND ADDITIONAL RESOURCES

Organic Risk Management Guide, UMN:  
[https://organicriskmanagement.umn.edu/](https://organicriskmanagement.umn.edu/)

Asparagus Production Guide, UMN:  
[https://z.umn.edu/3zpa](https://z.umn.edu/3zpa)

Soil testing: [https://z.umn.edu/3zp8](https://z.umn.edu/3zp8)
Midwest Vegetable Production Guide:  
[https://z.umn.edu/3zp9](https://z.umn.edu/3zp9)

Manure Application Basics for Vegetables:  
[https://z.umn.edu/3zj3](https://z.umn.edu/3zj3)

Five Cover Crops to Try in Vegetables:  
[https://z.umn.edu/3xz2](https://z.umn.edu/3xz2)

USDA Cover Crop Chart:  
[https://z.umn.edu/3zpc](https://z.umn.edu/3zpc)

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[https://www.sfa-mn.org/minnesota-asparagus-project/](https://www.sfa-mn.org/minnesota-asparagus-project/)

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