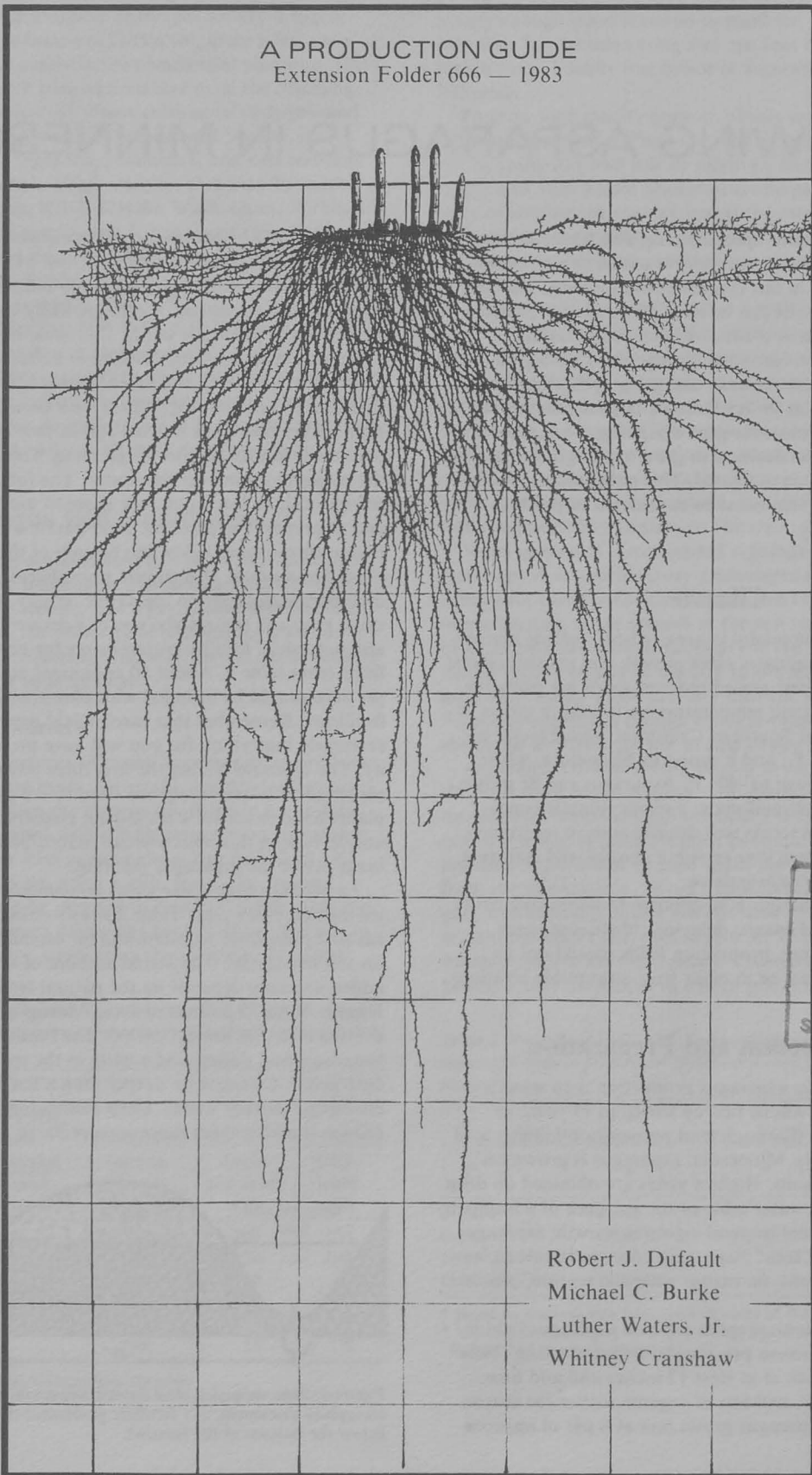


MN 2000 EF-666

GROWING ASPARAGUS IN MINNESOTA

A PRODUCTION GUIDE
Extension Folder 666 — 1983



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GROWING ASPARAGUS IN MINNESOTA

Asparagus is a high value specialty crop and the earliest producing spring vegetable. It currently is priced as a gourmet item and will remain in this category until growing, harvesting, and processing costs can be reduced. Although production in the United States is concentrated in California, Washington, and Michigan, many other areas have great production potential climatically and geographically. Minnesota has great potential for becoming a large asparagus producing region, for Minnesota-grown asparagus has proved to be of high quality. The decision to grow asparagus is one that should be thoroughly investigated. This publication describes the cultural practices that must be considered to produce asparagus successfully.

Climate

Production is most successful in areas where freezing temperatures or drought terminates plant growth and provides a rest period. Without this rest period reduced yields are probable. Asparagus tolerates great temperature variations: it grows in the Imperial Valley of Southern California, where temperatures can reach 115° F., and it grows in Minnesota, where temperatures can plunge to -40° F. Asparagus can be grown in a wide range of soils and under various climatic conditions, but it thrives in fertile well drained soils in moist temperate regions that have long growing seasons and sufficient light for maximum photosynthesis.

In Minnesota, asparagus is susceptible to late spring frosts that may kill emerged spears, delaying subsequent spear development. Therefore, production fields should not be established in low areas or in other frost-susceptible locations.

Site Selection and Preparation

The first major task in asparagus production is to select a site. Asparagus land will be tied up for 10 to 15 years or more, so careful and thorough land preparation initially is of utmost importance. In Minnesota, asparagus is grown on sandy to heavy clay soils. Highest yields are obtained on deep sandy loams. A high water table or the presence of a fragipan is especially detrimental to good vigorous growth; asparagus will not tolerate "wet feet." Asparagus roots penetrate at least six feet, so shallow soils, no matter what the texture, should be avoided.

The preferable time to prepare a future asparagus field is during the growing season previous to actual planting. Take a soil test from a depth of at least 12 inches and add lime, phosphorus fertilizers, and lots of organic matter the season prior to planting. Asparagus grows best at a pH of approxi-

mately 6.5 to 7.5. Asparagus will grow well in soils that have a salt content too high for many crops, but it will not tolerate extreme acidity. Although asparagus will tolerate less than optimum soil conditions, yields are likely to be reduced and the life of the plantings will be shortened in these soils.

Do any necessary land leveling or subsoiling, and then plow down deeply all soil amendments before furrow construction or bed shaping. All furrows should be about six to eight inches below the normal soil surface (see figure 1). Prepare them in the fall prior to planting. This operation allows the ridges to settle over the winter. The following spring, the furrows can be listed out once more to move out eroded soil and to prepare for planting. Incorporate a complete fertilizer two to three inches below the bottom of the furrow at this time. The amount of nitrogen, phosphorus, and potassium to incorporate depends on the native fertility of the soil. By using your soil test results, you can derive the phosphorus and potassium fertility requirements for new production fields from table 1. About 50 additional pounds of nitrogen per acre should be included with phosphorus and potassium fertilizers. Remember that careful field preparation is extremely important, for you will have no further opportunity. The objective during the first three years after planting asparagus is to encourage maximum fern growth so that plants build extensive storage root systems. Any practice that interferes with this objective can reduce both yields and the longevity of the asparagus planting.

To produce high spear yields consistently, you must fertilize the bed every year. Table 2 shows estimates of phosphorus and potassium requirements for established beds based on soil test results. The actual amount of nitrogen to be added annually depends on the natural fertility of the soil. Usually 50 to 75 pounds of actual nitrogen should be sidedressed after the harvest period. The fertilizer should be broadcast and disked under early in the spring prior to spear emergence. Cultivate no deeper than a few inches or just enough to destroy weeds. Deep cultivation may injure the crowns, making them more susceptible to disease.

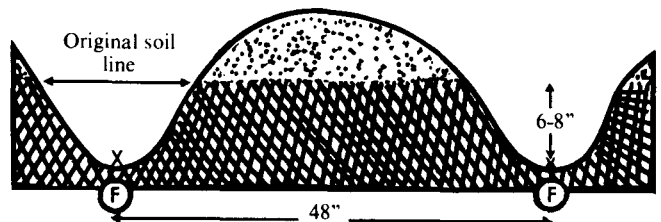


Figure 1. Side view of typical furrow construction. X = crown or transplant placement; F = fertilizer placement (two-three inches below the bottom of the furrow).

Asparagus Varieties

Asparagus varieties should be both high yielding and disease resistant, although no available asparagus variety is highly resistant to rust or to fusarium crown rot. Only a few varieties of asparagus are available for commercial plantings. Until recently, varieties have been various strains of the Washington type. Jersey Centennial, a new cultivar recently released by the New Jersey Agricultural Experiment Station, is reported to be more vigorous, productive, and rust resistant than Mary Washington. Other varieties that may be used in Minnesota are Viking, KB-3, Martha Washington, Waltham Washington, Faribo hybrid, and Green Giant. The California varieties UC 157, 800, 66, 309, 500W, 711, and 500 all have been bred for warm climates and do not possess the longevity or hardiness needed in Minnesota.

Asparagus is a dioecious (DYE-EE-SHUS) plant, meaning that there are both male and female plants. Generally, females produce larger spears than males, but the males produce greater numbers of smaller diameter spears. Only female plants produce berries. Breeding work is in progress worldwide to produce high yielding all male asparagus lines.

Asparagus Bed Establishment

Commercial asparagus plantations can be established either by traditional crown planting or by transplanting ten-week-old seedlings. Direct seeding into a permanent location is discouraged because of the difficulty of establishing a stand. Growing your own crowns in a nursery may be an advantage if you are planting a large acreage.

The Asparagus Nursery

Asparagus crown nurseries offer the opportunity to produce many crowns per acre easily. Generally, ten production acres can be established from the crowns produced in a one-acre nursery. Asparagus seed with a high germination percentage should be seeded on level ground about one inch deep and spaced about two inches apart within rows. The spacing between rows should be planned to facilitate mechanical digging. A modified potato digger has been used successfully to dig crowns. Generally, single rows spaced about 24 inches

Table 1. Pounds of P₂O₅ and K₂O recommended for new asparagus beds in relation to phosphorus and potassium soil test results on different soils*

Phosphorus soil test (pounds per acre)	Pounds P ₂ O ₅ per acre recommended Sandy and loamy soils†	Potassium soil test (pounds per acre)	Pounds K ₂ O per acre recommended†	
			Loam and sandy soils	Clay-loam soils
0-19	150	Less than 60	200	150
20-39	100	60-99	150	100
40-69	75	100-149	100	75
70-99	50	150-199	75	50
100+	25	200-249	50	25
		250+	25	0

* Based on research data from Michigan State University.

† Multiply pounds P₂O₅ by 0.44 to obtain pounds of P; multiply pounds K₂O by 0.83 to obtain pounds K.

apart will allow enough space for large crown production. This spacing scheme requires 130,000 seeds per acre for the planting. An 80-percent recovery of crowns will net approximately enough plant material to plant ten production acres with four feet between rows and one foot between plants within rows. Usually one ounce of asparagus seed contains 700 seeds.

To grow high quality crowns, obtain seed with a high germination percentage. Plant the seed in sandy soils so crowns can be easily dug and will be relatively free of adhering soil. Apply and incorporate phosphorus and potassium fertilizers prior to seeding the nursery bed at the rates suggested in table 2. Apply approximately 50 pounds per acre of nitrogen after the first shoot ferns out, and topdress an additional 50 pounds per acre in midsummer.

The slow rate of germination is a problem with direct seeding. Optimum temperatures for germination range from 77° to 86° F. Although lower soil temperatures slow germination, it is advisable to plant asparagus seed as soon as the soil is workable in Minnesota. Since the growing season needed to produce large crowns is limited in Minnesota, early spring seeding will allow germination to occur as soon as the soil environment becomes favorable. To prevent infection by soil-borne pathogens, asparagus seed should always be treated with fungicides like Captan or Thiram.

Weed control in direct-seeded asparagus presents a second challenge. A few satisfactory preemergence herbicides are labeled for direct-seeded asparagus (see table 3). Adjust the rate according to the texture of the soil type. Inevitably, mechanical cultivation is necessary in the nursery. Any cultivation should *always* be shallow to prevent damage to asparagus roots, which are very near the soil surface. Although asparagus is quite drought-tolerant, irrigation should be available for use in case of dry spells.

Asparagus crowns should be dug in early April or before the buds have begun to grow. Old plant tops should be mowed and removed from the field if they interfere with crown digging. A potato digger, peanut digger, or common moldboard plow can be used to lift the asparagus crowns from the nursery row. Avoid injury to the crowns during digging and handling. If dug crowns need to be stored prior to replanting, keep them cool (about 38° F.) and *dry*. High humidity will cause rapid decay. Crowns can become overheated if they are stored in a deep pile. Crowns in storage

Table 2. Pounds of P₂O₅ and K₂O recommended for established asparagus beds in relation to phosphorus and potassium soil test results*

Soil test		Fertilizer recommendations			
P	K	+	P ₂ O ₅ †	+	K ₂ O‡
0-150	0-300	+	80	+	80
0-150	Over 300	+	80	+	40
Over 150	0-300	+	40	+	80
Over 150	Over 300	+	40	+	40

* Based on research data from the University of Wisconsin.

† Multiply pounds P₂O₅ by 0.44 to obtain pounds of P; multiply pounds K₂O by 0.83 to obtain pounds K.

Table 3. Herbicide, insecticide, and fungicide suggestions for asparagus

WEEDS	Chemical	Pounds/acre active ingredient	Remarks and limitations
SEEDBEDS			
Annual weeds	chloramben (Amiben)	3	Apply immediately after seeding. Needs good soil moisture for activity.
	stoddard solvent (several trade names)	40 gal/ A	Apply before asparagus emerges and after weeds emerge.
	paraquat (Paraquat CL)	1	Apply before asparagus emerges and after weeds emerge.
	terbacil (Sinbar)	1 to 2	Apply immediately after seeding. Spray activated charcoal over seeded row at 300 lb/ A before herbicide application.
	linuron (Lorox)	1 to 2	Apply immediately after seeding. <i>(A 24C registration application is pending for legal use of Lorox on seeded asparagus. Consult your extension vegetable specialist before use.)</i>
ESTABLISHED BEDS			
Annual weeds	diuron (Karmex)	2 to 3	Apply after disking or chopping fern in the spring before weeds emerge. May be reapplied after harvest season if needed.
	simazine (Princep)	2 to 4	Do not exceed a total of 4 lb/ A/ year.
	linuron (Lorox)	2 to 4	Do not exceed a total of 4 lb/ A/ year. <i>(See comments above for using Lorox on seeded asparagus.)</i>
	metribuzin (Sencor, Lexone)	1 to 2	Apply in the spring before asparagus emerges, no later than 14 days prior to harvest.
	2,4-D alkanolamine salts (Formula 40)	1½ to 2	Apply before, during, or after harvest to actively growing weeds. Postharvest sprays should be made using drop nozzles to avoid fern contact.
	terbacil (Sinbar)	1½ to 3	Apply after cutting season. Use lower rate on coarse soils and high rate on finer soils.
Quackgrass	dalapon (Dowpon, Basfapon)	7½	Apply before harvest and again in 3 to 4 weeks if needed. Treat when quackgrass is 4 to 6 inches high. Do not spray the fern.
Canada thistle, field bindweed, hemp dogbane, milkweed, swamp smartweed, quackgrass	glyphosate (Roundup)	1½ to 3¼	Apply up to 1 week prior to spear emergence or last harvest. Do not contact fern growth
INSECTS			
	Chemical/formulation*		Remarks and limitations
Asparagus beetle	carbaryl (Sevin) 1 lb active ingredient (1¼ lb 80% WP)		1 day; do not repeat within 3 days.
	malathion 1¼ lb active ingredient (2 pt 5 lb EC)		1 day
	methomyl ½-1 lb active ingredient (Lannate, Nudrin)		1 day
	methoxychlor 1 lb active ingredient (2 lb 50% WP)		3 days (unless washed or blanched)
Cutworms	carbaryl (Sevin) 2 lb as bait		1 day; do not repeat within 3 days.
Asparagus aphid	malathion 2 lb active ingredient		
DISEASES			
	Chemical/formulation*		Remarks and limitations
	Spray in field, use label directions: maneb zinc 1 to 1½ lb WP zineb 1 to 1½ WP Polyram 1 to 1½ lb WP		Apply only on fern growth after spears have been harvested. Apply every 7 to 10 days to fern growth only.

* EC = emulsifiable concentrate; WP = wettable powder

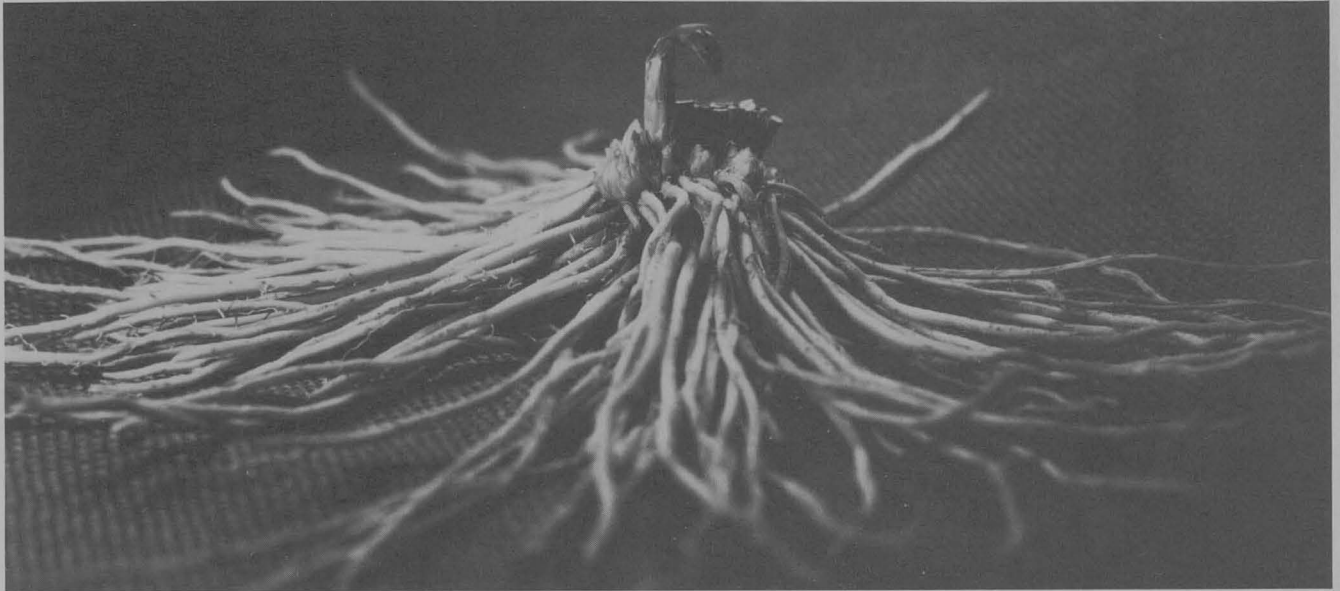


Figure 2. A high quality asparagus crown.

should be stacked only a foot or so deep. Avoid freezing temperatures in storage, since severe injury or even complete loss is probable.

Crown Plantations

For small plantings, it is probably best to buy one-year-old crowns from a reliable grower. Insist on only one-year-old crowns, which transplant easier, produce as vigorous plants as two-year-old crowns, and are cheaper. Crowns should be large, with many storage roots and buds (see figure 2). Each bud will eventually produce a spear. Storage roots contain high levels of sugar that nurture the developing spears. The larger the crown, the more vigorous the resulting asparagus plant will be.

Crowns usually are hand planted with buds up, spaced 12 inches apart within rows in furrows four feet apart (11,000 crowns per acre). Six to eight inches is the optimum depth for crown planting (see figure 1). Shallower planting depths cause production of spindly, thin spears, whereas deeply planted crowns produce fewer spears of larger diameter and emergence is delayed. Planting crowns closer than 12 inches results in reduced spear size and quality. Spacing crowns farther than 18 inches apart may result in larger spears but fewer spears per acre.

After placement in the furrows, cover the crowns with two to three inches of soil (see figure 3). Gradually fill in the furrow as shoots emerge. By the end of the season, the furrows should be entirely filled in, although the developing asparagus fern should never be buried.

Weeds cause the greatest problem in establishing an asparagus bed from crowns. Applying Lorox at two pounds active ingredient per acre immediately after the crowns are covered should control weeds until the asparagus is large enough to be cultivated easily and safely. *(A 24C application is pending for legal use of Lorox on crowns. Consult your extension vegetable specialist before use.)*

Seedling Transplants

Transplanting seedlings into the field is rapidly gaining in popularity throughout the country. Seedlings are produced in greenhouses and are transplanted into permanent commercial fields when they are about 10 to 12 weeks old. The young seedlings can be mechanically transplanted, which reduces planting costs. Studies indicate that a survival rate between 92 and 98 percent can be expected in the field. The plant spacing is the same as in crown planting (see figure 3). A transplant solution of 10-52-17 or 9-45-15 should be used at planting time. Follow the manufacturer's recommendation for mixing. Each transplant should receive at least half a cup of transplant solution. The most favorable time for field transplanting is early May. Seedlings should be thoroughly hardened off before field planting. Place the plants in a moderately shady location and keep them moist. After about three days, transplant them to the field. In many cases, the asparagus fern will totally yellow and die; this is normal.

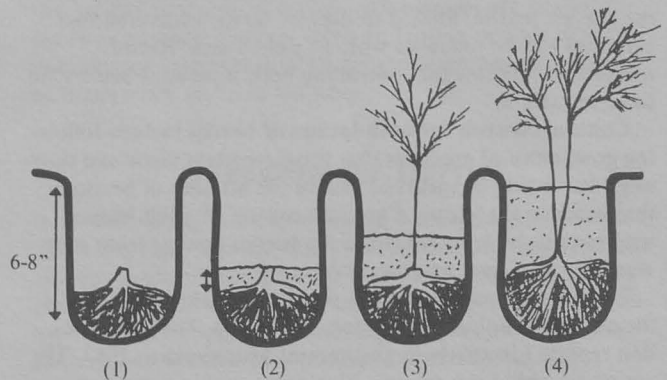


Figure 3. Planting crowns: (1) set crowns upright in wide furrows, six to eight inches deep, with roots spread, (2) cover with two inches of soil, (3 and 4) gradually fill the furrow as the plants grow.

Weed control is a challenge in the transplant plantation. Recent studies have shown that an “over-the-top” application of Lorox at two pounds active ingredient per acre (applied two weeks after transplanting) gives excellent weed control without serious plant damage. (*A 24C application is pending for legal use of Lorox on transplants. Consult your extension vegetable specialist before use.*) Cultivation will be necessary to fill in the furrows as the fern grows and as herbicides fail.

The question of whether to use transplants or crowns is still unanswered. They are comparable in price, but crowns are one-year-old plant material, whereas transplants are only 10 to 12 weeks old. Since the growing season is short in Minnesota and transplants do not grow to a large size in their first season, both crowns and transplants may come into harvest in the beginning of the third season.

Pest Management

Insects

Asparagus grown in Minnesota is relatively free of insect pests compared to many other vegetable crops. The asparagus beetle is the most common insect that attacks asparagus. The adult beetles, which overwinter under debris along field edges, begin to move to asparagus as the plants first emerge in spring. The beetles feed on the spears and glue rows of black eggs, usually on the tips. These eggs hatch in approximately one week and the fleshy, dark gray larvae then move to the foliage on which they feed. The larval stage lasts two to three weeks, after which the larvae drop to the ground, burrow into the soil, and pupate. Two or three generations are produced during the growing season in Minnesota.

The twelve-spotted asparagus beetle also may be present. Its life cycle is similar to that of the asparagus beetle, differing primarily in that the larvae feed on the developing berries.

When asparagus beetles and spotted asparagus beetles are present at harvest, they can cause extensive damage. Beetle feeding causes a distorted “shepherd’s crook” growth of the spear. The presence of eggs renders the spears unacceptable for market.

On nursery seedlings, defoliation of the plants by asparagus beetle larvae should be watched for carefully; insecticides should be sprayed if the infestation becomes moderate. After the harvest season, limited feeding by larvae on established plantings can be tolerated without yield losses. Recommended insecticides for controlling both asparagus beetles are listed in table 3.

Cultural controls for both species of beetles include following good cultural practices that promote plant vigor and thorough harvesting of spears to reduce the number of beetles that hatch in the spring. Chemical control of adult beetles may have to be repeated, since the beetles emerge from overwintering sites over an extended period.

The most devastating insect pest that attacks asparagus is the asparagus aphid (*Brachycolus asparagi*). The aphid was first reported in southern and central Minnesota in 1982. The asparagus aphid is a minute, blue-green sucking insect that usually feeds on asparagus fern. In the process of feeding, it injects a toxin into the asparagus plant that is translocated down the stem into the dormant buds. The toxin causes the buds to elongate into new shoots prematurely, producing a

“witch’s broom,” or a dwarfed, very bushy, short plant with silver, blue-green color. Under severe insect pressure, all the buds on the crown may “break,” causing the plant to have none left over for the following season, essentially terminating the plant’s life. The aphid can drastically reduce asparagus acreage in one season if left unchecked. Aphid outbreaks usually are associated with extended periods of cool weather. At present, only Malathion at two pounds active ingredient per acre is labeled for control of the aphid. The use of systemic herbicides like Dysyston, Metasystox, Temik, and Cygon is being evaluated.

The asparagus aphid lays its eggs in late summer or early fall. The eggs overwinter on the fern and fall to the ground by spring. Unharvested asparagus, which ferns out in early spring, is highly susceptible to early aphid infestations because egg masses are allowed to hatch and the aphid’s life cycle begins. Asparagus that is harvested into early summer is not at risk until the fern is allowed to develop. The aphid feeds only on the fern, not on asparagus spears. Removing asparagus fern in late fall after it has dried down greatly reduces potential aphid infestations the next year, but this is seldom possible before the first snowfall. If an asparagus aphid infestation is suspected, immediately contact your county extension service for instructions on diagnosis.

Cutworms can cut off asparagus spears below ground and even cause damage by feeding on the tips of spears above ground. Shoots damaged by cutworm feeding develop into crooked spears and must be picked and culled. If chemical control is warranted by moderate infestations, carbaryl (Sevin) applied as a bait formulation at two pounds active ingredient per acre should control the feeding.

Weed Control

A number of herbicides are available for use on asparagus (see table 3). Depending on the type of asparagus plantation (direct-seeded nursery, transplants, crowns, or established asparagus beds), choosing the most effective herbicide and rate represents a challenge to the grower. The desired herbicide should produce long-term weed control, be safe to use on the asparagus fern, and be legal to use. As outlined below, each type of asparagus plantation presents a different set of problems.

Direct-Seeded Asparagus. Producing asparagus crowns in a nursery for eventual digging and establishment of new production fields is still a popular practice. The slow germination and emergence rate of asparagus seedlings and their slow growth rate present outstanding weed control problems. Therefore, the major weed control objective in nursery production of crowns should be to use an herbicide that has long weed-killing activity yet remains safe on the delicate asparagus seedlings. The herbicide should remain active at least until the seedlings are large enough to be mechanically cultivated safely. This may take as long as two to three months after seeding.

Transplants. The use of seedling transplants to establish new asparagus acreage in Minnesota is increasing. Since furrow opening and planting is a one-step operation, herbicides to control weeds must be applied “over-the-top” of the transplant fern or directed to the ground after planting to avoid the asparagus fern. Choosing an herbicide and a rate that is toxic enough to control weed species but will not seriously set

back the growth of the asparagus plant and determining the application method are the major concerns.

Crowns. Traditionally, most new asparagus production fields are established by planting one-year-old nursery grown asparagus crowns into deep furrows. Since the first new shoots may take many weeks to emerge and grow to a size that can be cultivated, weeds in the furrow may become large and not controllable by cultivation. Therefore, an easily applied preemergence herbicide of long, dependable activity is necessary to reduce the number of mechanical cultivations needed to keep fields weed-free.

Established Asparagus. Many herbicides are now labeled for use on established asparagus and can be applied before the harvest begins (preemergence), after harvest (delayed application), before and after harvest (split application), or throughout the harvest season (multiple application). The problems facing the grower are choosing an application method that complements the operation and choosing a chemical and rate that will control weeds after harvest for the duration of the growing season.

Table 3 lists the herbicides labeled for use in Minnesota. Recommendations for herbicides in the direct-seeded nursery, on crown plantations, and on transplant plantations appear under Asparagus Bed Establishment. Direct further questions concerning weed control recommendations to your University vegetable extension specialist.

Disease

The main diseases of asparagus are fusarium root rot and asparagus rust. Fusarium root rot, caused by the fungus *Fusarium oxysporum*, is present in all asparagus production regions in the United States. The disease enters the plant through young feeder roots, spreads, and eventually weakens and kills the plant. Infected plants wilt, turn yellow, and are stunted. Spears may turn brown, rendering them unmarketable. In dissected roots, reddish-brown color is positive diagnosis of fusarium. As the fungus builds up in the soil over a period of years, yields progressively decrease. The intensity of the disease can be increased by nutrient stress, drought, and insect damage. Sometimes fusarium is introduced into the field on newly planted crowns or seed. To surface sterilize seed, soak the seeds for two minutes in a solution consisting of one part laundry bleach (sodium hypochloride) and four parts water. Immediately rinse the seeds for one minute under cool running water and spread them out on paper towels to dry. Once fusarium is in the field, there are no simple controls. Since the pathogen is soil-borne, fumigation may be attempted, but it is costly. New beds should never be planted in fields previously in asparagus.

Asparagus rust (*Puccinia asparagi*) is a potentially devastating disease. The symptoms of the disease are commonly first observed as orange spore patches on the base of the spears and on the fern branches (see figure 4). High humidity and warm temperatures are conducive to spore germination. Wind rapidly scatters the spores and if sufficient moisture is present, an entire field may be infected. Asparagus rust causes individual fern needles to fall. Where the attack is severe, an entire field may ultimately become brown. The result of an uncontrolled rust infestation is a reduction in the size and numbers of spears produced.



Figure 4. Rust infection on asparagus stems.

The most effective control of asparagus rust is to plant resistant varieties. Some of the varieties selected out of Washington strains have some rust resistance. Jersey Centennial is remarkably resistant to rust. Other ways to control the spread of the disease are destruction of wild asparagus plants and volunteer seedlings in the vicinity. Removing or burning asparagus fern in production fields in the fall is not an effective control measure. A variety of fungicides are labeled for use in controlling rust (see table 3). During periods of high humidity or extended rainfall, fungicide applications should be made every seven to ten days.

Preparing for Harvest

In earliest spring, mow or chop the old asparagus fern with a brush hog mower or flail chopper. Add phosphorus and potassium fertilizers and give the entire field a shallow disking. Do not delay disking. Doing so can cause considerable damage to the developing but unemerged spears just below the soil surface. Wounds also provide a portal for disease organisms.

Apply a preharvest herbicide at this time. The advantage of an early season herbicide application is that it reduces or even prevents the establishment of winter annuals and other weeds not controlled by cultivation.

Harvest

Spears are hand harvested when they are six to eight inches long. A special pronged knife can be used to cut the spears below the soil surface, or they may be snapped at the soil surface. Cutting must be done carefully to avoid damaging developing spears and the crown below the soil surface. The knife should be placed near the spear, tilted on a 45 degree angle, and directed to cut the spear about two inches below the soil surface. Shoots injured by cutting will not develop properly and should be culled. Spears may be hand snapped just above the soil surface. Snapping severs the spear at the junction between the green tender tissue generally above ground and the white woody tissue below ground. The advantage to cutting spears is that the woody base restricts water loss, which preserves spear quality.

Depending on the planting method, asparagus beds require two to three seasons to become established. Transplants and crowns require two years for establishment before first harvest begins, whereas asparagus started from seed takes three full growing seasons before harvest. During the establishment years, fern growth, plant vigor, and health should be optimized with careful cultural management. For areas with short growing seasons, the USDA recommends a light harvest (two to three weeks) during the first season after plant establishment. A full harvest season of six to eight weeks may begin the following season, although the harvest should be terminated immediately any time spears are reduced to pencil size. Harvesting may have to be performed every two days at the height of the harvest season. Spear emergence greatly

increases in response to warm temperatures and slows considerably with cold temperatures.

Overharvesting greatly reduces the vigor of the asparagus plant by seriously draining the sugar reserves in the crown. *Remember: next year's yields and profits are determined by how well the asparagus is treated this year.*

Field Maintenance After Harvest

Asparagus plants need stored nutrients and time to recover from harvests. They also need weed-free environments, moderate soil fertility, and adequate moisture to build up food reserves in their crowns. Neglecting asparagus fields after harvest is complete is a more significant contributor to poor yields in subsequent years than insect or disease damage.

After harvest, add nitrogen fertilizers according to soil test results. Since the asparagus plants will now be left to fern out, they need nitrogen to encourage photosynthesis and maximum fern development. Research has consistently shown that the bushier the asparagus plant, the better the yields will be the next season. Incorporate the nitrogen very shallowly. A postharvest herbicide application is necessary to extend weed control full season. A contact herbicide may be necessary to kill perennial weeds prior to fertilizer incorporation. In times of severe drought or if the asparagus is grown on sandy soils, use irrigation to maximize subsequent yields.

Asparagus is a rewarding crop to grow. But it is a perennial plant that will cause perennial problems if its culture and maintenance schedules are ignored.

On the cover: Crown and root system of a six-year-old asparagus plant; each block represents one foot square. From: Weaver, J., and W. Bruner. 1927. Root Development of Vegetable Crops. McGraw-Hill Book Co., Inc., N.Y.

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