

# Asparagus

Permanent asparagus plantings in Wisconsin are usually started with year-old crowns. Direct seeding has had limited success in Wisconsin. Plug production of seedlings is also being done on a limited basis and will likely increase in future years as male hybrid seed becomes increasingly available.

Hybrid male cultivars cost more than the open-pollinated varieties, but yields are 1.5 to 2 times that of the traditional cultivars.

## Planting

### Field transplant production

**Rows:** 18–20 inches.

**Seeds in row:** 2 inches (1 inch deep). Use 4–5 lb seed/a. Each pound produces about 10,000 plants, enough for about an acre. (Sidedress with 75–100 lb/a ammonium nitrate about mid-June.) To speed germination, soak seeds in warm water (about 90°F) for 4–5 days before planting. Add a few radish seeds to provide early plants to mark rows for cultivation. The following spring, lift and reset plants in a permanent location.

### Indoor transplant production

You can also start seeds indoors around the first of March for transplanting the middle of May. This way you do not need

to replant them the following year. Use the same spacing for transplants as recommended for 1-year-old crowns.

### Permanent plantings from 1-year-old crowns or from transplants

**Rows:** 4–6 ft.

**Crowns in row:** 9–15 inches (6–8 inches deep). Cover the crowns or transplants with 2–3 inches of soil and gradually fill furrows as plants grow (see illustration). Poor stands result if plants are covered too deeply at the start. Ridge the soil moderately over the rows after the plants are well established.

Avoid planting asparagus in fields infested with perennial weeds such as Canada thistle, quackgrass, and field bindweed (creeping Jenny) or eliminate these weeds before planting.

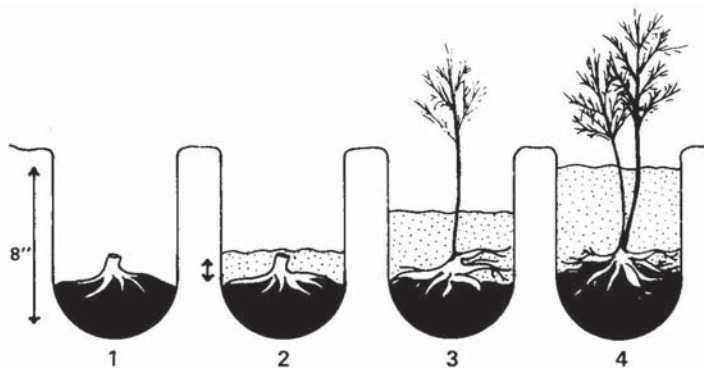
## Lime and fertilizer

**Lime:** Use dolomitic limestone to maintain a pH of 6.0 on mineral soils and 5.6 on organic soils.

**Fertilizer rates:** Apply  $P_2O_5$  and  $K_2O$  according to soil test recommendations before planting. Use annual nitrogen,  $P_2O_5$ , and  $K_2O$  recommendations in the following table each year asparagus is grown. Take credits for previous legume crops and manure.

**Application:** Broadcast and work in before spears begin to grow in early spring.

**Nitrogen:** On sandy soils, apply half of the nitrogen in early spring and the remaining half after the last harvest.



1 Set the plants upright in wide furrows, 6–8 inches deep, with the roots spread.

2 Cover with 2–3 inches of soil.

3 Gradually fill the furrow as the plants grow.

### Annual nitrogen, phosphate, and potash recommendations for asparagus

Nitrogen		Phosphate and potash		
Organic matter (%)	Amount to apply (lb/a)	Yield goal (lb/a)	Amount $P_2O_5$ to apply* (lb/a)	Amount $K_2O$ to apply* (lb/a)
<2	80	2,000–4,000	10	20
2.0–9.9	60			
10–20	40			
>20	20			

\*Amounts shown are for optimum (O) soil test levels. Apply 50% of this rate if soil test is high (H) and omit if soil test is excessively high (EH). If soil test is low (L) or very low (VL), increase rates according to soil test recommendations.

## Disease control in asparagus

Disease	Active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
<b>Cercospora leaf spot</b>	mancozeb	2.0 lb Dithane M45, Dithane DF Rainshield	120	Only apply on asparagus ferns after spears have been harvested. Do not apply more than 8.0 lb ai/a per season.
<b>Fusarium root rot</b>	<i>Field choice is very important so that plant stress in subsequent years is avoided.</i>			
<b>Purple spot</b>	azoxystrobin	6.0–15.5 fl oz Aframe, AzoxyStar, Equation, Quadris, Satori, Willowood Azoxy 2SC	100	Do not apply more than 92.3 fl oz/a product per season. Do not make more than 1 application of Equation, Quadris, Satori, or another Group 11 fungicide before alternating with a fungicide with another mode of action.
	chlorothalonil	2.0–4.0 pt Bravo Weather Stik, Chloronil 720, Chlorothalonil 720, Echo 720, Equus 720 3.0–5.75 pt Echo Zn, Equus 500 Zn 1.8–3.6 lb Bravo Ultrex, Equus 90DF, Initiate 720	190	Do not apply more than 9.0 lb ai/a chlorothalonil per growing season. Post-harvest application only.
	trifloxystrobin	3.0–4.0 oz Flint	180	Do not apply more than 12.0 oz/a Flint per season. Do not make more than 3 applications of Flint or other Group 11 fungicides during the season.
<b>Rust</b>	chlorothalonil	2.0–4.0 pt Bravo Weather Stik, Chloronil 720, Chlorothalonil 720, Echo 720, Equus 720 3.0–5.75 pt Echo Zn, Equus 500 Zn 1.8–3.6 lb Bravo Ultrex, Equus 90DF, Initiate 720	190	Do not apply more than 9.0 lb ai/a chlorothalonil per growing season. Post-harvest application only.
	mancozeb	1.5 qt Penncozeb 4FL 1.6 qt Dithane F-45, Manzate Flowable 2.0 lb Dithane DF Rainshield, Dithane M45, Koverall, Manzate Pro-Stick, Penncozeb 75DF, Penncozeb 80WP	180	Use rust-resistant varieties. Do not apply more than 6.0 lb ai/a per season. Apply only on ferns after spears have been harvested. Cut infected plants at ground level in late fall or winter and destroy infected debris.
	myclobutanil	5.0 oz Rally 40WSP	180	Do not apply to harvestable spears. Do not make more than 6 applications or exceed 30.0 oz/a Rally (0.75 lb ai/a) per year. Former product name was Nova.
	sulfur	10.0–30.0 lb Kumulus, Micro Sulf, Microthiol Dispers	—	Use after cutting. Irrigate and cultivate before applying. Repeat at 7- to 10-day intervals through fern growth season. Foliar injury may be enhanced under high temperatures. Do not use in combination with oil.
	tebuconazole	4.0–6.0 fl oz AmTide TEBU 3.6F, Folicur 3.6 F, Monsoon, Onset 3.6L, Orius 3.6F, Tebucon, Tebuconazole 3.6F, Tebusha 3.6FL, Tebuzol 3.6F, Toledo, Willowood Teb 3.6SC	180	Postharvest application only. Do not make more than three foliar applications or exceed 18.0 fl oz/a per season.

## Insect control in asparagus

Insect	Rate/a of active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
<b>Asparagus aphid</b>	<i>Natural enemies will often eliminate this insect; spot treat when populations are increasing rapidly and biological control is ineffective. Treat when 5% of ferns show injury. New plantings tolerate less injury.</i>			
	0.05–0.1 lb acetamiprid	2.5–5.3 oz Assail 30 SG	1	Assail is applied as a foliar spray. Do not exceed 10.7 oz/a of formulated product per season.
	azadirachtin	10.0–21.0 oz Azatin XL Plus 0.5–2.0 gal Neemix 0.25EC 0.25–1.0 pt Neemix 4.5EC	0	Apply at 7-day intervals when pests first appear. May apply every 3–4 days for heavy infestations.
	1.0 lb chlorpyrifos	1.33 lb Lorsban 75WG 2.0 pt *Lorsban Advanced	1	Apply at fern stage only. Do not exceed two applications.
	0.5 lb dimethoate	1.0 pt dimethoate 400	180	Apply after the last harvest. Wait at least 7 days between applications. Do not exceed 5.0 pt/a per year.
	0.9–1.25 lb malathion	1.5–2.0 pt (various brands) 57%EC	1	Apply as needed. Aphid colonies appear in late summer.
	1–2% potassium salts of fatty acids	2.0 gal M-Pede/100 gal water	0	Primarily a contact spray. Apply every 7–14 days as needed.
	0.086 lb pymetrozine	2.75 oz Fulfill 50WDG	—	Apply after harvest.
0.004–0.05 lb pyrethrin	1.0–12.0 fl oz Pyrenone 0.5 EC	0	Primarily a contact spray.	
<b>Common and twelve-spotted asparagus beetles, Japanese beetle</b>	1.0–2.0 lb carbaryl	2.0–4.0 lb Sevin 50WP 1.25–2.5 lb Sevin 80S 1.0–2.0 qt Sevin XLR Plus	1	Apply when 5–10% of the plants are infested with adults or 2% of the spears have eggs or 10% of the plants are defoliated by larvae or 50–75% of the plants have larvae.
	1.0 lb chlorpyrifos	Lorsban (several formulations)	1	Apply at fern stage only. See label for rate.
	0.5 lb dimethoate	1.0 pt dimethoate 400	180	Apply after the last harvest. Wait at least 7 days between applications. Do not exceed 5 pt/a per year or apply within 180 days before harvest.
	0.9–1.25 lb malathion	1.5–2.0 pt (various brands) 57%EC	1	Apply as needed.
	0.5–1.0 lb methomyl	1.5–3.0 pt *Lannate LV	1	Do not exceed 4.5 lb ai/a or 8 applications per crop.
	0.05–0.1 lb permethrin	*Ambush, *Pounce	1	Several formulations; see label for rate. Do not apply more than 0.4 lb ai/a per season.
	0.031–0.063 lb spinetoram	4.0–8.0 oz Radiant SC	60	Do not exceed 24.0 oz/a Radiant (0.188 lb ai/a) or 3 applications per crop. Wait at least 4 days between treatments.
	spinosad	4.0–6.0 fl oz Entrust SC	60	Apply to ferns only. Do not make more than 3 applications per crop. Do not exceed 18.0 fl oz/a Entrust SC per season.

\*Restricted-use pesticide.

(continued)

Pest  
management

Asparagus

Bean

Carrot

Celery

Cole crops

Cucumber

### Insect control in asparagus *(continued)*

Insect	Rate/a of active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
<b>Cutworms</b>	0.5–1.5 lb <i>Bacillus thuringiensis</i>	0.5–1.0 lb DiPel DF	0	
	2.0 lb carbaryl	Sevin bait (several formulations)	1	Apply when 5–10% of the plants show cutworm damage.
	chlorantraniliprole	3.5–7.5 fl oz Coragen	1	Do not make more than 4 applications per crop season and allow at least 3 days between applications. Do not apply more than 15.4 fl oz/a Coragen per season.
	1.0 lb chlorpyrifos	1.33 lb Lorsban 75WG 2.0 pt *Lorsban Advanced	1	Apply when soil is moist and worms are active.
	0.45–0.9 lb methomyl	1.5–3.0 pt *Lannate LV 0.5–1.0 lb *Lannate SP	1	Do not exceed 4.5 lb ai/a or 8 applications.
	0.05–0.1 lb permethrin	*Ambush, *Pounce	1	Several formulations; see label for rate. Do not apply more than 0.4 lb ai/a per season.

\*Restricted-use pesticide.

### Weed control in asparagus

Weed	Rate/a of active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
<b>Annual weeds</b>	0.19 lb flumioxazin	6.0 oz Chateau SW		Apply only to dormant asparagus no less than 14 days before spears emerge. Application to nondormant asparagus may result in unacceptable crop injury. Postharvest applications may be made after final harvest and prior to fern emergence and must be sprinkler- or rainfall-incorporated with 0.5–0.75 inch of water. Do not exceed 6.0 oz/a Chateau SW per growing season.
	3.9 lb pendimethalin	up to 8.2 pt Prowl H <sub>2</sub> O	14	Prowl H <sub>2</sub> O may be applied in a single broadcast application up to 8.2 pt/a (maximum 2.4 pt/a on sandy soils) at least 14 days prior to first harvest or after final spear harvest and prior to spear emergence. Spray contacting emerged spears may result in severe injury.
	trifluralin	several manufacturers		Apply to established asparagus as a single or split application, before new spears emerge or after harvest. Rate varies with soil texture. Follow recommended soil preparation, application, and incorporation procedures. Must be incorporated within 24 hours.
<b>Annual broadleaves</b>	0.09–0.24 lb mesotrione	3.0–7.7 fl oz Callisto		Callisto can be applied to asparagus as a spring application prior to spear emergence, as a postharvest application (after final harvest), or both. Do not exceed 7.7 fl oz/a Callisto per year or apply more than twice per year. For postharvest applications, use a directed spray to minimize contact with any standing asparagus spears or ferns to prevent crop injury. See label for rate and adjuvant recommendations based on weed and crop growth stage.
	0.8–1.6 lb terbacil (seeding year only)	1.0–2.0 lb Sinbar WDG		Plant seed 1.0–1.5 inches deep. Spread a band of activated charcoal over the seeding row and follow with a single application of Sinbar. Use the lower rate on coarser soils.

\*Restricted-use pesticide.

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**Weed control in asparagus** *(continued)*

Weed	Rate/a of active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
<b>Annual broadleaves</b> <i>(cont.)</i>	1.2 lb terbacil	1.5 lb Sinbar WDG	5	Apply before spears and weeds emerge or to small weeds (less than 2 inches tall). Application may be made after clean cutting. Do not exceed 2.5 lb/a per year. Do not use on plants that are diseased or lacking in vigor as crop injury may result. Do not plant to any other crop within 2 years of application.
<b>Annual grasses and broadleaves</b>	linuron	Lorox DF (use and rate varies by soil type—see label)	1	Lorox DF is registered for use on newly planted asparagus and on established beds. Before treating a newly seeded bed, place a 1-inch band of activated charcoal (300 lb/a) directly over the seed. See label for crop height and weed size restrictions. Do not apply more than 4.0 lb/a per year in a maximum of 3 applications. Do not add surfactant to spray mix. Do not use on sand or loamy sand. Do not use on soils with less than 1% organic matter.
<b>Nutsedge and some broadleaves</b>	0.023–0.047 lb halosulfuron	0.5–1.5 oz Sandea	1	Sandea controls several broadleaf weeds and nutsedge. It will not control grasses. It may be applied as a postemergent broadcast treatment before or during the harvest season or as a postharvest directed spray using drop nozzles to direct the spray below the ferns. Spray contact with the fern may cause temporary yellowing. Wait to treat first-year transplants until at least 6 weeks after fern emergence. Do not exceed 2.0 oz/a per crop season in a maximum of two applications. Do not use soil- or foliar-applied organophosphate insecticides on asparagus that has been treated with Sandea or serious crop injury may occur. <b>Consult label for other important usage information, precautions.</b>
<b>Germinating annual weeds in established beds</b>	0.8–3.2 lb diuron	1.0–4.0 lb Karmex DF 0.8–3.2 qt Direx 4L		Do not use on newly planted or seeded asparagus during the first growing season. If making two applications in one season, do not exceed 3.0 lb/a of Karmex or 2.4 qt/a of Direx per application. Moisture is needed to activate the herbicide. See label for specific application information and precautions.
	metribuzin	see label	14	Metribuzin is registered for a single preemergence application or a split application preemergence and postharvest. Do not exceed 2.0 lb ai/a per year. Do not apply to plants during the first growing season after setting crowns or to newly seeded beds. Apply in early spring before spears or ferns emerge. For split applications, apply half in early spring before spears or ferns emerge and half after the last harvest of spears but before ferns emerge.
	4.0 lb napropamide	8.0 lb Devrinol DF-XT 2.0 gal Devrinol 2-XT		Apply in early spring after disking but before weeds emerge. Do not apply to frozen ground or to ground with more than 10% organic matter. Incorporate or irrigate within 24 hours if no rainfall occurs. Treat only once per season.
<b>Emerged broadleaves</b>	2,4-D (see label for rate)	several manufacturers		Apply to actively growing weeds, usually in April or May. If spears are present, treat right after cutting. No more than two applications during the harvest season, and these should be at least 1 month apart. Contact by spray may cause malformed spears; cut and discard. Postharvest sprays require ground equipment using drop nozzles to avoid spraying the ferns. See label for worker re-entry and preharvest intervals.

\*Restricted-use pesticide.

*(continued)*

Pest management

Asparagus

Bean

Carrot

Celery

Cole crops

Cucumber

**Weed control in asparagus** (continued)

Weed	Rate/a of active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
<b>Emerged broadleaves</b> (cont.)	0.25–0.5 lb dicamba	8.0–16.0 oz Clarity	24 hours	Apply after cutting, but at least 24 hours before next cutting to actively growing weeds. Multiple applications per season allowed, but do not exceed 16.0 oz/a per year.
	2.0–4.0 lb norflurazon	2.5–5.0 lb Solicam DF	14	Do not apply to asparagus in the first growing season. See label for correct application rate as determined by soil type. Before application, remove or incorporate crop debris. Rain or irrigation needed within 4 weeks of application for activation.
<b>Emerged grasses</b>	0.068–0.12 lb clethodim	9.0–16.0 oz Select Max	1	Add non-ionic surfactant at a rate of 0.25% vol/vol. Wait at least 14 days before repeating treatment. Do not apply more than 64.0 oz/a per season.
	0.124–0.375 lb fluzifop-P-butyl	8.0–24.0 oz Fusilade DX	1	Make postemergence application to actively growing grasses; check label for size range and treatment rate. Always add either crop oil concentrate or non-ionic surfactant to final spray mix. Do not apply more than 48.0 oz/a per season.
<b>Emerged weeds</b>	0.094–0.47 lb sethoxydim	0.5–2.5 pt Poast	1	Apply postemergence to actively growing grasses. Always add 2.0 pt/a of crop oil concentrate to the spray mix. Apply no more than 5.0 pt/a of Poast per season. Do not apply if rain is expected within 1 hour.
	glyphosate	several manufacturers and formulations	5	See manufacturer's label to assure that the formulation is labeled for this crop and for specific instructions. Apply at least 1 week before the first spears emerge or apply as a spot treatment after cutting spears or after all spears have been removed. Do not spot treat more than 10% of the field. Direct contact with the crop will cause serious injury.
	*paraquat (rate varies by label)	several manufacturers, not all registered for this use	6	Application will kill emerged crop, so apply to dormant asparagus before emergence or after last harvest. Always add crop oil concentrate or non-ionic surfactant to spray mixture. Follow precautions on label.

\*Restricted-use pesticide.