

Know Your Asparagus Pests

A.R. Putnam¹, R. Stuckey², M.L. Lacy², D. C. Cress³, G.W. Bird^{2,3}, and M.J. Dover³

The first step in pest management is to accurately identify the pest. If you know the status of your pests, and have good supporting weather data, computers can help you make projections and decisions on control practices.

It is necessary to keep close track of the times of appearance of pests and their numbers. If you

can accurately identify the pests and report a few things about them to extension personnel, it will greatly enhance the chances for successful pest management. This chart is intended as a guide to help you identify the major asparagus pests. Each pest is identified with a code number which should always be used for reporting purposes. The latest control recommendations for these pests may be obtained through your local Cooperative Extension Service Office.

¹Department of Horticulture

²Department of Botany and Plant Pathology

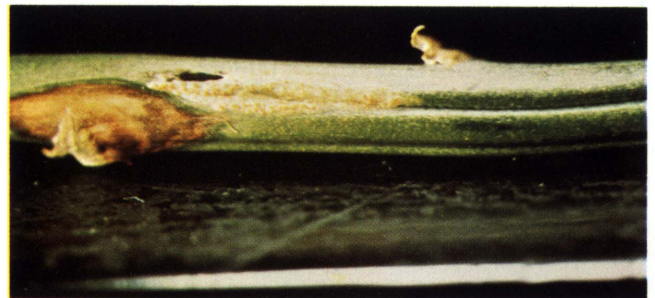
³Department of Entomology

Disease Pests of Asparagus

The asparagus rust and root rot diseases are two important fungal diseases of asparagus in Michigan. Although the asparagus rust fungus can attack all aboveground parts, damage is most severe when fern tops are attacked several years in succession. This results in reduced vigor of the root system so that in the coming year only cull shoots are produced or the entire plant dies.

The rust fungus must produce several spore stages to complete its life cycle. Aecial and pycnial lesions may appear simultaneously during spring and early summer. Uredial lesions appear in mid to late summer and are followed by the telial stage in late summer. Incidence of asparagus root rot is believed to be increased by plants produced under less than ideal conditions, certain cultivation practices and insect injuries.

Rust



(FIG. 211)

Aecial lesions first appear as oval, light-green patches on asparagus stalks. The patches become slightly raised and light orange in color. They may appear as soon as growth begins in the spring.

(Continued on back)

Insect Pests of Asparagus

Three major insect pests of asparagus in Michigan are beetles, asparagus miner and cutworms. Both the common and spotted asparagus beetles chew and scar tender asparagus buds at the tips. After leaves come out, the adult beetles and common asparagus beetle larvae feed on the stems and leaves, robbing the root system of food materials for growth the following season. Also, eggs deposited on spears by adults of the common asparagus beetle are difficult to remove and result in insect contamination in the processed crop.

Asparagus miner feeding may increase the problem of *Fusarium* root rot. However, definite evidence of this is lacking at this time. You should be aware of this insect and be able to differentiate between miners, rust and mechanical stem damage which turns the stem brown near the base.

Several species of cutworm are found in Michigan asparagus fields. The white cutworm has been observed in several counties but identified as a problem only in Oceana County. Other cutworms found in Michigan include the variegated, dark-sided, bristly and black cutworms. White cutworm activity is greatest early in the season, terminating in June. The dark-sided cutworm can cause extensive damage from mid-June to mid-July. Cutworm larvae can cause severe damage by feeding on spears and ferns.

Common Asparagus Beetle (Continued)



(FIG. 112)

(FIG. 113)

(Left) From 3 to 8 dark-brown eggs 1/16 inch (2 mm) long are found standing on end in rows like the teeth of a comb, along the stems and leaves anytime after April or May.

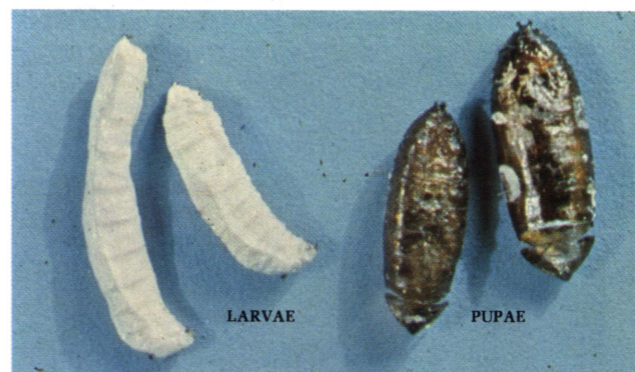
(Right) Dull-gray and slug-like larvae with black heads and legs hatch from eggs, migrate to the tips of leaves, feed upon them and develop to 1/3 inch (8 mm) in length. The larval body is plump, soft, wrinkled and non-hairy. Larvae migrate to soil and form yellowish pupae from which adults emerge. Two to 5 generations may occur each year.

Asparagus Miner



(FIG. 141)

There are 2 generations of asparagus miner each year. The adult fly appears in the field near the end of May giving rise to egg, larval and pupal stages, each of which lasts for about 3 weeks. Adults are small, 1/6 inch (4 mm) long, black and shiny two-winged flies.



(FIG. 143)

Larvae are whitish, legless and headless, up to 1/5 inch (5 mm) long and mine beneath the epidermis of stems. Early season mining by the larvae is greatest in the stem above ground while second-generation larval activity occurring in late summer is greatest in the stems below ground.



(FIG. 144)

Overwintering occurs as pupae in the larval tunnels under the epidermis of stems 1 to 6 inches (2.5 to 15 cm) below the soil surface.

White Cutworm



(FIG. 161)

The adult moths are ash-gray in color with a brownish, yellowish or reddish tint. The wing span is 1 3/4 inches (4 cm) and bears a single dark discal spot on each of the hind wings. Moths appear generally in July and early August and lay their eggs a few days later.



(FIG. 163)

The general body color of the larvae is a light yellowish gray with irregular whitish areas on the top and sides. The whitish areas merge into a distinct white stripe along the sides. The head and body vary in color but are usually light brown and dotted with black spots.



(FIG. 164)

Pupae occur between 1 1/2 to 2 inches (3.8 to 5 cm) below the soil surface, and are enclosed in an easily broken earthen shell. Pupae are brown in color and from 1 1/3 to 1 1/2 inches (3.3 to 3.8 cm) in length.

Common Asparagus Beetle



(FIG. 111)

Adults are 1/4 inch (6 mm) long, brilliantly colored, black, red and yellow. Each wing is black and straight-sided with a red margin and three large yellow squarish spots. The reddish head region is much narrower than the body.

Spotted Asparagus Beetle



(FIG. 121)

Adults are reddish-orange with 6 black spots on each wing cover. The greenish eggs appear shortly before berries form and are glued singly on their sides to the leaves.

The orange-colored larvae hatch, crawl to the developing berry and feed on the pulp. Pupation occurs in the soil. Two to 3 generations may occur each year.

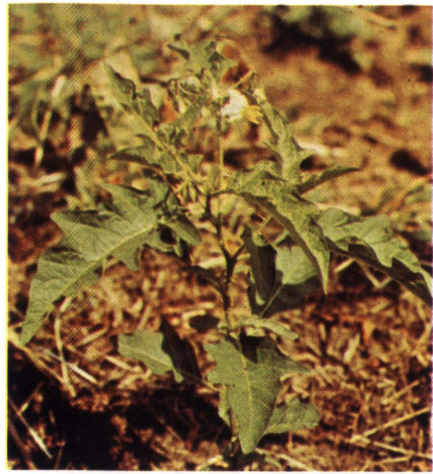
Weed Pests of Asparagus

Weeds cause losses in asparagus not only by using nutrients and water, but some may produce toxic substances that inhibit asparagus growth, some harbor insects and diseases, and others interfere with harvesting. Weed competition is most damaging to asparagus in mid to late summer when the fern is producing reserve food for next year's crop. Under dry conditions, competition for water is particularly acute.

PERENNIAL WEEDS

Perennials live for more than two years and may live indefinitely, and in that respect are similar to asparagus. They have become a more serious problem with the improved control of annual weeds using pre-emergence herbicides. Perennial weeds reproduce and spread in fields by vegetative methods. They may be divided into broadleaved plants and grasses or sedges.

Horsenettle



(FIG. 311)

Leaves are alternate, wavy edged or lobed with rough yellow spines. Stems are 1 to 4 feet tall (3 to 12 dm), also with spines. Flowers are borne in clusters and are white to purple, about 3/4 inch (1.9 cm) across. The fruits are about 1/2 inch (1.3 cm) in diameter and resemble a tomato in shape.

Field Bindweed



(FIG. 321)

Leaves are alternate on long twining stems and are shaped like an arrowhead. Roots may extend several feet into the soil with new shoots emerging from them. Flowers are funnel shaped, white to pink and about 1 inch (2.5 cm) across. This plant is often called wild morning glory.

Common Milkweed



(FIG. 331)

Leaves are opposite and oval shaped, 4 to 8 inches (10 to 20 cm) long with prominent veins. The upper surface is smooth and the lower surface downy. Stems may be 2 to 5 feet (6 to 15 dm) tall, producing pink star-shaped flowers in clusters. Spiny seed pods are green to gray and 2 to 4 inches (5 to 10 cm) long. The thick fleshy roots may extend several feet in the soil.

Swamp Smartweed



(FIG. 341)

Leaves are alternate, narrow and pointed, with a sheath enclosing the base. Stems are 1 to 3 feet (3 to 9 dm) tall from an extensive woody rhizome. Flowers are pink, and produced in a dense spike 1 to 3 inches (2.5 to 2.6 cm) long.

Northern Dewberry



(FIG. 351)

Leaves are compound with 3 to 5 leaflets. Stems are woody, prostrate to arching with thorns. Flowers are white to pink producing black edible fruits. Roots spread several feet deep. Reproduces both by seed and by stems that root at the tips.

Quackgrass



(FIG. 361)

A perennial grass which spreads by seeds and rhizomes. It suppresses crops by competition and by releasing a toxic substance. Tillage often spreads this weed because each of the cut rhizomes can produce a new plant.



(FIG. 362)

(FIG. 363)

(Left) Quackgrass leaves can be identified by a clasping auricle which wraps around the leaf sheath at the base of the leaf blade. Leaves also have a prominent ribbing.

(Right) The flower head of quackgrass is a spike. It is unique and easy to distinguish from that of other grassy weeds.

Yellow Nutsedge



(FIG. 371)

Leaves are a shiny light green color arising from a triangular stem. The plant grows 1/2 to 2 feet (1.5 to 6 dm) tall and is more common on moist than dry soils.



(FIG. 372)

One of the major reasons yellow nutsedge is so difficult to control is that it produces many tubers (often called nuts). These tubers can remain alive in the soil for several years.



(FIG. 373)

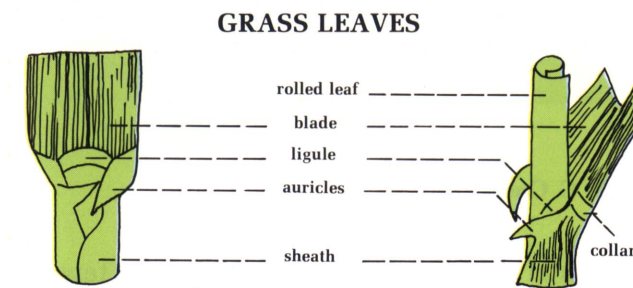
Yellow nutsedge produces yellowish to yellowish-brown flowers in narrow spikelets. The seed is yellowish brown, 3-angled, about 1/16 inch (1.5 mm) long. Seed could be an important means of spread from field to field.

Nematode Pests

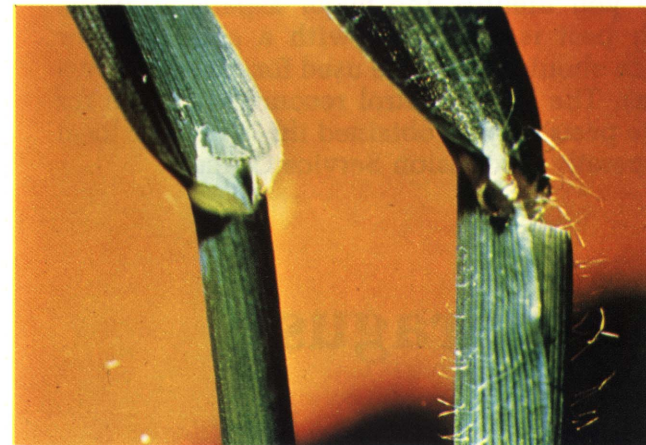
Plant parasitic nematodes are not known to be of economic significance in Michigan asparagus production. Asparagus roots secrete a chemical that is toxic to one or more plant parasitic nematodes. (Univ. of Maryland, 1958). Therefore, asparagus-nematode relationships have received little attention during the past 15 years. The On-Line Pest Management project provides an excellent opportunity to verify these findings on field basis. Periodic soil samples will be taken from asparagus fields by the Pest Management Field Assistants and analyzed for the presence of plant parasitic nematodes at the Michigan State University Nematode Diagnostic Service Laboratory.

ANNUAL WEEDS

Annual weeds complete their life cycle from seed to seed in one season. Most of the problem annual weeds in asparagus germinate during the spring and summer. They may be divided into two classes, grasses or broadleaved weeds. Grasses are difficult to tell apart until they reach the flowering stage. When in the seedling stage, grasses may be identified by their leaf characteristics, in particular by that part of the leaf called the ligule. The major parts of grass leaves:

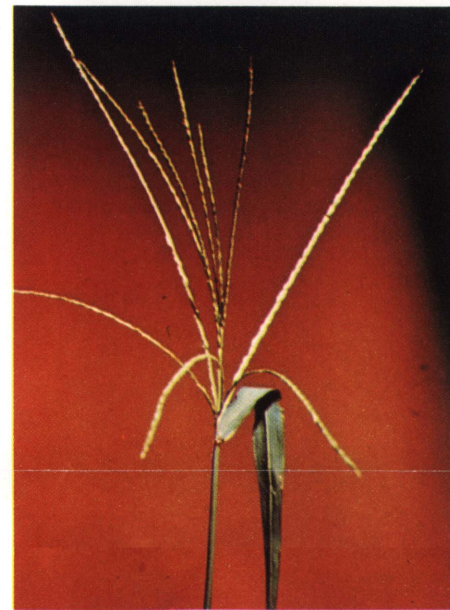


Crabgrass



(FIG. 381)

There are two types of crabgrass found in Michigan asparagus fields. Smooth crabgrass (above, left) usually has none or only a few hairs on the leaf blades. Large or hairy crabgrass (right) has many hairs on the leaf blade and sheath. Both plants have a membrane-like ligule. This grass usually lays close to the ground.



(FIG. 382)

The flower heads of crabgrass are easily distinguished from other grasses. They are divided into 3 to 10 segments in a finger-like arrangement. Crabgrass does not germinate until soils have warmed up in early June.

Barnyardgrass



(FIG. 391)

(FIG. 392)

(Left) Seedlings of barnyardgrass can easily be distinguished from other grasses because their leaves have no ligules and both the leaf blades and sheaths have no hairs. This grass grows upright, but may spread if not crowded.

(Right) The seedhead of barnyardgrass is also easily recognized. It is a branched panicle and the flowers are covered with short stiff bristles. This seedhead may be green or purplish in color.



(FIG. 401)

(FIG. 402)

Yellow Foxtail



(FIG. 411)

(FIG. 412)

(Left) Yellow foxtail is one of several problem weeds in the foxtail family. The ligule is a fringe of very short hairs. A tuft of long hair at the base of the leaf blade characterizes this species. The remainder of the leaf blade is smooth or sparsely hairy. The leaves are often twisted in appearance.

(Right) The foxtails were obviously named for the appearance of their seedheads. The plants grow 1 to 2 feet tall and may produce several seedheads.

Field Sandbur



(FIG. 421)

Sandburs are one of the most unpleasant weeds in asparagus fields because of the sharp, spiny burs which cling to clothing and may puncture the skin. Sandburs germinate during the harvest period and produce light-green, smooth leaves. The ligule is a conspicuous ring of white hairs. The leaves are sharp pointed and may become twisted as they get older. They are most common on sandy fields close to lake Michigan.

Stinkgrass



(FIG. 431)

This grass is most prevalent in Southwestern Michigan. The leaves are narrower than any of the other grasses commonly found in asparagus. The ligule is a fringe of hairs. Leaf blades are smooth on the underside and may have a few hairs on the upper side. The seedheads are branched panicles with flat, gray-green-to-purple spikelets.

Redroot Pigweed



(FIG. 441)

Pigweed is a broadleaved annual that is common in asparagus fields. Seedlings may be identified by the reddish stem, root, and new leaves. Plants may grow up to 6 feet tall and use large amounts of nutrients and water.

Common Lambsquarters



(FIG. 451)

This broadleaved annual can be recognized by its distinct gray-green color and mealy-coated leaves. Like pigweed, it is a severe competitor with crops. It often grows to a height of 3 to 4 feet.

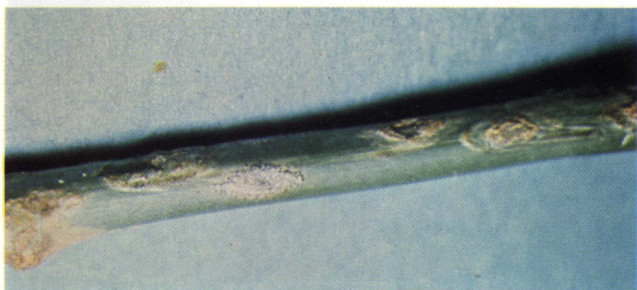


(Left) This weed has become much more prevalent in no-tillage fields. Seedlings can be identified by the ligule which is a dense fringe of short hairs. The leaf blades are smooth to sparsely hairy. This grass may reach a height of 4 feet with coarse stems.

(Right) The seedhead of fall panicum is a fine-branched panicle, usually purplish in color. This weed germinates in mid-season and produces seed in the fall. It is a vigorous competitor with asparagus fern growth.

Disease Pests, Continued

Rust, Continued from Cover



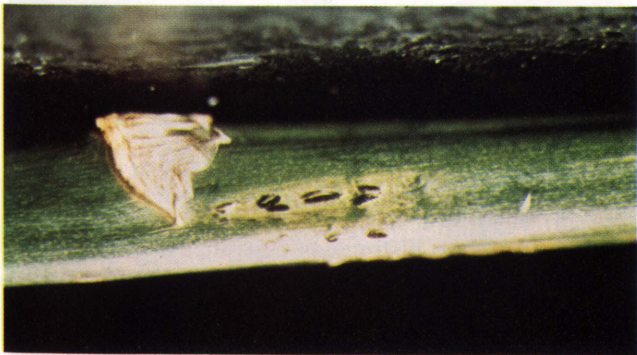
(FIG. 212)

Pycnial lesions are more difficult to distinguish. They may be confused with lesions of other kinds. The pycnial lesions are generally from $\frac{1}{4}$ to $\frac{1}{2}$ inch long, light brown to gray in color, bordered by a darkened ring, and contain small black bodies (pycnia). These lesions always appear with the aecial lesions, Fig. 211, sometimes in the same location on the stalk.



(FIG. 213)

The uredial stage consists of reddish brown spores that erupt from beneath the host epidermis. The uredial stage can become visibly very noticeable and is the stage that does the most damage to the asparagus plant. Uredia may be formed as early as June and as late as September.



(FIG. 214)

Those uredia that develop in late summer give rise to the black telial (overwintering) stage. Both the uredial and telial stages may be seen in the same lesion in August - September.

Fusarium Root Rot



(FIG. 221)

Plants affected with root rot may become wilted, dwarfed, yellowish to a dingy brown in color. Internal browning may also occur. On mature plants, a distinct wilt occurs which is most noticeable in the hot months of July and August. Destruction can become widespread, but generally affected plants are scattered among healthy plants.



(FIG. 222)

Affected plants exhibit a dark or sometimes reddish color on the outer part of the root which finally involves the entire crown as well as the below-ground stem. Rotted storage roots become hollow and limp. The entire crown may eventually die.

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