

## ASPARAGUS PHYTOPHTHORA CROWN, ROOT, AND SPEAR ROT

Phytophthora rot of asparagus, caused by the oomycet *Phytophthora asparagi*, was first reported in California in 1938. More information about this disease was reported in 1980s, when severe infection of spears occurred and intensive studies of the disease were conducted. Phytophthora rot can shorten lifespan of production fields by 50%. The damage caused by Phytophthora rot varies from year to year and site to site, and depends on rainfall and soil drainage.



Figure 1. Death of asparagus plants caused by *Phytophthora asparagi* in a low-area of the field (picture by Michigan State University).

### Symptoms

Infected plants show yellowing ferns. Plant death occurs in wet conditions, mostly in lower areas of the field (Figure 1). Infected crowns and roots show water-soaked lesions and/or shriveling, but the tissue remains firm at the lesion site (Figure 2). Crown death occurs in nursery and commercial fields. Spear rot begins as soft, watersoaked lesions and/or shriveling, occurring slightly above or below the soil line. Continued growth of infected spears result in shepherd's crook of spears and fern (Figure 3).



Figure 2. Infected and shriveling roots of an asparagus plant caused by *Phytophthora asparagi* (picture by Michigan State University).

### Disease Cycle

*Phytophthora asparagi* overwinters as long-lived spores (oospores) in the soil. In the presence of asparagus plant, oospores

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germinate and infect asparagus roots and crowns. The pathogen produces sporangia on infected tissues. In the presence of water, sporangia release swimming spores (zoospores). Rain splashes zoospores onto the spears, where they encyst and infect the spear. Production of sporangia and zoospores, and infection of plants, occur throughout the season.

## Disease Management

The following practices are recommended for reducing the incidence of *Phytophthora* infection of asparagus.

- Cultural practices: poorly drained soils, planting at low areas, and excessive irrigation should be avoided. For establishing successful production of asparagus, blemish-free, vigor crowns, with proper transplanting practices, should be considered. To maintain vigor of the plants, long-harvest periods should be avoided.



*Figure 3. Shepherd's crook of asparagus spears caused by Phytophthora asparagi (picture by Michigan State University).*

- Chemical management: mefenoxam/metalaxyl products (MetaStar, Ridomil Gold, Ultra Flourish, and Xyler); Orondis Gold; and phosphorus acid products (Aliette, Phostrol, ProPhyt, Rampart) are recommended for managing *Phytophthora* rot of asparagus in the Midwest states. Always check the label for the updates.