

Early blight on tomato

Alternaria solani

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Alternaria solani is a seedborne disease that has been frequently found in tomato seed production areas in Indonesia.

Symptoms and damage

On seedlings

- Initially stem lesions are found, dark and slightly sunken
- If they enlarge, lesions with concentric rings are formed
- Infected seedlings planted in the field are often girdled and will die (collar rot)
- If plants not die, infections will result in yield reductions

On mature plants

- Symptoms are first observed as small (ca. 3mm) round, dark lesions on older foliage. Spots on stems and petioles are elliptical (Fig. 1)
- There is often a narrow, yellow halo around the spot (Fig. 2)
- If spots enlarge and exceed a diameter of 6 mm concentric rings appear in the spots
- If spots become numerous, the plants can defoliate, resulting in sunscald of fruit
- If spots develop on the primary leaf veins, the area beyond the spot will die and become brown

On fruits

- symptom development can occur during all stages of fruit setting
- Symptoms occur through the calyx or stem attachment
- Brown dark lesions grow and form concentric rings (Fig. 3)
- Masses of black spores are produced in the rings
- Diseased areas appear leathery
- Infected fruits frequently drop

Disease expression is favored by a high humidity and extended periods of leaf wetness from frequent rain, overhead irrigation, or dews, and by alternating wet and dry conditions. Stressed, weakened and wounded plants are more susceptible, e.g. when infected by nematodes or during fruiting or at a low nitrogen fertility. The minimum, optimum and maximum temperatures for disease development are 10, 22.5 and 30 °C. Disease expression is a

avored on susceptible cultivars and at a high inoculum density. Symptoms are often visible about 10 days after infection.

Survival and dissemination

- *A. solani* can survive as mycelium or as spores (conidia or chlamydospores) free or on infected debris in soil for long periods
- It also survives on (debris of) solanaceous crops and weeds, including potato and egg plant
- *A. solani* survives for long periods in seed (≥ 10 year)
- Spores are released at dry weather conditions and are disseminated by wind, rain, irrigation water or insects. They germinate and infect leaves after two hours when leaves are wet.

Prevention and cure

Cultural practices

- *Produce seed* in arid or semi-arid areas or in the dry season
- *Surround seed production fields* with grass land or other non hosts
- A three- or four years *rotation* with crops known as non-hosts such as grains, corn or legumes is encouraged.
- Use *wind breaks* of grasses or trees
- *Avoid* the use of *overhead irrigation*; drip irrigation is preferred. If used, allow crops to dry quickly
- *Destroy or remove tomato plants and crop debris*. Compost debris well and don't use it on tomato.
- Destroy solanaceous weeds, or other plants that can serve as a host
- Increase the organic matter in soil, eg. by old manure. It will help to eliminate the inoculum
- *Maintain fertility*. Nitrogen and phosphorus deficiency can increase susceptibility to early blight.
- Use certified *pathogen-free seed* and disease-free transplants
- Use disease-free certified (disinfected) seed
- Use tolerant cultivars

Chemical control

- When symptoms appear in the field apply fungicides (carbamates, mancozeb (Dithane), maneb, captan, clorotalonil (Bravo), cuprics, Quadris (azoxystrobin)) Follow instructions provided by the manufacturer. Realize that irrigation and rainfall will wash off the fungicide.

Pictures



Fig. 1 Elliptical spots on



Fig. 2. Leaf spots with a narrow yellow halo



Fig. 3. Brown lesions with concentric rings

Source: www.nysaes.cornell.edu/ent/hortcrops/english/eblight.html