

## **Purple blotch on Allium**

*Alternaria porri*

J.M. van der Wolf & A.S. Duriat

*Plant Research International, P.O. Box 16, 6700 AA Wageningen, tel. +31.317.476024, Fax +31.317.423110, E-mail [Jan.vanderWolf@wur.nl](mailto:Jan.vanderWolf@wur.nl) IVEGRI, Jl. Tangkuban Perahu 517, Lembang, Bandung 40391, Indonesia, Fax +62.22.2786245, [Duriatas@plaza.com](mailto:Duriatas@plaza.com)*

Purple blotch on *Allium* species is caused by the seedborne fungus *Alternaria porri*. It follows often injury produced by downy mildew and botrytis leaf blight infections. It occurs throughout the world and is frequently found in Indonesia, both on seed as in the field. Damage varies widely with locality and season.

### **Symptoms and damage**

Symptoms can appear on leaves, fruits, stems and petioles.

On leaves, flower stalks and floral parts

- Initially small, whitish sunken lesions appear
- Oval spots turn brown, enlarge and become water-soaked, zoned and purplish. The lesion borders are reddish and surrounded by a yellow halo (Fig. 1)
- If conditions are favorable for disease development, lesions rapidly girdle leaves and seed stems, which may turn yellow, collapse and die within several weeks after first symptoms appear (Fig. 2)
- At moist conditions, diseased tissue is covered with a dense dark purplish black mold of conidia (typical long tailed multicelled spores, 50-100 x 14-25 µm; Fig. 3)

On onion bulbs infected at harvest or in storage

- Tissue becomes first semiwatery and deep yellow
- It gradually turns into a wine-red and finally into darkbrown to black neckrot
- Often only one or two outer scales are affected. Diseased tissue dries out and becomes papery

Disease expression is favored by humid (90% RH) and warm conditions (26 °C) and in particular if rain showers (removing sporulation inhibitors) are followed by sunshine (inducing sporulation) and dry weather (conidial dissemination)

### **Survival and dissemination**

- Conidia are spread by air, rain splashes, tools etc.
- Germination can occur when tissue is covered by a film of water for at least 2 h

- First symptoms can appear 1- 4 days after penetration
- A new generation of conidia can be produced every 5 days in warm, moist weather
- Free moisture (rain, fog, dew) is required for infection and spore production.
- Mycelial growth occurs over a temperature range of 6-34 oC, with an optimum of 26 oC at a RH of 90%
- the fungus maintains in soil in infected plant debris (>1 year)

### ***Prevention and cure***

#### Cultural practices

- Produce seed in arid or semi-arid areas or in the dry season and isolated from other allium crops
- Use certified pathogen-free seed and plant bulbs, and disease-free transplants
- Grow in well-drained soil, in places where air circulation is good
- Avoid the use of overhead irrigation; drip irrigation is preferred. If used, allow crops to dry quickly
- Lower the density of transplanted crops
- Treat seed with hot water or a fungicide before planting
- Avoid working around plants when the foliage is wet
- Eradicate weeds, in particular members of the onion family that can host *A. porri*
- Control insects, to prevent wounding
- Strive to maintain a balanced fertility. A high nitrogen rate will increase the prevalence, whereas high rates of calcium and potassium seems to reduce the infection rate.
- Eliminate allium cull piles and burn or deeply plow plant debris. Practice crop rotation (allium species only every 4 years)
- Use tolerant cultivars if possible (none of the cultivars is really resistant)

#### Chemical control

Field sprays with dithiocarbamate fungicides, particularly mancozeb, iprodione and chlorothalonil have been reported to be effective.



Fig. 1. Zoned lesions on Allium leaves caused by *Alternaria porri*



Fig. 2. Collapsed leaves due to infections with *Alternaria porri*



Fig. 3. Multicelled conidia of *Alternaria porri*