

Symptoms and Management of Purple blotch disease of Onion and Garlic

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Purple blotch disease of *Onion and Garlic* crops caused by *Alternaria porri* has remained a major concern in agriculture for both farmers and research fraternity as it severely damages the crops and drastically reduces the yield. Medicinal values of onion and garlic are innumerable and is one of the ancient crops being utilized in medicine. Extract of onion is used as antibacterial, antifungal, anti-helmenthic, anti-inflammatory, anti-septic and anti-spasmodic. The vegetative growth of the crop is supported by lower temperature and short photoperiod whereas bulb development requires higher temperature with longer photoperiod. Maharashtra and Karnataka are the major onion growing states in India which contributes 55 per cent of total area of country whereas Gujarat, Rajasthan, Odisha, U.P. and Maharashtra are major garlic growing states in India. The disease usually affects the leaves and bulbs of a plant, and reducing their yield up to 97%. Purple blotch disease is severe in high humidity and moderate temperature of 80–90% and 25–30°C, respectively (Dar *et al.*, 2020).

Symptoms

Disease typically appears as tiny, sunken, and pale specks on leaves and flower stalks. The centre of the flecks turned purple and the margins take a shade of purple or red which is surrounded by yellow halo becoming eye shaped under moist condition (Fig.-1). This extends upwards and downwards in leaves. The surface of the spots is covered with brown or almost black sporulation of the fungus. As the disease advances, the leaves shrivel, turn yellow and then they dry up. Lesions may girdle leaves and stalks causing them to drop after 2-3 weeks (Fig.-2). Severely infected foliage causes dieback. Symptoms are very prominent on the inflorescence stalks. The spot on seed stalk (scapes) are elongated and enlarged. In severe cases stalks breakdown from the point of spots, as a result, seed either do not develop or are shriveled. Bulbs can be infected through neck wounds after harvest causing storage rot.



Fig.-2

Symptoms appear as a dark yellow to wine red spongy rot of outer or inner scales of bulbs and bulbs tissues eventually become papery.

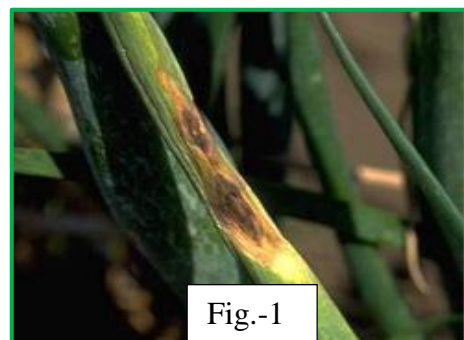


Fig.-1

Cause condition for the development of disease

The disease is caused by the fungus *Alternaria porri*. The mycelium of the fungus remains alive in diseased crop debris from one season to the next. Chlamyospores are also formed and serve as survival structure. Bulbs can also carry the fungus. The seed-born inoculums are likely to lose viability after a few months of storage. Temperature, humidity and host nutrition play an important role in infection. The fungus requires rain and persistent dew for sporulation and infection. The optimum temperature for sporulation and infection is about 25°C. Spore germination on leaves decreases with increase in nitrogen dose to the host and that is reverse for potassium. Secondary infection takes place in the field through conidia that spread through air and water splashes.

Management

- Use healthy seeds.
- Crop rotation of 2-3 years with non related crops should be followed.
- Seed should be treated with Thiram @ 4 g/kg of seed.
- Three Spray of Mancozeb @ 0.25%, or Difenaconazole @ (0.025%) or Tebuconazole @ (0.025%) at fifteen days interval starting from one month after transplanting.

References

1. Dar, A. A., Sharma, S., Mahajan, R., Mushtaq, M., Salathia, A., Ahamad, S. and Sharma, J. P. (2020). Overview of purple blotch disease and understanding its management through chemical, biological and genetic approaches. *Journal of Integrative Agriculture*. 19(12): 3013–3024.