

SNAPDRAGON DISEASES

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Snapdragons are susceptible to many diseases. Some attack the stems, leaves and flowers while others attack the root systems. The following is a brief description of some diseases that may attack snapdragons:

ANTHRACNOSE. This fungus, Colletotrichum antirrhini, attacks the stems and leaves of snapdragons. In the greenhouse it is most destructive in the fall and spring because of condensation caused by wide or rapid temperature fluctuations. It may be found outside during August and September.

Anthracnose causes numerous elliptical, sunken spots on the stems. When the cankers first appear, they are dirty white with a narrow, brown or reddish-brown border. Later, black dots appear in the center of the spots. These are the fruiting structures of the fungus. The canker or cankers may enlarge, coalesce and girdle the stem. This kills the branch or entire plant depending upon its location.

The leaf spots are circular and yellowish-green in color. These rapidly become dirty white, with a definite outline, and have a narrow brown border.

Control: Heat and ventilate greenhouses to reduce humidity. Avoid wetting the foliage when watering. Air movement provided by fans (such as horizontal air flow) will help keep foliage dry. Spray with maneb or mancozeb on a 7-10 day schedule if the disease appears.

BOTRYTIS. This disease appears when the flowers are ready to harvest. The fungus, Botrytis cinerea, causes a wilting of the flower spikes. Tan-colored areas develop on the stem, enlarge rapidly, and girdle the stem killing the entire spike.

Botrytis can also attack flowers and seedlings. The infected areas may produce masses of grayish colored spores which are spread throughout the greenhouse by air currents.

Botrytis attacks snapdragons through wounds made during cutting, especially on plants weakened by other diseases or insects.

Control: Sanitation is important in controlling this disease. Remove all dead or dying plant parts from on or under the branches. This will reduce the inoculum supply. Heat and ventilate to reduce humidity as Botrytis spores require moisture to germinate. Spray with benomyl or Daconil 2787 weekly, especially during periods of cloudy, rainy weather.

DOWNY MILDEW. This fungus usually attacks snapdragon seedlings. It causes a downward curling and a reduction in the size of the leaves. The infected leaves are paler than normal and the lower surface is covered by a white to bluish-purple, downy fungus growth. The fungus Peronospora antirrhini, may infect the tip of the seedling and progress down the stem killing the plant down to the soil surface.

The growing point is usually attacked on large plants. This causes a stunting and lack of flowers.

Control: This fungus is favored by moisture and low temperatures. Heat and ventilate properly to

reduce humidity. Keep the night temperature above 52°F. Avoid wetting the foliage when watering. Spray foliage, completely covering upper and lower surfaces with mancozeb weekly.

PHYLLOSTICTA LEAFSPOT. Phyllosticta antirrhini attacks leaves, petioles and stems of snapdragons. Leaf symptoms appear as circular, dark-colored spots which gradually enlarge and become cream colored to pale brown. Later the spots become zonate or show a series of concentric rings with many black dots on the upper surface of the leaf. Spots are most common near the tips and edges.

Stems may exhibit two types of symptoms. On young shoots, a water-soaked area suddenly appears several inches back of the tip. In a few days the infected tissue shows a dark-brown rot which quickly girdles the stem. This causes a wilting and death of infected shoots. At other times, dark green, water-soaked spots are formed and the center of the spot becomes ashy white, cracked and covered with dark fruiting structures of the fungus.

Control: Sanitation is very important in the control of this disease as the spores can be carried over in infested soil and plant debris. Remove dead or dying plants as soon as they are found and clean up after every crop. Preventative sprays of benomy or Daconil 2787 on a 7-10 day schedule should help. Heat and ventilate properly as infection occurs under periods of high humidity and high temperature.

POWDERY MILDEW. This disease, caused by Oidium sp., is fairly easy to recognize by the powdery white fungus growth on the leaves (figure 1). It may be on both surfaces but predominately



Figure 1. Spores of powdery mildew nearly cover these snapdragon leaves.

on the upper. The disease generally starts on the lower leaves but may become severe on the upper foliage. Stem and flower infections can occur.

Control: Heat and ventilate properly to keep plant parts dry. Sprays of benomyl or Karathane (dinocap) every 7-10 days will help if this disease becomes a problem.

RUST. Snapdragon rust, Puccinia antirrhini, is one of the easiest diseases to recognize. It just appears as small, brown blisters surrounded by a yellow halo. The blisters increase in size and darken. In 2-3 days the epidermis breaks revealing a mass of brown spores, mainly on the underside of the leaf.

The reddish-brown, powdery pustules may also occur on the stems and seed pods. Severely

attacked plants may have a scorched or brown appearance (figure 2).

Control: Keep the foliage dry and the humidity low. Also, provide air circulation around the plants by proper spacing and the use of fans. Preventative sprays of mancozeb or maneb every 7-10 days will keep this disease under control.

DAMPING-OFF. This usually occurs in the seedling flat or shortly after transplanting. First symptoms would be a rotting off and toppling of emerged seedlings. A reduced number of emerging

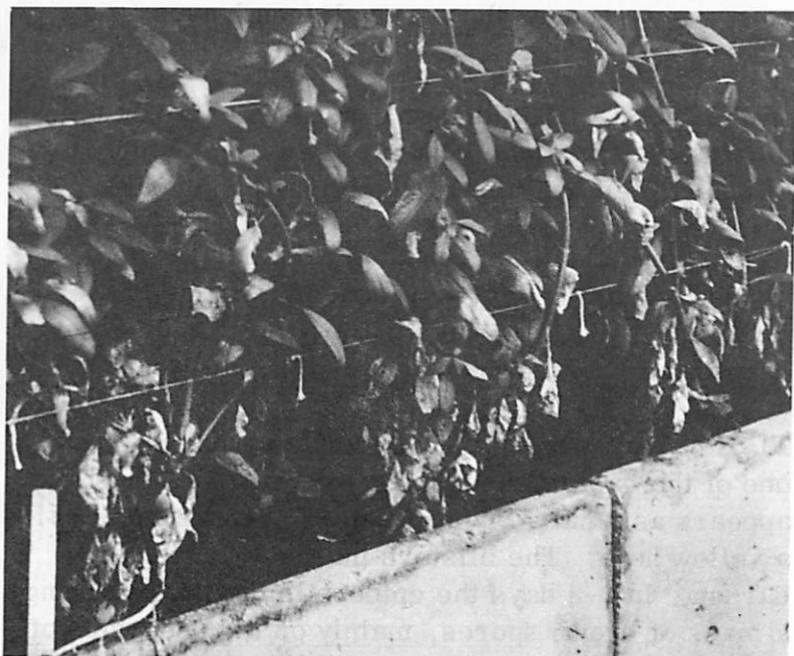


Figure 2. Snapdragon rust may occur high on the plant but here the infection is low causing a scorched appearance.

seedlings might also be attributed to damping-off organisms. The fungi involved would be *Pythium*, *Phytophthora*, *Rhizoctonia* and even *Fusarium*, the two most common being *Rhizoctonia* and *Pythium*.

COLLAR ROT. This is caused by *Rhizoctonia*. It is more prevalent during periods of high temperatures with abundant moisture. The fungus attacks the stem at the soil surface. This quickly girdles the stem resulting in wilting and death of the plant. This may be confused with *Botrytis* stem cankers.

ROOT ROT. This can be caused by *Pythium* sp. or *Phytophthora* sp. They seem to be more prevalent in heavy soils that do not drain properly. January and February is the ideal time for root rots to occur. Severe root rot can cause stunting, chlorosis, wilting and even death of a plant.

THIELAVIOPSIS. Black root rot, caused by *Thielaviopsis basicola*, attacks the roots and stem of snapdragons. The roots have elongated, sunken, black lesions that may girdle the root. In advanced stages the fungus may attack the stem causing a dry, blackened lesion to develop. Visual above-ground symptoms may be stunting, chlorosis, wilting or death of the plant.

Control of Damping Off, Collar Rot, Root Rot and Thielaviopsis: Use artificial mixes or soil treated with steam or chemicals for seedling production. Steam soil at 180°F for 30 minutes or use aerated steam at 140°F for 30 minutes. Chemicals such as methyl bromide or vapam can be used according to manufacturer's directions.

Fungicides that may be used for collar rot and *Thielaviopsis* are benomyl and Terraclor. For root

rots, use Dexon or Truban. Be sure to follow manufacturer's directions when using these materials.

PHYSIOLOGICAL WILT. Snapdragons have been known to wilt during periods of bright weather for no apparent reason (figure 3). This has been attributed to insufficient water, a temporary water deficit, root damage from high soluble salts, girdling of the stem by Botrytis or Rhizoctonia, roots injured by Pythium and infection by Verticillium. In 1960 Cornell University did an in-depth study of this problem. After all experiments were completed, they felt that the wilting was due to infection from Pythium. This soil-borne pathogen is extremely difficult to eliminate and keep out of greenhouse benches.



Figure 3. Physiological wilt is not really physiological, usually being caused by non-lethal infections of roots by Pythium.