Pinks

FACT SHEET 31/96

Common Diseases of Hybrid Pinks

Pinks are susceptible to more than 20 diseases, most of them fungal, but fortunately only a few are regularly troublesome. Important in recent seasons there have been fusarium wilt, fusarium stub rot, ring spot, rust and leaf rot. These diseases are described below.

Figure 1. Stub Rot

STUB ROT

Caused by *Fusarium* spp.

Stub rot may be caused by several *Fusarium* species, usually *Fusarium culmorum*. It is most severe in wet conditions. The causal fungus infect the base of newly planted cuttings and stem wounds of mature plants. Natural growth cracks and stem wounds left after flower picking or stopping provide ample infection sites for this opportunistic wound pathogen. Infection results in a loss of leaf colour (greying) of one or more branches (Figure 1). The causal fungus is sometimes visible as an orange-coloured growth at the base of affected shoots. Stub rot can kill side shoots and eventually the whole plant.

The disease differs from wilt in that it tends to be worse in the autumn rather than the summer.

High volume sprays of fungicides based on captan, carbendazim and maneb have been shown to limit spread of the disease.

WILT

Caused by *Fusarium oxysporum* f. sp. *dianthi*

Wilt in hybrid pinks can be very damaging. The fungus infects plants through the roots and invades the water-conducting tissues; infected plants make slow growth, wilt and eventually die (Figure 2).

Infected cuttings can be a source of wilt, and symptoms may not show until several weeks after planting; cuttings should therefore be obtained from disease-free stocks of a reliable source. Fusarium can survive in the soil for several years after an infected crop. Recent research has shown that even at a depth of 60 cm, soil-borne inoculum of *F. oxysporum* f. sp. *dianthi* can still cause wilt.

The disease is most severe when the root-zone temperature is 25-26°C. This temperature influence helps to explain why the disease is generally more troublesome in protected crops than outdoors. However, it can be a problem in field crops in hot summers such as that of 1995.

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The most effective means of controlling wilt is to sterilise the soil. Drenching with an MBC fungicide (e.g. Bavistin DF) is also useful, either as a spot treatment, or applied on a precautionary basis soon after planting according to the disease situation.

Chemical disinfectants for treating surfaces contaminated with *F. oxysporum* f. sp. *dianthi*, such as capillary matting used for production of pot dianthus, were recently evaluated in HDC Project HNS 63 (See HDC Factsheet 36/96, Disinfecting against Fusarium). Several products gave a good reduction but none eliminated the pathogen.

The fungus causing fusarium wilt of hybrid pinks will also affect other dianthus species (e.g. carnations), but unrelated flower crops (e.g. asters, chrysanthemums) are not affected.

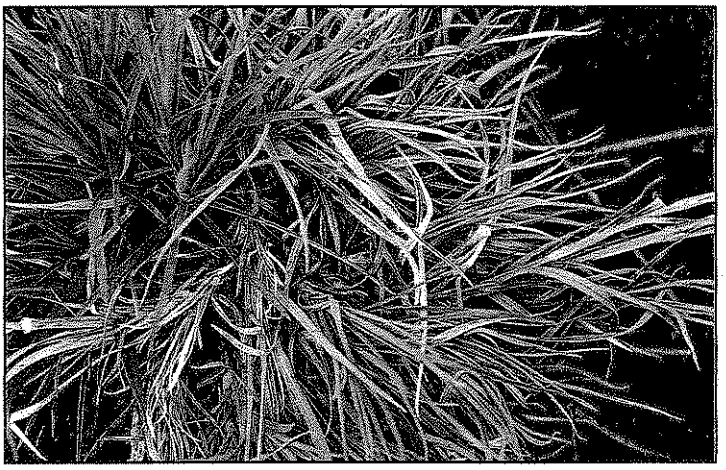

Figure 2. Fusarium wilt causes loss of leaf colour.

RING SPOT

Caused by *Mycosphaerella dianthi*

Ring spot causes tan-coloured spots, usually with a purple margin, on both leaves and flower buds (Figures 3 and 4).

It is most common in the winter months and in unheated protected crops where condensation conditions occur. It can spread very rapidly through a crop when conditions are favourable.

An HDC-funded experiment on control of ring spot in protected crops (PC 87) identified several fungicides which were effective in controlling ring spot and a significant improvement on the established treatments (chlorothalonil-based products, dichlofluanid and mancozeb). An Off-Label Approval is now available for the use of Plover (difenoconzole) on protected hybrid pinks grown in the ground and in pots, based on the results of this work. The use of low level irrigation and good ventilation will help to control ring spot in protected crops. Note that the fungus causing ring spot on hybrid pinks also affects sweet william, where it causes similar symptoms.

Figure 3. Ring spot on flower buds; a common problem in protected crops when condensation occurs

Figure 4. Ring spot symptoms on leaves

Figure 5. Rust

Figure 6. Leaf rot on the flower bud and leaf axil

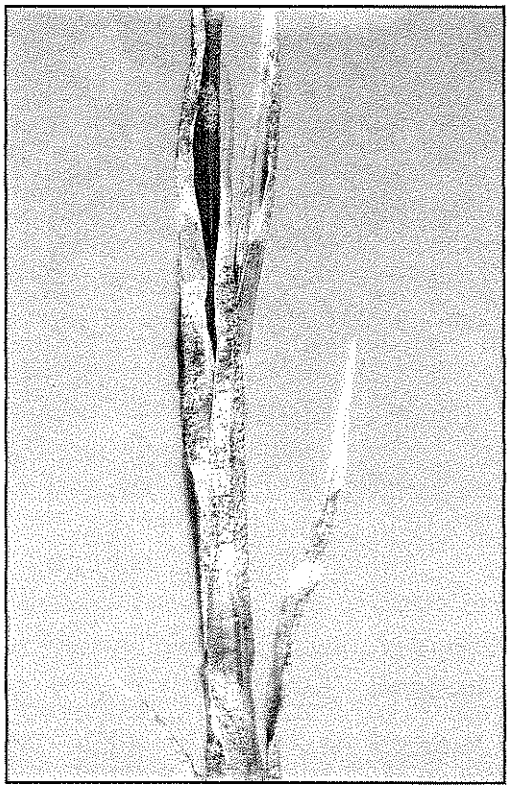

Figure 7. Leaf rot

RUST

Caused by *Uromyces dianthi*

Rust is a fairly common problem on pinks, causing unsightly brown blisters on the leaves. These eventually rupture releasing rusty-brown coloured spores (Figure 5).

It is most troublesome in old houses under leaky ventilators or gutters especially during the autumn and winter, and in field crops in mild, wet weather. Free water is needed on the leaf surface for 24 hours for spores to germinate, and infection is favoured at temperatures of 10-15°C. The variety Haytor White is particularly susceptible.

HDC-funded project BOF 33 (1995-1997) is investigating fungicides for rust control in three outdoor flower crops. A first experiment in 1995 investigated protective sprays for control of sweet william rust, caused by *Puccinia arenariae.* All the fungicides tested gave good control when used as a programme of sprays, although some treatments resulted in significant and detrimental shortening of flower stem length. A second experiment in a field crop of hybrid pinks cv. Haytor White is investigating the effectiveness of different fungicides after rust is just established in a crop.

LEAF ROT

Caused by *Heteropatella valtellinensis*

Leaf rot was a common and damaging disease in the 1970s, particularly on the variety Doris and its sports, but then it virtually disappeared for many years and has only recurred in the late 1980s. It caused serious damage to field crops in Cornwall, and also to carnations on Jersey, in 1994 and 1995. It attacks all green parts of the plant producing dark green, water-soaked areas which turn pale brown when the fungus starts producing spores. These are spread by water splash during wet and windy weather (Figure 6). Infection at the leaf axis is particularly common (Figure 7).

The disease is favoured by wet conditions and causes most damage when growth is slow.

High volume sprays of an MBC fungicide or captan should limit spread.

VIRUS DISEASES

Several virus diseases affect pinks, including carnation mottle, carnation vein mottle, carnation necrotic fleck and carnation ring spot. Carnation mottle and carnation ring spot are spread by handling plants, while the other two are transmitted by aphids.

The effect of virus infection on growth and performance of pinks is not clear, and some viruses may be found in both good and poor plants.

Carnation necrotic fleck is believed to be the most damaging, causing purplish spots and streaks on leaves (Figure 8), leaf death and stunted plant growth.

Good control of aphids will reduce the risk of infection by carnation vein mottle and carnation necrotic fleck viruses.

FUNGICIDES

Although there are no fungicides with specific label recommendations for control of diseases on pinks, various fungicide treatments are permitted, at growers own risk, under the long-term extension of use arrangements for use of pesticides on minor crops. Recent HDC-funded trials have identified new fungicides, developed primarily for the arable sector, which have potential for effective use on hybrid pinks. Work to improve rust control is in progress. With correct disease identification and rapid adoption of appropriate control measures, diseases should not be a limiting factor in the production of hybrid pinks as a cut flower crop.

Full results of the HDC-funded projects briefly described here (PC 87, BOF 33 and HNS 63) are available to levy payers from the Horticultural Development Council.

Figure 8. Carnation necrotic fleck virus causes purplish spots and streaks on leaves. It is transmitted by aphids.

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