



## Chrysanthemum stunt

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### The causal organism

The chrysanthemum stunt viroid (CSV) is the causal organism of a disease commonly known as chrysanthemum stunt. Viroids are extremely small pieces of RNA (ribonucleic acid). They are known to be highly contagious in nature. The chrysanthemum stunt viroid can cause severe damage to chrysanthemum crops if it reaches epidemic proportions.

### Symptoms of chrysanthemum stunt

The symptoms of stunt disease may include the following:

- The chrysanthemum plants are severely stunted; the mature plant is half to two-thirds of its normal size.
- Flowers are smaller than normal and they may have a rolled-in appearance.
- Buds form and flowers open from seven to 10 days before those on healthy chrysanthemum plants.
- Young foliage is a paler green colour and tends to be upright instead of curving away from the plant stems.
- Cuttings that are infected by CSV root poorly and may take up to five days longer than normal to root.
- When the light intensity and temperature are high some chrysanthemum cultivars may exhibit yellow leaf spotting, which is termed "measles". Little is known about the susceptibility of different varieties and how severely the symptoms are expressed under various environmental conditions.

### How chrysanthemum stunt is transferred

CSV is highly contagious and vegetative propagation is an ideal avenue for the spread of this disease. It is important for growers to understand that CSV is primarily spread from infected plants to healthy plants by the sap. Roots or leaves of an infected plant may rub against a healthy plant and subsequently infect it.

### Control measures

Contaminated cutting tools, workers' clothes and hands may transfer the disease to healthy stock. Workers are advised to wash their hands in soap and water and wash cutting tools in a solution of 1% sodium hypochlorite.

The recommendation for control of stunt disease in South Africa is use of a 20% household bleach solution containing 1% sodium hypochlorite, as a disinfectant for cutting tools. Growers prevent the corrosion action of the bleach on tools by dipping them in mixture of vinegar, water and emulsifiable oil.

If the staff are moving from areas where CSV is problem to healthy chrysanthemum plants, clothing and shoes should also be changed. It is desirable that staff work in "clean" areas first and progress to infected areas. Remember, other chrysanthemum plants may be symptomless disease carriers.

Plants infected by CSV should be rogued and burnt along with adjacent plants. After removal of plant debris, it is advisable that the soil be fumigated with methyl bromide.

Cuttings must not be taken from chrysanthemums infected by CSV as the cuttings will also be infected and the resulting flowers may be unsaleable. Where feasible, new chrysanthemum crops should be planted in fresh soil, where chrysanthemums have never been grown. New, healthy cuttings produced from stock that have been pathogen-tested for virus and viroid infection should be purchased.

Provided the correct hygiene procedures are followed and pathogen-tested stock is used, CSV can be controlled.

For effective pest and disease control, correct diagnosis is essential. A commercial diagnostic service is available at the Institute for Horticultural Development. For further information, contact the Diagnostic Service. ph: (039) 210-9222 or fax (039) 800 3521.

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