Marginal Burning of Carnation Petals

by
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The petal edge burning problem on carnation is one on which much observation but little research has been done. The many observations and tests made by growers and handlers of these flowers indicate a simple relationship of water loss in excess of water intake. However, the many indirect factors which may be involved lead to a conclusion that the overall problem is more complicated.

There are two kinds of marginal petal burn. One is a bleaching of the petal edges, often apparent when flowers are still in the bud stage. This type of "burn" is caused by intense light or solar heat. It is most troublesome on dark colored varieties and may or may not be associated with the other type. The most serious type of petal edge burning is characterized by a blackening and curling of the petal margins. Tissue appears seared and dry. Although it may appear on the flowers before cutting, it usually develops further in the 12 hours or less following cutting. Flowers often burn seriously after cutting even though no petal burn was visible at the time the flowers were cut. There is also a blotchy intermarginal fading of the petals of dark colored varieties which is caused by the absorption of excess solar heat. Flowers left on the plants in an open stage during warm, bright weather will usually show some of this color breaking.

Historical

Marginal burning of the petals is easily produced on any carnation variety by simply placing slightly wilted flowers in cold water and setting them in a draft of dry air.

Bleaching and burning of carnation petals was mentioned as one serious problem in Colorado by J. A. Valentine prior to 1915. The first William Sim planted in Colorado around 1947 was almost outlawed because of petal edge burning. Tom Knipe, a red variety of the 1930's and King Cardinal were never grown in Colorado because of petal edge burn. Tom Knipe burned so badly in all sections of the country that it lasted only a few years. The idea advanced at that time was to grow this variety with low nitrates to decrease troubles from burning.

What we know or think we know about petal burning

1. Some growers have more trouble with this problem than others.
2. The problem is more serious in winter.
3. Colored flowers, especially red and dark pink burn more easily. Burn on white and light pink is relatively uncommon.
4. The flowers from young plants tend to burn more easily.
5. High chlorides are associated with petal burning--especially when potash is low.
6. High rates of feeding with muriate of potash have caused serious petal burning problems.
7. Excess salinity or high specific salts in the soil or water supply may contribute to petal burning.
8. Root damage from fertilizer burn or overwatering is suspect.
9. Flowers produced at temperatures below optimum are suspect.
10. Flowers subjected to extreme water losses either before or after harvest.
11. Fumigation especially with parathion, burns flowers on the plant. Spraying with captan, vapatone, and several other materials can also burn petal edges.

Practices which have helped some growers are:

1. Tighter cutting of susceptible varieties
2. Placing the fresh cut flowers in warm water with a good detergent added. While flowers are in water they should be out of drafts, and preferably in a moist atmosphere.
3. Late afternoon cutting and placing flowers in water overnight before grading has reduced petal burn, and has allowed the grading out of flowers that were burned.
4. Handling the flowers in boxes with polyethylene overwrap before grading, after grading and while the flowers were in transit to the wholesale house has helped reduce the burning in another instance.

Questions to be answered

Considerable research is already under way at Colorado State University on this problem, while other facets will be started this summer and next fall. Some of the questions which need to be answered are:

What, if any, fertility levels influence petal burning?

To what extent does ventilation (amount and kind) affect burning?

What, if any, weather conditions accent this problem? It is felt that burning is more of a problem during or following warm, dry days in winter.

If low humidity is a cause of petal burning, what humidity is required to prevent it?

What should be the minimum humidity in a greenhouse? In a grading room?

What other precautions are necessary in handling or storage of carnation flowers that will help avoid petal edge burning?

You can see from these random thoughts that this problem is in for intensive investigation during the coming two years.

Your editor,
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