

Back to Basics — Fluorides and Plants

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Probably the greatest association the nonprofessional plant grower makes with fluorides is that of a tooth decay preventative. The addition of one part per million fluorine to drinking water supplies has become a highly controversial topic in many parts of the country.

Although fluoridated water may be beneficial in the prevention of tooth decay, it can be quite damaging to plants. It has been known for years that air-borne fluorides will damage plants; it has also been learned that soil- or water-borne fluorides are also damaging as well.

Fluorides added to water supplies that are used on plants or found naturally in a growing medium are absorbed by the roots of the plants. They are translocated through the vascular system of the plants to the leaves where they accumulate. When the build-up reaches a level of concentration greater than the plant can withstand, injury results. This injury is most often seen as a tip burn or marginal burning of the leaves and is often followed by the death of the entire leaf.

The Dutch have shown that tomatoes, cucumbers, chrysanthemums and carnations do not seem to be affected by low fluoride levels. Most of their experience has been gained at the commercial level of production.

The vase life of some cut flowers is generally reduced when fluoridated water is used. Roses, gladiolus, freesias, gerberas

and cut poinsettias are adversely affected.

Freesias and gladiolus are also adversely affected when irrigated with fluoridated waters. More recently workers in the United States have shown that irrigating certain members of the *Liliaceae* family with fluoridated water is damaging. As little as one-quarter part per million fluoride in the irrigation water will cause damage to *Cordylone*, *Dracaena*, *Chlorophytum*, *Zebrina*, *Calathea*, *Maranta*, *Pleomele*, and *Stromantha*. Easter lilies are also damaged by fluorides.

Other sources of fluorides, besides the water, are peat moss, perlite, and regular 20% superphosphate. Since all of these materials may be part of a potting medium, there is the possibility of fluoride damage to plants. Where city water supplies are fluoridated with 1 ppm fluorine, damage to sensitive plants may be expected.

Where these known conditions of fluoride damage may exist, there are some steps that can be taken to reduce the risk of injury to the plants.

1. Adjust the pH of the growing medium. Use ground limestone to raise the pH from 6.0 to 6.5. At this pH the calcium ties up the fluoride to make it unavailable for absorption by the plant's roots.
2. If possible, use growing media that contain low amounts of fluoride.
3. Do not water plants with water that contains fluorides. Use a water filter that has activated charcoal as its major component to filter the water used for irrigating plants.

4. If none of the above steps are possible, try to grow plants that are not sensitive to low levels of fluoride pollution.

Finally, do not assume that all tip burn or leaf scorch problems are due to excess fluorides. There are many other factors that may cause these conditions to develop.

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