COLORADO FLOWER GROWERS ASSOCIATION

Bulletin 331 | Edited by David E. Hartley | January 1978

AVOIDING GROWING MEDIA PROBLEMS

Kenneth L. Goldsberry

Since the article "The Herbicide Era" was published (Goldsberry 1977) it has been brought to our attention that many problems other than herbicide contamination can exist in a growing media. The percolation of water has been known to decrease and stop completely before a crop is harvested, resulting in poor aeration and over watering. The type of peat moss used has been a problem. Some growers have used muck, not peat and ruined their medium. The base soil has even been silt and some growers have received topsoil from low lying alkali fields.

How a grower handles his growing media may also lead to problems. Oversteaming, using steamed or fumigated media before it has been aerated, adding too much fertilizer to the preplant mix and even adding "hot" compost, have all contributed to the media dilemma of growers.

Most growers can overcome virtually all growing media problems by using common sense and some precautions. Most "seasoned" growers can produce plants in almost any type of media — from straight soil to the new peat-lite mixes. They must, however, recognize plant requirements and symptoms. Someone has said "One must learn how to ask the plants."

We still maintain that a growing media contamined with herbicides or plants exposed to weed-killers, are the growers' number one potential, incurable problem. The media can't be "cleaned" but must be dumped and in most instances plants cannot be salvaged. If plants are worth saving, they will usually be malformed and delayed.

Media Nutrient Tests - A Must

The peat-lite mixes have varying nutrient levels and generally require early fertilizer applications for good plant growth. The grower can usually start his fertilization programs from a "zero" base.

When soil is used in the medium, it is desirable to have it tested and determine what nutrients are present so a fertilizer program can be established. If a grower purchases a media with wood shavings, he must generally increase the nitrogen level of his feeding program or plants will become deficient because the microorganisms are using the nitrogen to break down the wood. Knowing the nutrient content of your growing media at the beginning provides a "tool" for producing a quality crop.

Media Percolation Tests

Does your media drain well? Many growers assume the soil they purchase has all of the ideal characteristics. Why not take a couple five inch pots of moistened soil, add water to the top, observe and record the length of time required for the reservoir of water to percolate out. Keep adding water periodically throughout the day. If the water percolates as well at the end of the day as it did the first few times, it's a good soil. If water stands or drains very slowly, consider the modifications you should make to improve percolation. The peat-lite mixes present no percolation problems.

Media Herbicide Tests

Last fall a bedding plant grower was planning well in advance and ordered several yards of "topsoil". Approximately 30 yards were dumped on plastic film in a vacant greenhouse to keep from freezing. A similar amount was piled outside and three or four yards were mixed with peat and other materials for use as a seed germination media and for the transplanting of perennials in packs. The grower noticed many of the seedlings in the November planting were dying. The geraniums were developing malformed leaves and some of the germinating perennial seedlings were becoming malformed. The plant symptoms were diagnosed as weed-killer damage. Needless to say, it was suggested to the grower that he get a new soil.

The Colorado Bureau of Plant Industry was called to view the damage and take soil samples for analysis. Samples of soils from the geraniums, indoor and outdoor stock piles, packs and the mixed media from the bin in the potting shed, were taken to CSU and seeds of tomato and beans planted in them. Germination was very slow in some samples and completely lacking in others. The pesticide residue report made by the Plant Industry Laboratory indicated the presence of Prometone and Tordon.

The damage incurred by the grower could have been avoided if the "bean test" had been made prior to the delivery of the soil or immediately afterwards — in either case, 6-8 weeks before the soil was needed.

Media Guarantee

Perhaps it is time for the greenhouse industry to consider some type of guarantee or verification from the soil or media supplier. Problems with the peat-lite type mix materials may be less prominent, but where soil is involved, something may need to be considered.

If a supplier is conscientious, he will test for salts, pH, nutrients and herbicides before he purchases a soil or have his source make tests. Such a report could be passed onto the grower as a part of the invoice or a separate independent agency could also make the tests and provide verification.

Germination Test for Herbicides

Take five or six samples of soil from different locations in a soil pile. Divide each sample, making sure they are moist before placing them in separate pots or flats. Sow bean seed approximately one inch deep in one set of containers and tomato seed one quarter inch deep, in the other containers. Keep the soil moist and at warm temperatures (60-70°F). Within one week all seed should be germinated. Allow the plants to grow until the second set of true leaves are well developed. The response of the seedlings will depend on the type of herbicide present.

In the test described concerning the recent grower problem, only a few of the seeds germinated and those that did were very malformed (Fig. 1). The beans didn't develop further than the first true leaves and seldom passed the cotyledon stage. The tomato cotyledons curled as soon as they started developing. All seedlings stopped growing.

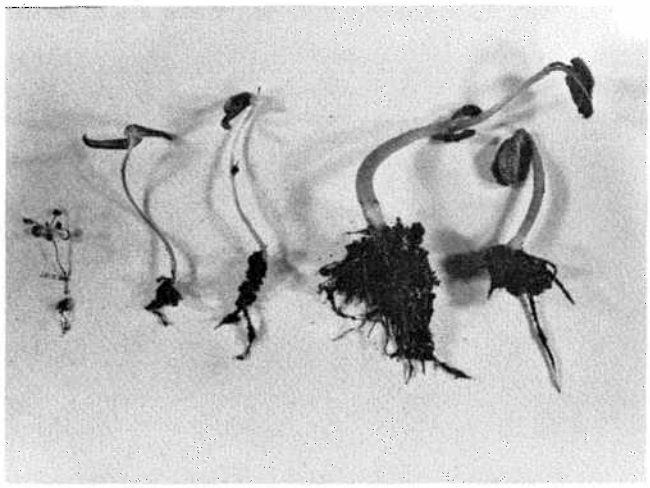

Fig. 1. Seed sown 23 November 1977 in soil mixes to determine the presence of herbicides. (Right) bean, hypocotyl malformed and growth stopped; (Middle) tomato growth stopped with formation of twisted cotyledons; (Left) weed seedling which sprouted in unsterilized soil was even affected.

The seed germination test is another tool for the greenhouse manager and it is wise to use it when soil is purchased. Who knows, the plants you save may be your own.

References

Goldsberry, Kenneth L. 1976. The Herbicide Era. Colo. Flo. Growers Bull. 316.

Sample of Verification

This is to guarantee that five samples _____ purchased from _____
type of growing media name of supplier
by _____ has been tested for pH, salts, N, P_2O_5, K_2O and Ca, resulting in the attached
name of customer
analysis. It has also been tested for the presence of herbicides by growing indicator plants in the media for a period of six weeks using approved greenhouse conditions.

It is further guaranteed that no symptoms of herbicide damage to the plants was visible at the end of the test period.

_____ _____
Customer Signature Signature of Supplier

_____
Date of Sale