

Should I Sterilize New Soil?

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Should new field soil be sterilized before using? There are so many factors bearing on this question that no flat, unqualified answer can be given. Let us look at some of these factors.

The basic argument in favor of sterilization is that there are a number of important disease organisms which may be present in most any new field soil. Within the past two months we have had occasion to observe serious cases of the following diseases, each of which was unquestionably introduced with unsterilized "new" field soil or sand: root-knot nematode on begonias and cyclamen, Pythium rot or "black-leg" of geraniums, Rhizoctonia rot or "wet stem rot" of carnations and poinsettias, and Thielaviopsis rot or "black root rot" of poinsettias. In these cases the organisms were present in the "new" soil, they were causing serious diseases of the crops, -- and there was very little which we could suggest to help matters at that stage of the game. The troubles in question could have been avoided only by proper sterilization of the soil before using.

On the other side of the fence it may be argued that these organisms are not present in all soils or are not important on the crops being grown. This may be true enough, and if ample experience has shown unquestionably that the particular source of soil does not contain pathogens which may be injurious to the particular crop being grown there is little argument for sterilization. However, if the soil is from a new source, a definite gamble is involved.

Another argument against sterilization is the fact that with some soils excessive amounts of salts or toxins are liberated which injure the plants unless a long period is allowed between sterilization and planting. This is also true. Some soils may be planted immediately after treatment with no ill effect. Others may require a considerable "rest" period before they are safe. The latter soils may sometimes be used much sooner if they are leached thoroughly immediately after sterilization or if gypsum is mixed in prior to sterilization. We suggest sterilizing as many weeks as possible before use. Unfortunately, we cannot tell by inspection or analysis whether the soil will or will not be safe for planting immediately after treatment.

A further argument against sterilization is that extreme precautions must be taken to avoid recontamination since disease organisms introduced into sterilized soil may be much more destructive than in untreated soil. Again, this is true. Unless the job can be done very thoroughly and unless one is willing and able to take every reasonable precaution against recontamination, he might indeed be better off with unsterilized soil.

Not only must the soil be thoroughly sterilized, but also the pots, flats, benches, or other containers and the tools used in working with the soil. Bins used for storing sterilized soil should be thoroughly cleaned out and washed or sprayed with formaldehyde solution (1 part to 50 parts of water). They should also be constructed so as to reduce to a minimum the chances of recontamination with soil blown in, kicked in, or spilled into them. The potting surface should be cleaned and washed with formaldehyde before loading with potting soil, and the bins for storing treated soil should never be under the potting bench. Mr. Charles Wilton, of S. S. Skidelsky and Company, recently made the excellent suggestion that a sheet of plywood or hardboard be used as a potting surface for sterilized soil. Such a sheet could be easily cleaned and swabbed with formaldehyde and stored away when not in use.

Conclusions

Whether or not new field soil for bench crops should be sterilized would depend upon the crop being grown, definite knowledge of the probable safety of the particular soil supply, and the ease with which the job can be done and recontamination avoided. If the grower is equipped to do the job easily and is so set up that recontamination can be avoided, sterilization of new soil is good insurance.

Where potting soil is concerned it is our opinion that the use of unsterilized soil is a gamble which the grower cannot afford. Note that most of the diseases which were specifically mentioned above were pot plant diseases -- and there are many more which are likewise soil-borne. But if sterilization is to be adopted, the whole program must be very carefully considered and planned. If one has dirty headhouses and greenhouses, if he can by no stretch of the imagination visualize maintaining reasonable precautions against recontamination, perhaps the whole idea should be dismissed. On the other hand, if he has, or can provide, a clean headhouse and greenhouse, if he can provide protected storage for an adequate supply of treated soil, if he can exercise sufficient authority over himself, his employees, and visiting friends to maintain reasonable precautions against recontamination -- then sterilization of all potting soil, new or old, is an investment which will pay handsome dividends. However, it is not a cure-all -- it will not control diseases which are carried through the air or transmitted through seeds or propagating stock, and above all it is not a cure for poor growing practices. But it will eliminate the causes of many diseases which either destroy the plants or severely reduce their quality.

One further point worth consideration, especially with new soil -- adequate sterilization will destroy nearly all weed seeds.