Recycling perlite rooting media

R. C. Hare

Plant Physiologist, Southern Forest Experiment Station, Forest Service, USDA, Gulfport, Mississippi

With use, a mixture of perlite and vermiculite loses its effectiveness for rooting tree cuttings due to collapse of the air- and water holding granules of vermiculite. A method is described whereby the perlite and uncollapsed vermiculite may be salvaged for reuse.

A half-and-half mixture by volume of horticultural grade perlite and vermiculite has proven useful as a rooting medium for tree cuttings (1, 2). Perlite used alone is extremely porous, consequently woody cuttings tend to dry at the base even under intermittent mist. Vermiculite alone, on the other hand, is too heavy for good aeration. Combining these two materials provides an excellent rooting medium having the capacity to hold both water and air. Unfortunately, this medium is not stable in the propagating bed. Unlike perlite, a stable porous volcanic rock, vermiculite loses its effectiveness when air- and water-holding spaces between the expanded mica flakes collapse under pressure. After a short time, many of the porous granules are reduced to useless pieces of flattened mica that diminish aeration within the medium. Unless the mixture is renewed every 3 or 4 months rooting success in subsequent trials is reduced.

Methods and Materials

A method to separate usable perlite and vermiculite from compacted vermiculite would be desirable, not only to save the cost of new material but also because perlite is becoming difficult to obtain at times. Separation attempts by sifting and air blowing «ere unsuccessful. However. hen dry used rooting medium was stirred into water the perlite and uncollapsed vermiculite floated and the compacted vermiculite sank. Usable material was then skimmed from the water with a sieve. Figure 1 shows used rooting medium and the same volume of medium after separation into usable material and collapsed vermiculite.

In practice, used medium is dried at 121°C in an electric sterilizer. Suitably sized portions are then stirred into a large tank of water and the floating material skimmed and redried before mixing with new vermiculite. The reclaimed mixture is then transferred to propagating beds where it is again washed.

Results

Problems with accumulation of micro-organisms, rooting hormones, soluble salts, and related materials are not anticipated, and, indeed, have not been experienced in trials over a 6-month period. Hormones, e.g., are relatively unstable and, if not absorbed, are degraded by microorganisms or heat sterilization. Soluble materials are removed in the several washings and potentially troublesome organisms are destroyed by heat sterilization.

Experience also indicates that the perlite fraction of the medium remains usable for at least 1 year. Given these circumstances, the reclaiming process can net substantial savings in research and commercial rooting operations.

As an example. I recently had 2.8 cubic meters of used medium reclaimed. The yield was 1.4 cubic meters to which 1.4 cubic meters of new vermiculite was added, thereby restoring the original volume. At current local prices, the 1.4 cubic meters of perlite that would otherwise have been needed costs $74. Approximately 6 hours of labor at $4/hour were required to reclaim the usable fraction. Deducting the labor cost from that of new perlite resulted in a net savings of $50. With my present four experiments per year the amount of savings is $200.

Literature Cited

1. Hare, R. C.
1974. Chemical and environmental treatments promoting rooting of pine cuttings. Can. J. For. Res. 4:101-106.

2. Loreti. F., and H. T. Hartmann.
1964. Propagation of olive trees by rooting leafy cutting, under mist. Am. Soc. Hort. Sci. Proc. 83:257-264.

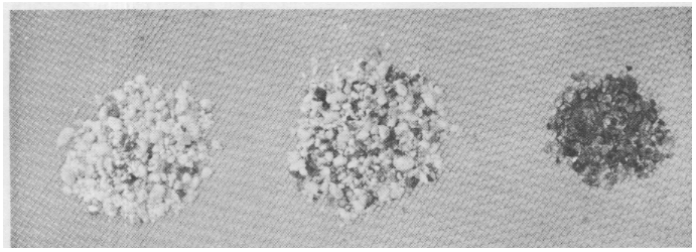

Figure 1.-Floating perlite and uncollapsed vermiculite (left), untreated old medium (center), and sinking collapsed vermiculite (right).