Root Penetration Of Peat Pots

James Gugino[1] and J. W. Boodley

Since the introduction of peat pots as a plant growing container there have been some reports on the lack of good root penetration of the pot. When planted to the final growing area this condition becomes quite serious. Unless closely watched the peat potted plant will exhaust the moisture within the soil ball and even though the surrounding soil may be moist the plant will be subjected to drought conditions. If the water stress is especially severe the plant may die.

Failure of the plant to develop an adequate root system outside the peat pot will prevent the plant from reaching maximum growth. This is true whether it is a petunia plant being planted to the garden or a peat-potted carnation planted to the bench for production of cut flowers.

Root penetration of peat pots is influenced by many factors. Probably the most important is that associated with the moisture content of the peat pot itself. If the pot is thoroughly watered and not allowed to dry out completely then the chances for maximum root penetration are best. If the pot is never completely wetted or allowed to dry then root peneration is restricted.

The use of a non-ionic wetting agent[2] presented a way to allow greater wetting of the peat pot without any toxic effects on the plant. Such wetting agents reduce the surface tension of water and allow it to easily penetrate difficult-to-wet materials such as peat. By permitting easier wetting to take place it was theorized that a condition more conducive to root penetration would be maintained and thus a more improved root system would develop outside the pot.

To test this theory, Barbara Ecke Supreme poinsettia cuttings were propagated February 7, 1962. One-half the cuttings was rooted directly in a modified soil media, in 2¼-inch clay pots. The other half was rooted directly in 2-inch peat pots. Low pressure intermittent mist was used. The cuttings were lighted from 11 PM until 1 AM daily to keep them in a vegetative condition.

On March 7, the cuttings were removed from the pro-

(*continued on page 2*)

---

[1] Former undergraduate in Floriculture

[2] Aqua-gro. Aquatrols Corp. Camden, N. J.

Root penetration

(*continued from page 1*)

pagation area. Those that were rooted in clay pots were transferred to new peat pots. Both old and new peat potted cuttings were then treated with 1 ounce of non-ionic wetting agent per gallon of water. Treatment was made by immersing the entire pot and soil ball in the liquid solution for approximately 5 seconds. Half of the plants were dipped and the other half not dipped. Following the treatment all of the plants were potted as single plants to 4-inch clay pots and placed under natural daylength conditions in a 60° night temperature 70° day temperature greenhouse.

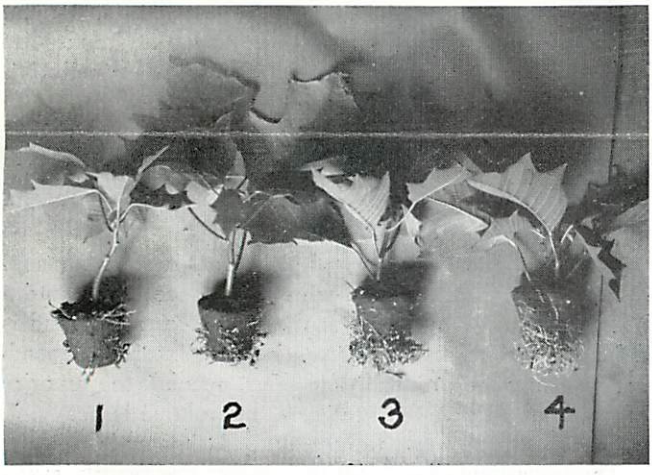

Figure 1: Peat-potted poinsettias propagated February 7, photographed April 11, 1962. The plants were potted to 4-inch clay pots on March 7, and treated with a non-ionic wetting agent at 1 ounce to 1 gallon of water. No. 1, new-pots, undipped; 2, new-pots, dipped; 3, old-pots, undipped; and 4, old-pots, dipped.

At the end of four weeks, April 11, one-half the plants were examined for root penetration of the peat pots. The soil ball was carefully washed from the root system that surrounded the peat pot. Figure 1 shows the relative differences obtained under the conditions of the study. Observations of the pots showed a greater volume of roots had penetrated the old peat pots as opposed to the new pots. This would be expected since at the time of potting root penetration had already started.

Old-pots dipped. A greater number of roots had penetrated than the undipped pots. Distribution of the roots was better in the dipped pots than the undipped. In the untreated pots root penetration was confined primarily to the basal half of the pot.

New-pots dipped. Root penetration was only slightly better than in the undipped pots. This may have been due to the relatively short time the plants had been potted and root penetration had only actively started.

Further observations were made of the remaining plants

(*continued on page 3*)

Root penetration

(*continued from page 2*)

on May 4, 1962. This was 8 weeks after potting the plants from the propagation area.

Old-pots dipped. When compared with old-pots undipped the plants in the dipped pots had a greater number of roots that had penetrated the bottom of the pots.

New-pots dipped. In this treatment the most striking observation was the diameter of the roots that had penetarated the pot wall. The majority of the roots were twice the diameter of those in the undipped pots. The root system from the undipped pots was of a fibrous nature with no particularly outstanding size to the primary roots. A strong primary root system that penetrated the pot wall would permit development of an extensive secondary root system that would assure maximum growth and productivity.

In addition, the new-pots dipped had more uniform root growth around the entire pot area. The bottom of the peat pots were well-rooted through which was not the case for the undipped pots.

The results of this trial showed that non-ionic wetting agent as a preplanting treatment for peat-potted materials was beneficial to root penetration and establishment of the plants in the final growing location. This success prompted the treatment of 2200 peat-potted annual plants that were placed in the Miss Minnes Memorial Garden at Cornell. Professor Robert Lee, supervisor of the garden, felt that this preplanting treatment was one of the factors responsible for the outstanding display of the garden last year.

For bedding plant producers the use of the material could help to prevent complaints of poor survival of peat potted plant materials. Instead of a dip treatment the material could be applied as a watering when the plants are brought to the display-sales area.

Contract gardeners could use the material at the time of planting a contract area. Faster root penetration would enable the plants to become established more quickly and thus not be as subject to water stress in areas where maintenance may be a problem.

Flower growers should trial the material wherever peat-potted plants are being established in the final growing location for production purposes.