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WRAPPING AIR-LAYERS WITH RUBBER PLASTIC

By WM. R. GROVE
Lychee Orchards,
Laurel

The lower limbs of some trees and plants occasionally lie on the ground. Under appropriate soil and moisture conditions many of these limbs will strike root and start new plants, especially when the limbs have been scarified.

Many generations ago the Chinese decided to utilize this rooting ability by taking the moist soil up to the limbs, scarifying or removing the bark from a small section of the limb at the point where the new roots were to be formed. The point selected should have been and probably was just below a node.

The soil was doubtless wrapped around the cut and tied in place by using leaves and straw. To keep the soil wet over the period of from three to ten weeks required for the roots to develop to a length of one to three or more inches was doubtless then, as now, the real problem.

In the modern method when the young roots begin to show through the wrapping of moss or dirt, the limb is cut off just back of the new roots, kept in a moist and reasonably dark atmosphere for perhaps two or three weeks, then gradually exposed to more light so that within a few weeks the young tree will stand the full sunlight.

That process, variously known as Chinese air-layering, gootee layering (India) and marcottage, has long been used by nurserymen and others in plant propagation. One of the most serious drawbacks to this method has been the necessity of frequent watering to keep the layered limb alive until suitable new roots could be developed.

While the above process was the one prevailing for many centuries, the introduction of rubber plastics, having the properties of holding water, but permitting the passage of respiratory gases, offered an opportunity to develop a new method of wrapping the layers so that they would produce new roots before the water within the layers had become exhausted or sour. This means that a limb of a lychee, hibiscus and many other varieties of plant life can be girdled or scarified, encircled with sphagnum moss, soil or other rooting material in the usual way, then wrapped in a sheet of the rubber plastic, tied securely, preferably with rubber bands, and then forgotten until adequate roots can be observed through the plastic, when the branch is cut from the tree or shrub, the plastic removed and the newborn tree potted or planted. This eliminates the expense incident to watering the layers.

My first experiments with the plastic wrapping were with what is known as plio-film but it failed by disintegration before the lychee roots could be formed. I then used Vitafilm which is a heavier plastic with the

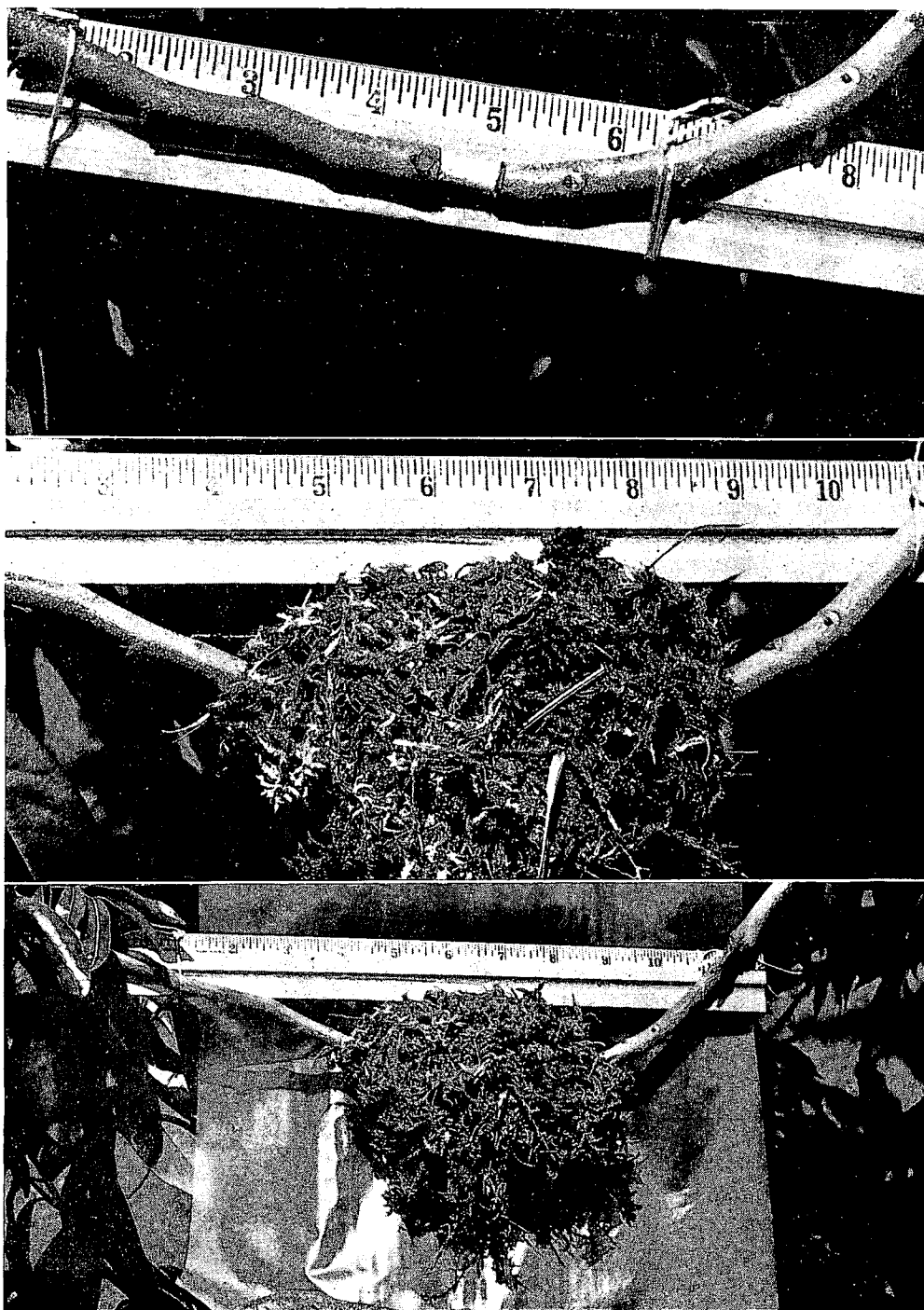


Fig. 1. Air layering the lychee—showing the relative size of bark removed. Fig. 2. Air layering the lychee—loose sphagnum moss placed over the girdled area. Fig. 3. Air layering the lychee—showing the size of the plastic sheet required.

same properties as the pliofilm, ie: holding the moisture but permitting the passage of air. Plioilm, or the other light plastics, may be found to be suitable for plants that may be quickly rooted, such as hibiscus tiliaceous, which requires only twenty days.

Experiments have been made with white, black, green and red colored plastics and experience may prove one or more of these to be better material for wrapping the layers than that I used in most of the 1947 production, which was the clear vitafilm, gauge 250 P-9, manufactured by the Good-year Tire and Rubber Company.

To more clearly illustrate the method, I present photographs showing in detail the various stages of the process, using the lychee, which requires more time for rooting than most plants, as the subject.

The Lychee layers, wrapped with the plastic, do not root as quickly as when no covering is used, doubtless due to the slower process of breathing, but the great saving of labor and trouble of watering much more than compensates for the delay.

We observed that on a hot day the layers that were exposed to the sun became quite hot to the touch of the hand. We opened some at this stage and the moss seemed quite warm. However, we could charge no loss directly to this cause. We layered some sapodilla limbs in May and took them off in mid-October, with good roots. So in five months the moss had not become sufficiently overheated to prevent good rooting.

This year we used dried sphagnum moss from the north instead of fresh moss and did not find it as satisfactory as the local fresh moss.

There were a number of adverse factors which affected the layering this year, so it is difficult to precisely appraise the advantage of the method. For instance, the first lot of vitafilm was lost in transit, which delayed for thirty days the start of the layering.

We like to start layering lychees soon after April 1st and not later than May 1st

to be certain that the roots are well formed before the hurricane season.

Colored girls were taught to do the work of cutting the bark and wrapping the layers. At first we tied the moss on with a waxed string. Later we developed the method shown by the photographs using no string, but tying the wraps only on the outside of the plastic, using rubber bands instead of string. The plastic wrapping is a faster process than our old style wrapping.

Another item is the pecking of holes by birds. In our operation of somewhere near 13,000 layers of all kinds, I am quite certain we did not have more than a dozen of such occurrences. Perhaps there are so many fruits and berries on the place that the birds do not have to explore for food.

We had two hurricanes in one week before all the layers were ready to be cut off. The shaking in the wind did not help them.

The labor trouble and the hurricane damage would have applied to layers wrapped in the old style, for we used to tie the moss on securely, and then put on a wrap of tar paper open at the top for watering and with a small hole in the bottom for drainage.

The average size of the plastic wrapper used on the smaller branches was about 9 1/2 x 11 inches or about 100 square inches per wrap. The cost per wrap including freight, was less than two cents. The vita-film was shipped in rolls of about 100 lbs.

While the vitafilm used in our work is no longer available, the large rubber companies are manufacturing a still heavier product that costs considerably less per pound, but will somewhat increase the cost of each wrap. The cost will still be around two cents each. I have tried the heavier product and found it satisfactory.

I have used commercially the method described and have applied for a patent. I am using it on many items other than lychees and it appears to be a successful method on any plants that can be air-layered.

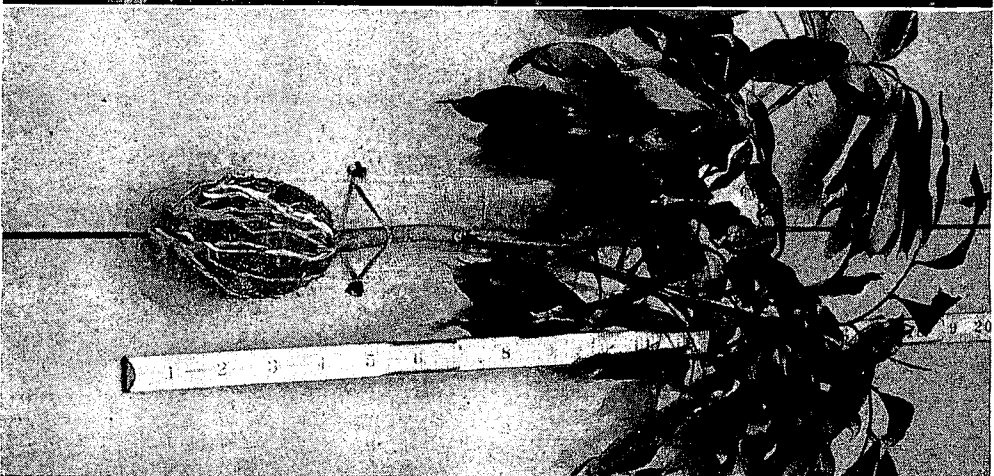
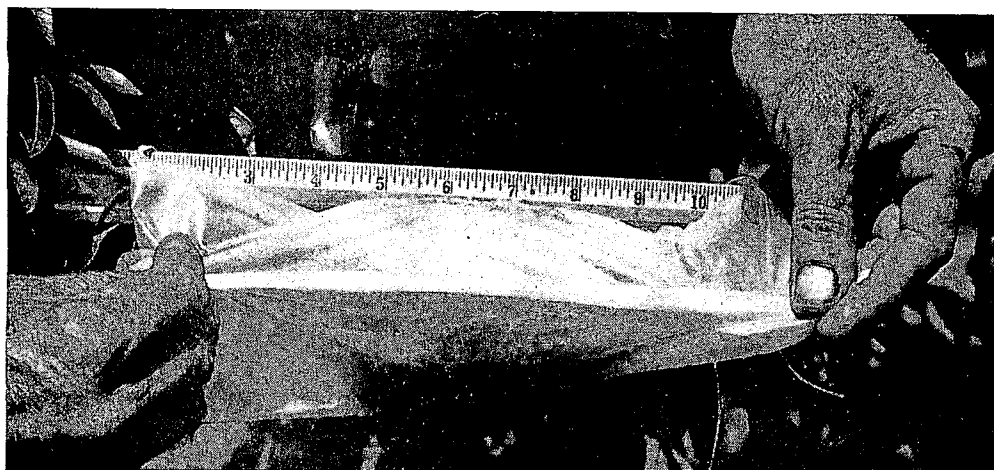


Fig. 4. Air layering the lychee—the longitudinal wrap. Fig. 5. Air layering the lychee—the wrap completed and tied with rubber bands. Fig. 6. Air layering the lychee—roots developed and wrap removed; the air layer detached and ready for planting in soil.