mately 65 cubic yards of potting medium, at a cost of $17.25 per cubic yard, or about $7.00 per cubic yard less than buying the bark already composted.

PINE BARK MEDIA IN CONTAINER GROWING AT WIGHT NURSERIES

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The growing medium for plant production in a container nursery must be considered with utmost care. Many leaders in the industry feel that the growing medium is the single most important element in a container growing operation. Many of the production problems faced by nurseries today are directly affected by the growing medium used. Some of these problems are: root and stem diseases, fertilizer deficiencies or buildups, and moisture retention.

The importance of a good growing medium has been recognized at Wight Nurseries. Several changes have been made since our original mix of two parts peat moss and one part sand. Today we use a mixture of three parts pine bark, one part sand and one part shale for all plants. For years growing media using peat moss, or peat moss and sand, were the most widely accepted. Other soil media were evaluated only when the increasing cost of peat and the spiraling freight cost of transporting high quality German peat made its cost prohibitive. It was in this way that pine bark became the principal ingredient in the growing medium at Wight Nurseries. Since pine bark is organic matter, it needed to be carefully analyzed.

Many important characteristics of pine bark make it an ideal growing medium. Its physical make up is well suited for plant production. Pine bark can be obtained at a reasonable cost and in large quantities in our area. Bark is also a renewable resource. Pine bark can be milled and screened to produce a consistent material, and it also has a slow decomposition rate. With these advantages pine bark can be used to produce a uniform standard mix.

The pine bark used at Wight Nurseries is contracted through a local fertilizer company. To insure a high quality consistent material, all our bark comes from one sawmill. No sawdust or wood chips are allowed in the bark. All bark must be stored on concrete slabs at the sawmill and at the fertilizer plant for sanitation purposes. The bark used is usually from 5 to 20 days old.

Before the bark is delivered to the nursery, it is put through a hammer mill and passed through a 9/16 inch screen. Porosity of the mix is very important and with this size bark, adequate draïnage and water retention are balanced, resulting in successful growth of many kinds of plants. After the bark is screened, dolomitic lime and trace elements are precisely metered and mixed thoroughly into the bark. The pH requirements of plants vary. Three rates of lime are added to the mixes to allow for the different pH requirements. Conifers are grown in a 5.8 to 6.5 range; broad-leaves (holly, *Ilex sp.*; pyracantha, *Pyracantha sp.*; ligustrum, *Ligustrum sp.*), 5.0 to 5.8; azaleas (*Rhododendron sp.*), around 4.5 to 5.0. Three pounds nitrogen per cubic yard are added to make up for the nitrogen tie-up occurring during the natural decomposition of the bark. Chlordane for fire ant control is also added to the bark at this time.

Samples of each ingredient of the mix are sent to the Soil and Plant Laboratory, Inc., 352 Mathews, Santa Clara, California, 95052, for routine testing and analysis to insure a high quality and standardization of the medium.

Once the bark is delivered, it is mixed with the shale and sand on a concrete slab with a front end loader.

The greatest problem that has been found with the use of pine bark is the inability to wet the mix initially. As the unmixed bark sits on the slab, a sprinkler is constantly wetting the pile. However, most of this water runs through the pile before it is absorbed into the bark. Once the bark is mixed and plants are placed in it, the newly canned plants are watered daily for two weeks, giving the equivalent of approximately 7 inches of rain. This method has proven satisfactory even in the hot summer months when heat stress is greatest.

Wight Nurseries does not practice any bark or soil mix sterilization. The expense and practicality of chemical sterilization or composting were found to be too costly. A complete pesticide program for control of insects, diseases and weeds is initiated once plants are in the medium.

The use of pine bark as the principal ingredient of our synthetic soil mix for the future is not without complications. With the increasing cost of natural gas and electricity, the use of wood by-products for energy sources is also increasing. Some sawmills are now burning their bark, sawdust and other waste as a substitute for natural gas. These practices put a higher value on bark and the price of bark has increased accordingly. Other materials for growing media must be analyzed to insure alternatives to pine bark if its future price makes it uneconomical to use.

A SYSTEM OF WATER TABLE CONTROL FOR SUBSURFACE DRAINAGE AND IRRIGATION

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Agriculture is a risky business. The extremes of weather are, perhaps, the worst of the many hazards faced. Most weather-related hazards are uncontrollable. However, any action that can be taken to alleviate the extremes helps to reduce the risk and increase crop production.

Our initial problem was one of drainage. While attempting to solve this problem, we devised a system of water table control, with the help of the Soil Conservation Service, that presently serves 108 acres. This system has provided us with drainage as well as protection from drought. It has enabled us to transplant successfully during the growing season. A water table control system with modifications to fit other situations may be of benefit.

We own two farms that are located just east of the city of Orangeburg, South Carolina, in an area that is commonly known as the "Flat Woods." The nursery is located on the farm nearest to town. The other we refer to as the "Lower Farm". We had a serious drainage problem during periods of excessive rainfall. For years we had accepted the fact that these farms were low and wet.

A survey by the Soil Conservation Service revealed that we could gain three feet of additional fall by deepening and enlarging about 1½ miles of an old inadequate outfall canal on our lower farm. This enabled us to deepen our lateral ditches sufficiently to permit the installation of several miles of agricultural tile (one foot lengths of six-inch clay pipe) for subsurface drainage. We were amazed by the efficiency with which this system removed excess water. (See Figure 1.)

We requested a survey of the nursery farm to see if we might have additional fall here also. We gained five feet of fall by deepening and enlarging just one mile of our old outfall canal. We were not low — just flat!

We became completely carried away with deepening our old lateral ditches to take advantage of every inch of our new-