

Cut flowers are led by anthurium at \$6.0 million, lei flowers at \$4.1 million, roses at \$1.8 million, orchids at \$1.1 million and "other" at \$2.3 million. Cut foliages were valued at \$700 thousand.

One of the impressive sights for the nurseryman's first visit to the tropics is to see plants he may have been accustomed to growing in pots developing into mature specimens in the landscape. *Ficus benjamina* reaches a spread of over 200 ft in the Mauna Loa Gardens in Honolulu, and *Cordyline terminalis* 'Tricolor' — popularly grown as a pot plant from 1 to 3 ft tall in the trade, can reach over 30 ft in Howard Cooper's Nursery in Hana. Tropical exotics, such as *Musa coccinea*, and *Heliconia bourgaeana* represent a new wave of interest for our nurseries, both as landscape and cut flower use.

Plants of the southern hemisphere, such as *Grevillea* 'Robyn Gordon', and hybrid kangaroo paws are undergoing evaluation at the Maui Agricultural Research Station.

TRICKLE IRRIGATION ON SHORT TERM CROPS

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Short term crops are a big part of our business. Situated in the center of North Alabama, Byers Nursery Company emphasizes lining out stock that has been grown in the field. More than 30 acres are devoted to *Lagerstroemia* cultivars and another 50 acres are used in growing *Cornus*, *Magnolia*, and other genera. These plants originate as seedlings, grafts, and hardwood or softwood cuttings.

Efficient production of these many small plants is our goal and adequate water is one of the elements of production that makes this scheme work. Normally, our area receives about 56 in. of rainfall, but this is not uniformly spread throughout our growing season. Therefore, we must have the ability to water our liners when needed.

Overhead irrigation with movable aluminum pipes was installed in 1954. This method served well until our production outgrew the covered area. In 1978 we began using trickle, or drip, systems to extend our water delivery capability. In 1981 a commitment was made to trickle irrigation and now we have approximately 250,000 feet at work.

Because of the short term nature of our products, we have chosen to install our trickle system in a very temporary manner, allowing crews to move and adjust our system daily if necessary.

After trying pipe made from reconstituted rubber and the lightweight biwall tubing, we determined the best product for our needs was the Agrifim system. That system consists of a ½ in. tube with pressure compensated, ½ gal/hr, in-line emitters placed 24 in. apart. Agrifim is a heavy-duty, relatively inexpensive, long-lived product that can stand the abuse of constant moving, rolling and traffic. In 8 hr the row is wet to field capacity 18 in. wide and 18 in. deep in our heavy, red clay soil.

After much effort at installing a mathematically perfect (from an engineering standpoint) system, our goal became more clear: we were not after engineering perfection, we simply wanted to water our plants.

Using water from wells and from our county water system, we supply water to the area needed in 2-in. PVC pipes. No filters or pressure regulators are used. The white 2-in. pipes are sawed and glued together as needed. Flow is controlled by valves set for each block of plants.

Instead of buying the expensive devices used by Agrifim to connect each row to the PVC pipe, we have adapted the typical biwall supply method. We drill a small hole the size of the capillary tube in the 2-in. PVC pipe and run a length of the capillary to a small hole bored in the Agrifim tube. This one simplification saves about \$1.00 per row.

Agrifim provides a figure-eight closure that pinches the end of the tube to close it, at a cost of about 25 cents. We found an idea at Ray Bracken's Nursery that cut the cost to almost nothing — a 1-in. piece of 1-in. PVC pipe will hold two thicknesses of the tubing and does an effective job of closing the end.

Winter storage of the tubing is a big problem. After several ideas and false starts, we developed a reel made of an old electric water heater tank and galvanized pipe. This reel holds about 16,000 feet of tubing while riding on an axle made of 1⅞-in. steel set upon a three-point hitch. We find collection and re-installation of tubing greatly aided by this reel.

This is a cost-effective and practically efficient method of watering short term crops. Probably more ideas will come along to improve this system, but at this point we like the results and consider it successful. We are anxious for visitors to see our nursery and comment on our ideas.