

facilities. Plants stored at subfreezing temperatures start growth rapidly in the spring. It is the most natural, healthful way to store plants.

## CONTAINER PRODUCTION OF EUONYMUS ALATA 'COMPACTA'

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Five years ago, when we decided to grow some of our *Euonymus alata* 'Compacta' in containers, we were not aware of the various problems that would arise from growing this species in containers. This report outlines some of these problems and our solutions.

We always gather our cuttings from the best growing stock in the nursery. In our area, cuttings are taken the 4th week of June. They are taken only from the most vigorously growing plants. The cuttings we make are 6 to 7 inches in length and about the diameter of a lead pencil. They are put in bundles of 25 in the field as they are made, and held together with an elastic band. They then are brought into the propagating work area where the bottom 2 or 3 sets of leaves are removed. We do not recut the cuttings; thus reducing the labor in the work area. We never remove any part on the terminal growth, because we feel that natural self-branching is sufficient. We also find that it checks the growth of the plant later on in its growth cycle. The cuttings are then placed 100 to a flat in coarse perlite. We use no hormone or fungicide dip on our cuttings. We have tried auxins in the past and found no beneficial effect from them. The cuttings are placed in our propagating frames using Mist 100 nozzles and a Mist-O-Matic scale.

As soon as a sufficient root system has developed (8 to 9 weeks) the cuttings are removed from the propagating frame. Around the first week of September they are potted into a Nu-pot with a soilless potting mix. We are presently using Pro-Mix BX. The potted cuttings are grown on in the fall until freeze-up time. The plants are fed with Peters 20-19-18 every 10 to 14 days at 3 ppm until they defoliate, when they are put in a minimum  $-2^{\circ}\text{C}$  ( $28^{\circ}\text{F}$ ) cold storage house.

Around the first of April the following year, the plants are removed from cold storage and set outside before any bud development occurs. Sometimes, because of weather conditions, we do see some bud swell, but this seems to have no effect when the plant is placed outside.

As soon as weather permits in April our canning operation begins. Feeding is done every 7 days at 3 ppm until the plants are containerized. The plant is upgraded from the Nu-pot to a 4 quart container. It should be explained here that because of different measurement sizes in our industry the 4 quart container mentioned here is actually larger than a standard 1 gallon container. We were using a 1 gallon container, but found it was too small to sustain the plant growth for the 2 years we like to grow this plant without trans-canning. This was one of our early mistakes. We did not size our container large enough to maintain optimum growth of the plant.

The potting mix we are using at present consists of equal parts of coarse sand and well-rotted softwood bark with 7 lbs dolomite limestone and 7 lbs Surge (a commercially formulated fertilizer made for container growing) per cubic yard.

Because of the tremendous ability of *E. alata* 'Compacta' to absorb nutrients for optimum growth, strict attention must be given to the feeding schedule. Our present feeding schedule after first year canning is 3 times a week with 20-19-18 (Peters) at 3.5 ppm through the overhead irrigation system. This is injected into the system by a GEWA injector for 20 minutes each feeding. We continue this schedule through to the first of September when it is cut to once a week for 3 weeks, then discontinued for the year to allow the plants to become winter hardy. The only other fertilizer our first year containers receive is a broadcast of 15-15-15 pelletized fertilizer the third week of June at the rate of 150 lbs per acre. Because of this fertilization program we feel that after the initial growth in the spring we can induce the plant to flush a second growth cycle around the second week of July. Therefore we have a plant with branches at the bottom and hopefully 15" to 18" on the single leader. Because we are looking for this extended growth in the terminal leader in the first year, no nipping is done in the container. Our second year plants start with this growth, and due to its self-branching qualities it will give us, hopefully, a well branched, saleable 15" to 18" plant (with a few 18" to 24") at the end of the second growing season.

Our fertilization program for second year plants includes one feeding in the spring, when the growth is active, with Osmocote (fast start) 18-6-12 at the rate recommended on the label. Although this formulation normally should sustain a plant for the growing season, we find with *E. alata* 'Compacta' that a second feeding the second or third week of July at half the recommended rate is needed to sustain the growth and quality of the plant. No other fertilizers are applied except the slow release on our second year plants, although this year we are seriously considering using liquid fertilizer instead of the second



feeding of Osmocote.

Overwintering of the plants and winter injury have not been a problem with us until this past winter. The third week of December we tip our containers in place, then cover them with micro-foam, then 4 mil plastic over the micro-foam, to protect the foam. We always irrigate the plants before tipping to insure proper moisture for the plant during the time they are under the micro-foam. This is where we had considerable damage to our plants last winter. Although we know a dry plant will not survive the winter months, our experience last winter indicates waterlogged root systems do not survive either. In January we had 3.2 inches of rain, which completely inundated one area of our growing pad. The micro-foam and plastic did a fine job of trapping the water as the temperature fell rapidly, thus leaving the containers half in ice. When these plants were uncovered in the spring they appeared at first to have survived, but upon close examination injury was found in the root system and at the cambium layer. There were no survivors in this block of plants.

The micro-foam is removed the first week of April and the plants are spaced 18 inches on center. We feel this spacing allows the plant to develop all the lower branches, thus ensuring a quality plant.

At the present time the only herbicide used on our *E. alata* 'Compacta' is Treflan granular at recommended rates applied immediately after canning, or when the older plants are uncovered in the spring. A second application is applied 8 weeks into the growing season. A walk-through hand weeding is needed to control weeds that may have been carried into the container area. We have used Ronstar 2G on our containers; while it does not appear to cause permanent injury to the plants, we feel that it does inhibit growth.

In conclusion, I would like to say that *E. alata* 'Compacta' is a plant that adapts very well to container growing if close attention to cutting size, no nipping, container size, fertilization, spacing, and overwintering procedures are observed.

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<sup>1</sup> The investigation reported in this paper (No. 80-10-27) is in connection with a project of the Kentucky Agricultural Experiment Station and is published with approval of the Director.