

This past summer I did an experiment with different hormones. Rootone F as a powder, Hormodin #2 as a powder, Dip 'N Grow as a liquid at the rate of 1:10, Chloromone as a liquid at the rate of 1:2 with water. Cuttings dipped in Dip 'N Grow rooted fastest, but more rooted and at a more uniform rate using my old stand-by, Rootone F.

Once the cuttings are stuck, we spray on a 2-wk. interval across the top with a fungicide. Once the cuttings start to callus and root, we spray with Sol-U-Grow, a 12-48-8 soluble powdered fertilizer at 4 to 6-wk. interval. If everything goes well, cuttings start rooting in 6 to 8 wks. They are then potted off in 1-qt. and 3-qt. pots, depending on the quantity and density of the root ball. The one draw-back to straight vermiculite is that the roots are very tender and have to be handled with extreme care. In general, we have found these techniques to be quite successful in our particular production scheme.

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Rootone F - A combination of NAA, IBA and thiram.  
Hormodin #2 - 3000 ppm IBA  
Dip 'N Grow - 10,000 ppm IBA + 5000 ppm NAA  
Chloromone - Alfalfa extract plus NAA

## **PROPAGATION OF DWARF NANDINA CULTIVARS**

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Flowerwood Nursery is currently producing two dwarf nandina cultivars. They are:

1. *Nandina domestica* 'Purpurea' (*N. domestica* 'Nana Purpurea')
2. *Nandina domestica* 'Harbour Dwarf'

We began producing 'Nana Purpurea' by cuttings in 1978 from our first batch of purchased plants. 'Harbour Dwarf' was started from purchased plants in 1980.

Dwarf nandina cultivars are high-value crops that are relatively easy to propagate if correct conditions can be met and if a large supply of stock plants are available. This latter factor accounts for the difficulty of getting large production numbers in a fairly short time. Generally, on a young plant only one or two cuttings are available at any one time, with the 'Harbour Dwarf' at this stage producing the fewest cuttings.

As the stock plants become older and cuttings are made repeatedly, the number of breaks per plant greatly increase. At this time cutting availability allows one to multiply production greatly.

The largest number of cuttings are usually available on 'Purpurea' as opposed to the 'Harbour Dwarf'; but if division is used as a means of propagation, 'Harbour Dwarf', after a few years, produces a vast number of suckers that can be separated from the parent plant and potted up already rooted.

In the propagation of dwarf nandina cultivars we will consider separately the two cultivars grown at Flowerwood Nursery.

First, *Nandina domestica* 'Nana Purpurea', (often called "Dwarf") will be discussed. This cultivar is propagated by tip cuttings. The season in which these are taken is variable. Cuttings are taken from outdoor plants either in late spring, summer, or early to mid-fall. If the parent plant has been overwintered in a protective structure, cuttings can be taken anytime and good results are obtained. Once the cool weather has hardened off the tops or a frost has fallen on the plants, the cuttings seem more difficult to root. This hardening is noticeable by the overall reddish coloration of the foliage and the darkening of the stem.

Cuttings are generally collected in the early morning while the plants are fresh and turgid. These are kept in a damp burlap sack. If collection is later in the day and the temperature is very warm, the cuttings are put in a large plastic garbage can with water in the bottom one-third to keep the cuttings moist.

The type of wood looked for in taking cuttings is current season's wood that has stiffened. The ideal cutting wood has a pinkish color, and is 1½ to 2½ in. long. The cut is generally made just above the point where the wood turns to a brown color. As much foliage as possible is left on the cuttings. Foliage color should show a lot of green, as an overall red color to the leaves generally indicates wood that is too hard.

Cuttings are gathered from the cutters frequently and taken to the stripping shed. They are then dipped in a fungicide for 10 to 15 min. We use captan 50% wettable powder at a rate of 2 lb/100 gal. of water.

After all the cuttings are gathered and taken to the stripping shed they are prepared for sticking in the rooting mix. No foliage is stripped away. It is our belief that a maximum amount of foliage left on the cutting enhances rooting. The

stems are cut to remove any brown wood that may have come with the cutting and the finished size is 1½ to 2½ in. of stem length.

The stems are then dipped in an IBA solution for 3 sec. If the wood is very soft, we use a rate of 1,250 ppm IBA. If the wood is a bit stiffer, 1,870 ppm is used.

The cuttings are now ready for sticking. They are put into round pint pots or 4-in. square pots in trays placed on the ground beds. This size is used to give more space to the heavily-foliaged cuttings and to reduce the risk of fungus attack.

The rooting mix consists of:

- 3 parts aged fine pine bark
- 2 parts Canadian peat moss
- 3 parts perlite

For each cubic yard of this mix we add:

- 3 lb. Osmocote (18-6-12)
- 1 lb. Micromax minor elements
- 5 lb. dolomite

All cuttings are stuck to a minimum depth, just enough to hold them up on the pot, about ½ to ¾ in. deep.

The cuttings are then put under intermittent mist. The greenhouse is covered with 51% shade cloth and a 3-ft. wide black plastic on the side to block excess wind and damaging light. The mist is controlled by an Intermatic cycler using a 60-min. clock with a time-delay to regulate the duration of the cycle. The sprinklers are Ross 24 in a single line set 14 ft. apart.

Generally, the cuttings are started on a 15-min. cycle; if it is hot during the day, the clocks are changed to a 10-min. cycle at mid-day. They are reset back to 15 min. late in the afternoon. This amount of water helps minimize shock, and after a few days the cycles are reduced. We then begin them on a 30-min. cycle and set them up to 15 min. in the middle of the day. Rarely is a 10-min. cycle used, but it may be still necessary during the heat of the day. Later in the afternoon the cycles are reduced, and we finish on 30 min. until the clocks go off for the night. By the end of the second or third week only a 30-min. cycle is needed as roots begin to appear. Reducing the water as much as possible helps to keep down fungus. Also at this time the on-off cycle of the 24-hr. clock is reduced. Generally the clocks can be cut off entirely by the fourth to fifth week as most cuttings will have rooted.

The previous paragraph describes warm-season rooting, but many of our cuttings are also rooted in the fall and winter.

In mid- to late-fall our rooting houses are covered with poly and ventilated on both ends. During this time the automatic cyclers are used on a maximum spacing between mist or are operated manually. The exact settings are dictated by the heat of the house during the day, how much water is retained on the foliage, and how quickly it cools in the afternoon.

By late fall and early winter, if good cuttings are available, they are stuck in completely enclosed houses. All the mist is hand controlled, either with hand-operated sprinklers, or by building up humidity with a water hose. In this method humidity is built up in the morning by wetting the walks and walls. This, and a periodic light mist, will hold the plants all day.

As many people can attest, high humidity rooting is very efficient, yet the chances of disease are magnified and must be monitored frequently.

All of our propagating houses are sprayed regularly in the afternoon after the clocks go off. We alternate between captan and Benlate<sup>1</sup> weekly. After the plants root, we also use Daconil<sup>2</sup>.

High-humidity houses root cuttings quickly. If it is not too cold during the rooting cycle, they generally can be rooted in 4 to 6 weeks.

After our liners root, we supplement them with Sta-Green (12-6-6) at a rate of 1 lb./100 ft.<sup>2</sup>. This is applied every 2 to 3 weeks in the spring and summer, then less frequently in the fall. No fertilizer is applied in the winter after one initial fertilizing.

The second cultivar that is propagated is the *Nandina domestica* 'Harbour Dwarf'. This is done either by tip cuttings or by division of suckers.

Tip cuttings are treated in much the same way as the *N. domestica* 'Purpurea'. The stems are similar in maturity but are usually more green in color. The stem diameter is larger and not as long, maybe  $\frac{3}{4}$  to  $1\frac{1}{2}$  in.

The cuttings are kept moist and cool by keeping them in wet burlap sacks or in a water-filled plastic garbage can.

The whole process of cutting and collection is similar to the "dwarf" except that the diameter of the foliage is reduced on the cutting bench; the number of leaves is not reduced. The leaves are cut down to where the cutting is about 5 inches across. We feel that this cultivar is extremely sensitive to

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<sup>1</sup> Benlate - benomyl

<sup>2</sup> Daconil - chlorothalonil

drying so we are very careful to keep the cuttings moist. Once they are stuck in the propagation mix, we are careful not to let them go dry, even for a short while during the day.

During the warm season the clocks are started out on a 15-min. cycle in the morning and then moved up to a 10-min. cycle by midmorning, until late afternoon when it is cut back to 15 min. After about 1 wk. we start the cycle out on 30 min., but go to 15 min. by midmorning and to 10 min. by midday. It is important to keep moisture on these leaves because the 'Harbour Dwarf' stresses more easily than 'Nana Purpurea'. In the afternoon the cycle is cut back to 15 min., then later to 30 min. until the mist goes off for the night.

Winter rooting of 'Harbour Dwarf' is by high humidity under poly, using the same process as with the 'Nana Purpurea'.

The other method that is used to produce 'Harbour Dwarf' is by division of suckers. Our stock plants are in 4-gal. containers. After several years the containers become full of suckers, which line the outside of the root ball around the rim of the can. The suckers are separated from the parent plants and kept moist by storing them in a plastic garbage can filled one-third with water. These are then taken to the stripping shed for preparation. Here the rooted suckers are divided into individual plants. Each plant has at least 1 or 2 green leaves. After all the suckers have been divided, they are potted into pint pots and set inside a plastic house. The potting mix is our standard propagation mix of 3 bark, 2 peat, 3 perlite, plus additives mentioned earlier. These plants are then treated as cuttings for about 10 to 14 days by misting them once an hour from midmorning to midafternoon.

After the plants no longer need to be misted, they are fed with supplemental fertilizer. Sta-Green (12-6-6) at the rate of 1 lb./100 ft.<sup>2</sup> is broadcast every 2 to 3 weeks until adequate growth is achieved.

These young plants make a plantable liner in a very short time, as soon as the root ball will hold together once the pot is removed.

In conclusion, dwarf nandina cultivars can be produced readily by following proper procedures. They are very popular in the retail market and command an excellent price for the wholesale nurseryman. They are definitely plants to consider in your production.