

PRODUCTION OF FORSYTHIA PLANTS FOR FORCING

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Developing a program for the production of forsythia as a pot plant started at North Willamette Research and Extension Center in 1980. Forsythia branches have been cut and forced for indoor use in early January for decades but many people prefer pot plants. An ideal forsythia pot plant would have many heavily flower-budded branches starting near the soil line. Stinson (7) also had this idea but his report was not brought to our attention until 1987.

Normally hardwood cuttings are used for propagation of forsythia and these were used in 1980 by graduate student, Robert Staton, to produce plants for evaluation of Dikegulac sodium (Atramec, Atrinal) to induce branching. Atrinal was used at 1000, 2000, and 3000 ppm, with 1000 ppm applied twice—April 15 and June 26—producing the best branching and flower bud formation. In later trials, softwood cuttings (2 to 3 nodes in length), obtained from forced stock plants during January and March, produced better plants.

'Lynwood' and 'Spring Glory' used in the first trial both flowered well, however the flower buds of some other cultivars are hardier (2, 3, 4, 5, 6, 9). Hardier cultivars could be used for dual purpose pot plants over a wider area. Cultivars tested include: 'Gold Zauber', 'Karl Sax', 'Lynwood', 'Meadowlark', 'Mr. K', 'Northern Sun', 'Ottawa', 'Spring Glory', 'Sunrise', 'Tetragold' and 'Vermont Sun'. 'Mr. K' is a selection by Klehm nursery of Illinois from plants they received without a name and it is very similar to 'Lynwood'. Best cultivars for pot plant use have been 'Lynwood', 'Mr. K', 'Ottawa', and 'Spring Glory'.

The days to first open flower, to full bloom, and the time plants are most attractive varies. The earlier the plants are brought into warmth, and the cooler the temperature, the longer it takes for flowers to open, but the longer they last. Starting January 5, 1987, 'Spring Glory' averaged 15 days to first flower, 21 days to full bloom, and 22 days of attractive display in a north window, and 11, 14, and 21 days, respectively, in a south window. Days for 'Ottawa' were 20.5, 25, and 25 in a north window, and 16, 19, and 21 in a south window. Starting February 16, 1987, the days were 3.0, 4.5, and 19.5 in a north window, and 3.0, 4.0, and 18.0 days in a south window for 'Spring Glory'. 'Ottawa' took 4.5, 8.0, and 19.5 days in a north window, and 5.0, 6.5, and 18.0 days in a south window. Performance of 'Mr. K' is close to 'Spring Glory'.

PRODUCTION PROCEDURES

Initial trials used Osmocote 18-6-12 at 2 lbs. nitrogen (N) per cu. yd. of ½ in. minus fir bark 9: fine sand 1; however, growth continued into the late fall. These plants had to be cut back before forcing. Six fertilizers rated at 3 to 4 month release were tested in 1983 with Osmocote 19-6-12 at 2 lbs. N/cu.yd., producing the most branches and flower buds. All subsequent trials have used 19-6-12.

All trials through 1983 used nursery gallon (2.7 liter) pots that are not accepted in the florist market. In 1984 plants were grown in 6x5 in. and 4¼x4 in. pots. Plants were larger and had more flower buds in the larger pots, but when test-marketed through a wholesale florist it was found the 4¼ in. pots sold better.

When plants were grown in 4¼ in. pots a new problem developed. The roots coil in the bottom of the pot and push the root ball above the pot rim. Bovre (1) reported that the root coils developed in 0.46 liter pots, but not in 1 liter pots. This root mass can be trimmed off and the plant flowers normally when forced; however this is an extra operation.

Struve's (8) work on root control of red oak seedling roots with copper carbonate in exterior latex house paint applied to the inside of pots suggested an answer to the root coil problem. Copper carbonate, basic copper carbonate (a mixture of copper carbonate and copper hydroxide), and Kocide 101 as fungicides, whose active ingredient is copper hydroxide, were evaluated at our Station during the 1988 growing season.

All three products were used at 1000 grams of product per liter of exterior latex house paint. We also had a control and oryzalin (surflan 75W), mixed with paint at the herbicide rate of 4 lbs active ingredient per acre, or 6 grams per liter; however the latter was not as effective on forsythias as the copper products.

All three copper products eliminated the root coil problem without causing adverse effects on growth, flower bud formation, or flowering time (Table 1). Since it takes time and expense to treat the pots, more than one use after treatment would be desirable. Root and top growth in pots painted with Kocide 101 in 1989 is being compared to growth in pots painted with the three compounds in 1988. All three compounds appear to be effective for at least two years. The test will continue in future years to determine the longevity of the treatments.

Table 1. Growth and development of three forsythia cultivars as influenced by interior coating 10.8 cm (4¼") pots to control excessive root growth Trial started May 4, 1988. Data recorded December 29, 1988.

Tr No. ¹	Height, (cm)	Width, (cm)	Number branches	Number flower nodes	Root coil depth (cm)	Soil Level, Above +, or Below -, pot rim (cm).
SPRING GLORY						
1	35.1	14.9	7.0	53.9	2.2	+1.5
2	34.0	13.4	7.9	49.1	1.5	+0.5
3	33.6	16.0	8.1	61.6	0	-1.0
4	31.3	16.2	7.2	60.8	0	-0.9
5	30.7	14.0	7.3	56.8	0	-1.0
6	33.3	14.1	6.8	51.3	1.4	+0.6
LSD 5%	N.S.	N.S.	N.S.	N.S.	0.3	0.4
LSD 1%					0.4	0.5
OTTAWA						
1	29.3	12.8	5.8	39.6	2.9	+2.0
2	30.9	14.6	6.5	46.5	2.0	+0.9
3	32.4	13.8	5.8	46.5	0	-1.1
4	29	14.1	5.9	48.3	0	-1.1
5	22.6	6.6	4.8	24.6	0	-1.2
6	30.1	9.6	4.6	32.1	2.7	+1.7
LSD 5%	N.S.	4.1	N.S.	10.0	0.4	0.6
LSD 1%		5.5		13.3	0.5	0.8
MR. K						
1	32.4	11.3	5.9	37.8	3.4	+2.5
2	30.6	11.1	6.3	40.6	2.9	+1.7
3	31.3	12.5	6.7	45.5	0	-1.0
4	33.2	15.5	6.8	54.2	0	-1.0
5	32.5	13.1	6.8	50.0	0	-0.9
6	31.8	13.0	6.3	45.0	2.5	+1.5
LSD 5%	N.S.	N.S.	N.S.	8.7	0.6	0.6
LSD 1%				11.6	.7	

¹ Tr. No
1 None
2 Exterior latex paint
3 Exterior latex paint with Kocide 101 at 100 grams per liter
4 Exterior latex paint with copper carbonate at 100 grams per liter
5 Exterior latex paint with basic copper carbonate at 100 grams per liter
6 Exterior latex paint with oryzalin (Surflan) at 6 grams per liter

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