

Attacking Hard-to-Root Plants at Mobjack Nurseries[®]

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INTRODUCTION

In our effort to produce an exciting mix of new, interesting, hard-to-find material at Mobjack Nurseries, we are continually faced with propagation challenges. I will explain a few of the propagation approaches we have tried and their success.

PROPAGATION APPROACHES

Chemical Manipulation of *Wisteria floribunda* 'Royal Purple'. After battling leaf drop and low rooting percentages on this cultivar, we decided to try two chemical treatments to reduce leaf drop. We chose Bioplex[®], a stress relief/summer digging agent, and Facination[®] a growth regulator which is reported to reduce leaf drop in roses. All cuttings were taken from mature field stock except where noted. They were wounded and dipped in 5000 mg-L (ppm) KIBA and placed under a tent of in our propagation house with intermittent mist. Cuttings were taken at three different times through the summer. Each group was equally divided into thirds and either drenched in Bioplex for 5 min, drenched in Facination[®] for 5 min, or left as the nondrenched control (Table 1). Seasonal timing had a greater effect on rooting than drenching with either Bioplex[®] or Facination[®]. Rooting percentage increased from an average 2% when cuttings were stuck in May to an average 27% rooting with cuttings stuck in July. The rooting of Facination[®]-drenched cuttings was 2-fold (38%) that of the nondrenched cuttings (18%) during the July propagation period. However, rooting percentages were still relatively low. We will continue to look for other treatments and timings to raise our success rate.

Shading and Bench Grafting of Yellow Magnolias. For several years we attempted to root softwood cuttings of yellow magnolia cultivars with little to no success. After hearing a talk about shading at a previous I.P.P.S. meeting we decided to give it a try. We covered the 19-L (5-gal) stock plants in 80% shade prior to budbreak and took softwood cuttings after the proper size shoots had emerged. We got a significant increase in rooting from 30% to 47%, compared to 3% for cuttings taken from full sun stock plants (Table 1).

We also bench graft yellow magnolias in the winter. Pat McCracken, from McCracken's Nursery in North Carolina, described this process to us. We take the understock *M. kobus* as a 0.9 to 1.2 m (3 to 4 ft) containerized whip in a 7.6-L (2-gal.) container into a greenhouse heated at 10 °C (50 °F) in January. When the first white roots are visible we top the understock back to a height of about 7.6 cm (3 inches) and raise the greenhouse temperature to 18 °C (65 °F). We then do a side veneer graft wrapped with rubber band and sealed with pruning paint. It is important to seal the top gaps between scion and understock and also the wound at the top of the scion if it was cut off. The understock is left unsealed to allow the sap to run-off if sap flow is heavy. Understock side shoots are removed as they occur and the scion should start leafing out in 4 to 6 weeks. After another 4 to 6 weeks, we carefully pot them into a 19-L (5-gal) container and remove the rubber band. In a good season

Table 1. Effect of the chemicals Bioplex®, Facination®, or shading of stock plants on rooting of selected woody plant species.

Species/Cultivar	Chemical or environmental treatment	Auxin treatment	Date	Stuck (no.)	Rooted (no.)	Rooted (%)
<i>Wisteria floribunda</i> 'Royal Purple'	Bioplex®	5000 mg·L ⁻¹ KIBA	14 May 2003	100	6	6
	Facination®			100	0	0
	Control			100	0	0
	Bioplex®	5000 mg·L ⁻¹ KIBA	2 June 2003	95	16	17
	Facination®			102	0	0
	Control			101	17	17
<i>Wisteria floribunda</i> 'Alba' (syn. 'Snow Showers')	Bioplex®	5000 mg·L ⁻¹ KIBA	25 Aug. 2003	72	17	24
	Facination®			72	27	38
	Control			72	13	18
	Bioplex®	5000 mg·L ⁻¹ KIBA	14 May 2003	35	4	11
	Facination®			35	6	17
	Control			35	0	0
<i>Wisteria</i> 'Caroline'	Bioplex®	5000 mg·L ⁻¹ KIBA	25 Aug. 2003	47	42	89
	Facination®			45	43	96
	Control			45	36	80
	Bioplex®	5000 mg·L ⁻¹ KIBA	14 May 2003	67	7	10
	Facination®			67	0	0
	Control			67	0	0
<i>Magnolia</i> 'Butterflies'	Bioplex®	5000 mg·L ⁻¹ KIBA	25 Aug. 2003	126	106	84
	Facination®			104	67	64
	Control			126	100	79
	Nonshaded	5000 mg·L ⁻¹ KIBA	1 June 1999	300	10	3
	Shaded		28 June 2000	540	160	30
	Shaded		28 June 2000	72	34	47

they will grow 1.2 to 1.8 m (4 to 6 ft). We have achieved about 75% to 80% success rate with grafting.

Hot Callous Grafting *Styrax japonicus* 'Emerald Pagoda'. We tried rooting this cultivar with little success, and the ones that root don't break dormancy the following spring. We talked with some folks who were grafting styrax and they said the success rate varied greatly from year to year. However, some had given up grafting the species. Knowing how heavy the sap flow can be if pruned in late winter, we decided to try to avoid sap flow problems with the scion and instead allowed the rootstock to fully leaf out. We accomplish this by healing-in bare-root *Styrax japonicus* whips the first week of January in a greenhouse heated to 10 °C (50 °F). After fully leafing out in about 4 to 6 weeks, $\frac{2}{3}$ of the canopy and leaves are removed. The plants are side veneer grafted and wrapped with Parafilm® M tape, which is a pliable material commonly used to seal petridishes. The Parafilm sealer will readily disintegrate after the graft union heals and swells. The union is placed on a hot water tube and covered with potting soil. The water temperature is 120 °F (49 °C) and the graft union is maintained at 29 °C (85 °F). In about 2 weeks abundant white callus is visible. After the scion has leafed out and started to grow, the plants are bare rooted and the understock top is removed. They are then potted and placed under mist for about a week to help them adjust to being transplanted at this critical time. By fall the plants are 0.6 to 0.9 m (2 to 3 ft) tall. We get about an 80% success rate with this method.

CONCLUSIONS

In summary, chemical treatments we have tried are not the answer we were looking for with regards to rooting wisteria. However, we did learn how important seasonal timing is in rooting some of the cultivars. There are a few other products and applications we are going to try to see if we can continue to increase our propagation success. We may test taking hardwood cuttings during wintertime. This has worked in the past on a few other varieties. Shading of stock plants seems to really help rooting yellow magnolias and winter bench grafting is another good option if you have the facilitates to do it. Hot callous grafting is very successful and should be a useful tool in many other applications where sap flooding is a problem or warmer temperatures in the graft union area can aid callusing of the graft union.