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Clonal Propagation and Field Production of Rusty Blackhaw Ames 25098, a Promising Ornamental Shrub for Landscaping

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Abstract
Rusty blackhaw, Viburnum rufidulum Ames 25098, is a slow growing ornamental shrub that is prized for its glossy foliage, good fall color, and cold hardiness. Nursery staff have reported that it can be propagated readily by softwood (SO) stem cuttings but that it transplants poorly, and field production is often very slow. The objectives were to assess the growth characteristics of this selection in comparison with V. lantana and V. dentatum and to determine if these faster growing viburnums, used as rootstocks, could stimulate faster V. rufidulum (scion) shoot growth.

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RFR-A9019

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Introduction

Rusty blackhaw, *Viburnum rufidulum* Ames 25098, is a slow growing ornamental shrub that is prized for its glossy foliage, good fall color, and cold hardiness. Nursery staff have reported that it can be propagated readily by softwood (SO) stem cuttings but that it transplants poorly, and field production is often very slow. The objectives were to assess the growth characteristics of this selection in comparison with *V. lantana* and *V. dentatum* and to determine if these faster growing viburnums, used as rootstocks, could stimulate faster *V. rufidulum* (scion) shoot growth.

Materials and Methods

V. rufidulum Ames 25098 was propagated by SO stem cuttings taken late spring 2007, grown in a climate-controlled greenhouse during the summer, overwintered, then forced into growth early spring 2008, and planted May 2008 at the ISU Horticulture Station, Ames, IA. Semihardwood (SE) stem cuttings were rooted early fall 2007, and otherwise handled like the rooted SO cuttings. Whip-and-tongue grafting was used with dormant Ames 25098 scions and rooted cuttings of *V. lantana* and *V. dentatum* rootstocks. Grafted plants were otherwise handled like the cutting-propagated plants. The statistical design was a completely random design (CRD). Data were collected during fall 2009 and analyzed by t-test for comparisons between treatments with sufficient replication. Data were analyzed using confidence limits (CL) for treatments having insufficient replication.

Results and Discussion

Viburnum species comparison. *V. rufidulum* Ames 25098 produced less total shoot length, was shorter, and had a smaller canopy after two years in the field than did either *V. lantana* or *V. dentatum* (Table 1).

Propagation-method analysis. *V. rufidulum* Ames 25098, propagated from SE stem cuttings produced more total shoot length and were taller than the surviving plant from a SO stem cutting (Table 2). The SO stem-cutting plant had a larger canopy, because the fewer shoots grew longer, but with none as long as the average dominant shoot that grew from SE stem cuttings. Plants from SE stem cuttings had better field survival and suffered less transplanting stress compared with SO stem cuttings. The SE stem cutting-propagated plants produced growth that was as good as or better than Ames 25098 on either *V. lantana* or *V. dentatum* rootstocks, except for 1 *V. rufidulum* Ames 2509/*V. lantana* grafted plant that had a larger canopy (Table 2).

This research shows that SE stem cutting-propagated *V. rufidulum* Ames 25098 plants produced better growth in the production field than did Ames 25098 scions on a *V. dentatum* rootstock, which suffered considerable stress during early summer 2008. Ames 25098 scions on a *V. lantana* rootstock produced growth similar to that of Ames 25098 SE stem-cutting propagated plants, suggesting that, with the appropriate grafting method, Ames 25098 could be propagated during spring, summer, and late fall on a *V. lantana*

rootstock, and in early fall with SE stem cuttings.

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Table 1. Growth-parameter comparisons for *Viburnum rufidulum*, *V. lantana*, and *V. dentatum*, propagated from stem cuttings.

Species	No. plants	Mean total shoot length (in.)	Mean plant height (in.)	Mean canopy diam. (in.)
V. dentatum 'Common'	10	809	40	30
t[z]		8.48***	5.41***	5.43***
V. lantana 'Common'	5	951	49	32
t[y]		30.38***	7.97***	5.48***
V. rufidulum 'Ames 25098'	8	196	31	22

[z]Calculated t value for *V. dentatum* vs. *V. rufidulum*
[y]Calculated t value for *V. lantana* vs. *V. rufidulum*
***Significant at $P \leq 0.001$

Table 2. Growth-parameter comparisons of own-rooted and grafted two-year-old *V. rufidulum* Ames 25098 plants.

Rootstock	No. plants	Total shoot length (in.)	Plant height (in.)	Canopy diam. (in.)
V. rufidulum 'Ames 25098' semihardwood (SE) cuttings[z]	7	208	31	21
95% Confidence Limits (CL)		144-272	29-34	17-23
V. rufidulum 'Ames 25098' softwood (SO) cuttings	1	109*	25*	28*
V. lantana	2	220^{NS}	30^{NS}	28*
		158^{NS}	20*	20^{NS}
V. dentatum[y]	7	23*	11*	7*

[z]Data are means.
[y]Data are means for all *V. rufidulum*/*V. dentatum* grafted plants. All were outside the 95% CL for all growth parameters.
[NS, *]Within or outside the 95% CL respectively, for comparisons with *V rufidulum* SE own-rooted plants.