

Crabapples: Sales Trends and Consumer Preferences in Iowa

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Abstract

A survey questionnaire was sent to 180 active members of the Iowa Nursery and Landscape Association to assess the importance of crabapples to the nursery and landscape industry in Iowa, identify the number of crabapple taxa offered, and characterize consumer preferences which influence crabapple inventories as perceived by questionnaire respondents. Most of the respondents (83%) identified crabapples as their customers' preferred flowering tree, with cultivars 'Prairifire', 'Spring Snow', and 'Snowdrift' as the most popular taxa. Slightly less than two-thirds of all respondents indicated they had eliminated certain crabapple selections from their product line since 1990. The cultivars 'Radiant' and 'Royalty' were cited most frequently as discontinued taxa, primarily because of disease problems. Businesses must continually evaluate the appropriateness of the crabapples they carry to ensure they are offering only those selections with excellent ornamental utility and superior disease resistance.

Introduction

Crabapples are the most widely cultivated small landscape tree in the northern United States and southern Canada (Egolf, 1987). Defined as those taxa in the genus *Malus* that bear fruits 5 cm (2 inches) in diameter or smaller, crabapples offer spectacular spring flowers, attractive summer foliage, an autumnal display of vividly colored fruit, and an array of growth habits and sizes to complement any landscape situation (Brewer et al., 1979; Fiala, 1994; Flint, 1991).

An examination of nursery catalogs underscores the popularity of crabapples. Approximately 200 taxa are currently available from nursery sources, and dozens more become available each year (Green, 1996; Palven, 1988). But with this abundance comes confusion and skepticism over the quality and uniqueness of each selection. In addition, many homeowners and nursery professionals have developed negative attitudes toward all crabapples because of inferior performances by a few widely planted selections. For instance, the cultivars 'Almey', 'Eleyi', 'Hopa', and 'Radiant' were selected by breeders and became commonplace in residential and commercial landscapes because of their showy, 7 to 10-day floral display each spring. Unfortunately, little consideration was given to their aesthetic impact at other times of the year. Thus, many established landscapes are blighted with these and other disease-prone crabapples that defoliate prematurely, flower only in alternate years, and/or produce undesirable fruit litter.

Over the last several decades, both early and more recent crabapple introductions have been held to a higher standard where disease resistance, aesthetic qualities, and maintenance considerations are given equal weight (Green, 1991; Guthery and Hasselkus, 1992). As a result, the majority of taxa available today are excellent landscape plants. Still, a surprising number of undesirable selections can be found in nurseries and garden centers. Failure to purge these substandard selections from wholesale and retail inventories could further undermine the reputation of this useful plant group and erode consumer confidence in the nursery industry.

The objectives of this study were to: 1) assess the importance of crabapples to the nursery and landscape industry in Iowa and identify the number of crabapple taxa offered, and 2) characterize consumer preferences that influence crabapple inventories as perceived by nursery operators participating in this study.

Materials and Methods

Survey questionnaires were sent by first-class mail to 180 active members of the Iowa Nursery and Landscape Association. Mailed questionnaires included a cover letter explaining the objectives of the research and instructions for returning the completed questionnaire. Association members surveyed were assured of the confidentiality of their responses. The initial mailing was sent on June 7, 1996, with follow-up mailings to nonrespondents on July 1.

Completed questionnaires were received from 105 firms (58.3% response rate), however, five businesses were eliminated from the study because they neither grew nor sold crabapples. Firms were

grouped according to their primary business type: retail nursery/garden center, landscape design/installation, rewholesale nursery, and production nursery. Because of the low number of responses, data from rewholesale nurseries, production nurseries, and one lawn care business, were grouped and analyzed together. Incomplete data for questions unanswered were not adjusted, and percentage results presented in tables are based upon actual reported totals. The frequency distribution of respondents was tabulated for each question with PROC FREQ of SAS (SAS Institute, Cary, N.C.).

The questionnaire contained 16 numbered questions in both closed-end and open-end form, and addressed the following areas: a) the relative popularity of crabapples compared to other flowering trees, b) the number of crabapple taxa offered for sale and identification of best-selling selections, c) the number of crabapple taxa eliminated from inventories since 1990, and why, d) crabapple traits that most influence customers' decisions to purchase, e) identification of fruitless selections sold in Iowa, and f) the outlook for future crabapple sales.

Results and Discussion

Most of the questionnaires were completed by owners and/or managers (96%). Respondents grouped themselves into five business categories, with retail nurseries and landscape design/installation firms comprising 90% of all respondents. Specifically, the participant profile was distributed in the following manner: Landscape design/installation (51%), retail nursery/garden center (39%), production nursery (5%), rewholesale nursery (4%), and lawn care (1%).

To gauge the relative importance of crabapples, respondents were asked to rate six species of flowering trees (rated on a scale of 1 to 6 where 1 = most and 6 = least) in order of their popularity with customers. Most believed crabapples were the preferred flowering tree as 83% gave them a rating of 1 (Table 1). Serviceberry was the most frequent choice as second most popular tree (28%).

Decisions concerning which crabapples to offer for sale are complicated by changing consumer demand and the overwhelming number of taxa available. Most nursery businesses are obliged to carry selections that provide a range of flower and fruit colors, and growth habits (weeping, spreading, upright, columnar, etc.). In Iowa, retail nurseries offer the widest assortment of crabapples, averaging 13.9 selections per business (SEM = 2.05). Landscape design/installation firms averaged 10.3 selections (SEM = 1.15), while the combination of all other respondents averaged 11.3 selections per business (SEM = 5.99).

When respondents were asked how they offer crabapples for sale, most retail nurseries (85%) and a majority of landscaping firms (55%) said they sell crabapples as container-grown trees. Over one-third (39%) of landscaping firms reported selling balled-and-burlapped crabapples, but only two landscape respondents stated their businesses offer large specimens transplanted with a tree spade.

The cultivars 'Prairifire', 'Spring Snow', and 'Snowdrift' were cited most frequently as the best-selling crabapple selections (Table 2). In 1996, the Iowa Nursery and Landscape Association designated 'Prairifire' as the "Tree of the Year." Because of its disease-resistant history and bright red-purple flowers (Dayton, 1982), the popularity of 'Prairifire' is not surprising, however, this promotion undoubtedly contributed to its prominent standing in Iowa. Almost one-third of retail (30%) and landscape design (29%) respondents also chose 'Prairifire' as their personal favorite.

Because any amount of fruit litter is intolerable in certain landscape situations, the demand for fruitless flowering trees is great. The selection 'Spring Snow', which is essentially sterile, satisfies this need and explains its popularity with customers of Iowa nurseries and landscaping firms. Finally, white-flowering 'Snowdrift', despite its susceptibility to the diseases apple scab (*Venturia inaequalis*) and fire blight (*Erwinia amylovora*), remains a favorite long after its introduction in 1965. Unfortunately, several respondents listed the cultivars 'Pink Perfection', 'Radiant', 'Royalty', and 'Sparkler' among their best-selling selections. These cultivars have serious disease problems and should not be offered as viable choices (Fiala, 1994).

A majority of all respondents (61%) indicated they had eliminated certain crabapple selections from their product line since 1990. Of the 34 discontinued taxa identified by respondents, the cultivars

'Radiant' (19%) and 'Royalty' (15%) were most frequently mentioned (Table 3). Disease problems were cited by 75% of respondents as the predominant reason for eliminating these and other crabapples from inventories.

A large number of retailers (77%) and landscaping firms (61%) indicated they place equal emphasis on flowering, fruiting, growth habit, and disease resistance characteristics when describing a particular crabapple to a customer. Yet, approximately three-fourths of retailers (72%) and landscapers (76%) declared their customers are still most interested in flower color. The necessity of offering a variety of crabapples with all flower colors represented was reemphasized as 36% of all respondents stated their customers were equally interested in white, red, and pink forms.

Fruiting characteristics of crabapples are a contentious issue in the selection process. In fact, 29% of all respondents reported that 26% to 50% of their customers find crabapple fruit objectionable. Another 18% remarked that 51% to 75% of their customers found fruit objectionable. Intolerance of fruit-bearing crabapples has prompted a large number of respondents (82%) to carry a fruitless selection, and for most (93%), 'Spring Snow' was the lone offering. Although a beautiful tree in bloom, 'Spring Snow' is subject to slight apple scab and mild fire blight (Fiala, 1994). Enthusiasm for this disease-prone crabapple should be tempered and alternative fruitless selections, or trees that bear small, persistent fruit should be identified and promoted.

The majority of respondents (90%) felt crabapple sales had either increased or remained the same during the period from 1990 to 1996, and a slightly larger group (93%) predicted sales would increase or remain the same during the next five years.

Positive feelings about past sales and optimistic perceptions for the future revealed in this study, bode well for crabapple use in Iowa, and presumably in other regions of the United States and Canada. Still, nursery and landscape businesses must continually evaluate the appropriateness of crabapple selections they offer. Fellow green industry professionals and an increasing number of sophisticated gardening clients demand crabapples with excellent ornamental utility and superior disease resistance.

Literature Cited

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Table 1. Rating of flowering trees in order of popularity with respondents' customers.

Tree species	Response (%) by Rating ^z					
	1	2	3	4	5	6
Callery pear	6.1 (n=6)	19.6 (n=19)	13.5 (n=13)	19.5 (n=17)	16.2 (n=13)	19.5 (n=16)
crabapple	82.7 (n=81)	11.4 (n=11)	3.1 (n=3)	2.3 (n=2)	0.0 (n=0)	1.2 (n=1)
dogwood	7.1 (n=7)	20.6 (n=20)	13.5 (n=13)	11.5 (n=10)	15.0 (n=12)	29.3 (n=24)
Japanese tree lilac	3.1 (n=3)	12.4 (n=12)	26.1 (n=25)	25.3 (n=22)	27.5 (n=22)	8.5 (n=7)
magnolia	0.0 (n=0)	8.2 (n=8)	16.7 (n=16)	24.1 (n=21)	26.3 (n=21)	28.1 (n=23)
serviceberry	1.0 (n=1)	27.8 (n=27)	27.1 (n=26)	17.2 (n=15)	15.0 (n=12)	13.4 (n=11)
	n=98	n=97	n=96	n=87	n=80	n=82

^zRating where 1 = most popular and 6 = least popular.

Table 2. Respondents' answer to the request, "List your three best-selling crabapples."

Taxa ^z	Response (%) by Business Focus			
	Total	Retail ^y	Landscape ^x	Other ^w
`Prairifire´	23.4 (n=67)	23.9 (n=27)	22.8 (n=34)	25.0 (n=6)
`Spring Snow´	22.4 (n=64)	20.4 (n=23)	22.1 (n=33)	33.3 (n=8)
`Snowdrift´	14.3 (n=41)	14.2 (n=16)	14.8 (n=22)	12.4 (n=3)
`Indian Magic´	5.2 (n=15)	8.8 (n=10)	2.7 (n=4)	4.2 (n=1)
`Profusion´	4.2 (n=12)	2.7 (n=3)	4.7 (n=7)	8.3 (n=2)
`Pink Spires´	3.8 (n=11)	2.7 (n=3)	5.4 (n=8)	0.0 (n=0)
`Red Splendor´	3.5 (n=10)	4.4 (n=5)	3.4 (n=5)	0.0 (n=0)
`Adams´	2.1 (n=6)	0.0 (n=0)	4.0 (n=6)	0.0 (n=0)
Centurion®	1.7 (n=5)	2.7 (n=3)	0.7 (n=1)	4.2 (n=1)
`Donald Wyman´	1.7 (n=5)	0.9 (n=1)	2.7 (n=4)	0.0 (n=0)
<i>sargentii</i>	1.7 (n=5)	1.8 (n=2)	2.0 (n=3)	0.0 (n=0)
`Robinson´	1.4 (n=4)	1.8 (n=2)	0.7 (n=1)	4.2 (n=1)
`Royalty´	1.4 (n=4)	2.7 (n=3)	0.7 (n=1)	0.0 (n=0)
Harvest Gold®	1.0 (n=3)	0.0 (n=0)	2.0 (n=3)	0.0 (n=0)
`Liset´	1.0 (n=3)	0.9 (n=1)	1.3 (n=2)	0.0 (n=0)
`Red Barron´	1.0 (n=3)	1.8 (n=2)	0.7 (n=1)	0.0 (n=0)
`Sparkler´	1.0 (n=3)	0.9 (n=1)	1.3 (n=2)	0.0 (n=0)
`Thunderchild´	1.0 (n=3)	0.9 (n=1)	0.7 (n=1)	4.2 (n=1)
`Amer. Masterpiece´	0.7 (n=2)	1.8 (n=2)	0.0 (n=0)	0.0 (n=0)
`Coralburst´	0.7 (n=2)	0.0 (n=0)	1.3 (n=2)	0.0 (n=0)
Golden Raindrops®	0.7 (n=2)	0.9 (n=1)	0.0 (n=0)	4.2 (n=1)
`Pink Perfection´	0.7 (n=2)	0.9 (n=1)	0.7 (n=1)	0.0 (n=0)
`Radiant´	0.7 (n=2)	0.0 (n=0)	1.3 (n=2)	0.0 (n=0)
Red Jewel™	0.7 (n=2)	0.0 (n=0)	1.3 (n=2)	0.0 (n=0)
Sugar Tyme®	0.7 (n=2)	0.9 (n=1)	0.7 (n=1)	0.0 (n=0)
	n=286	n=113	n=149	n=24

²Of the 34 taxa listed by respondents, only those mentioned two or more times are included.

³Retail nurseries/garden centers.

⁴Landscape design/installation firms.

⁵Other = rewholesale nurseries, production nurseries, and one lawn care firm.

Table 3. Crabapples eliminated from respondents' product line since 1990.

Taxa ^z	Response (%) by Business Focus			
	Total	Retail ^y	Landscape ^x	Other ^w
`Radiant´	18.6 (n=22)	19.0 (n=11)	18.5 (n=10)	16.7 (n=1)
`Royalty´	15.3 (n=18)	17.2 (n=10)	14.8 (n=8)	0.0 (n=0)
`Thunderchild´	7.6 (n=9)	10.3 (n=6)	5.6 (n=3)	0.0 (n=0)
`Hopa´	6.8 (n=8)	8.6 (n=5)	3.7 (n=2)	16.7 (n=1)
`Red Splendor´	5.1 (n=6)	0.0 (n=0)	7.4 (n=4)	33.3 (n=2)
`Indian Magic´	4.2 (n=5)	0.0 (n=0)	9.3 (n=5)	0.0 (n=0)
`Brandywine´	3.4 (n=4)	1.7 (n=1)	5.6 (n=3)	0.0 (n=0)
`Adams´	2.5 (n=3)	1.7 (n=1)	1.9 (n=1)	16.7 (n=1)
`Profusion´	2.5 (n=3)	3.4 (n=2)	1.9 (n=1)	0.0 (n=0)
`Red Jade´	2.5 (n=3)	3.4 (n=2)	1.9 (n=1)	0.0 (n=0)
× <i>zumi</i>	2.5 (n=3)	1.7 (n=1)	3.7 (n=2)	0.0 (n=0)
`Bechtel´	1.7 (n=2)	1.7 (n=1)	1.9 (n=2)	0.0 (n=0)
Candied Apple [®]	1.7 (n=2)	1.7 (n=1)	1.9 (n=1)	0.0 (n=0)
`Dolgo´	1.7 (n=2)	1.7 (n=1)	1.9 (n=1)	0.0 (n=0)
`Eleyi´	1.7 (n=2)	1.7 (n=1)	0.0 (n=0)	16.7 (n=1)
<i>floribunda</i>	1.7 (n=2)	0.0 (n=0)	3.7 (n=2)	0.0 (n=0)
`Liset´	1.7 (n=2)	1.7 (n=1)	1.9 (n=1)	0.0 (n=0)
<i>sargentii</i>	1.7 (n=2)	1.7 (n=1)	1.9 (n=1)	0.0 (n=0)
	n=118	n=58	n=54	n=6

^zOf the 34 taxa listed by respondents, only those mentioned two or more times are included.

^yRetail nurseries/garden centers.

^xLandscape design/installation firms.

^wOther = rewholesale nurseries, production nurseries, and one lawn care firm.