



# Malus

International Ornamental  
Crabapple Society

Spring 1998

Volume 12, No. 1

# International Ornamental Crabapple Society

## OFFICERS

### **President**

Norbert Kinen  
J. Frank Schmidt & Son Co.  
P.O. Box 189  
Boring, OR 97009  
(503)663-4128

### **Vice President**

Jim Stolzenburg  
Bailey Nurseries, Inc.  
1325 Bailey Road  
St. Paul, MN 55119-6199  
(612)459-9744

### **Editor & Publisher**

David Guthery  
Johnson's Nursery, Inc.  
W180 N6275 Marcy Rd.  
Menomonee Falls, WI 53051  
(414)252-4988

### **Executive Director**

David Allen  
The Holden Arboretum  
9500 Sperry Road  
Kirtland, OH 44094  
(440)256-1110

### **Secretary**

Maria Zampini-Pettorini  
Lake County Nursery  
P.O. Box 122  
Perry, OH 44081-0122  
(440)259-5571

### **Past President**

Maria Zampini-Pettorini  
Lake County Nursery  
P.O. Box 122  
Perry, OH 44081-0122  
(440)259-5571

## SOCIETY COMMITTEES

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## Malus

### **International Ornamental Crabapple Society Bulletin**

Spring, 1998  
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Malus is the official publication of the International Ornamental Crabapple Society and is published twice annually. The Society is a non-profit organization. You are invited to join our Society. Please address all membership and other inquiries to the IOCS office:

**International Ornamental  
Crabapple Society**  
c/o David Allen  
The Holden Arboretum  
9500 Sperry Road  
Kirtland, OH 44094

### **1998 Annual Membership Fees**

- Individual \$20.00
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If you are moving, please notify the IOCS office, so you may continue to receive your issues of Malus.

Manuscripts and other editorial matters pertaining to Malus should be mailed to the editor:

**International Ornamental  
Crabapple Society**  
c/o David Guthery, Editor  
Johnson's Nursery, Inc.  
W180 N6275 Marcy Road  
Menomonee Falls, WI 53051

Deadline for inclusion of articles in the Spring issue is March 1st and for articles in the Fall issue is September 1st.

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**Front Cover Photo:** *Malus* 'White Candle' with its large semi-double white flowers in bloom at the Longenecker Gardens in the University of Wisconsin-Madison Arboretum, Madison, Wisconsin. (Photo by David Guthery)

**Rear Cover Photo:** (Top left) *Malus* 'Silver Moon' in fall color at the Longenecker Gardens (Photo by David Guthery). (Top right) A close-up photo of the flowers of *Malus sargentii* 'Candymint' with its unique "Candymint" coloration (Photo by Michael Yanny). (Bottom right) *Malus* 'Red Barron' in its spring floral display (Photo by David Guthery). (Bottom left) One of the best ornamental crabapples for fruit display - *Malus* 'Indian Magic' (Photo by David Guthery).



## President's Corner

Dear Members:

IOCS is on course for the future. Progress toward our original purpose of evaluating and identifying superior ornamental crabapples continues. The good work started many years ago by pioneers in crabapple research is still in place and serves as a firm foundation for future work.

Observations gathered over a period of 10 years through the National Crabapple Evaluation Program (NCEP) were published in the Fall, 1995 issue of *Malus*. Groundwork for the next step in our evaluation odyssey was laid out this past winter at our annual Board of Directors Meeting in Chicago. The board voted to establish a crabapple evaluation committee to determine which cultivars have been fully tested and should be removed from the test sites in order to make way for new cultivars. Any members with crabapple cultivars that they would like to have evaluated should contact David Allen for more information.

In this first message of my two year presidency, I want to thank the Morton Arboretum and Dr. Tom Green for all the support they have given this organization over the years. Tom's diligent work as our past executive director was invaluable to the IOCS. His countless hours evaluating ornamental crabapples, from both an aesthetic as well as a scientific perspective, gave him a pulpit to serve as both an enthusiastic spokesman for ornamental crabapples and the IOCS. Now the Holden Arboretum serves as a home base for our society and I look forward to this work being carried forward by our very capable new executive director, David Allen.

With some new programs and projects in the works, it's time for all of us to get on the bandwagon and renew our efforts to educate and inform the public about modern, disease-resistant ornamental crabapples. Consumers, landscape architects, urban foresters, garden writers, nursery professionals - the list seems endless. So let's get busy! I look forward to seeing you at the 1998 Crabapple Symposium at the Holden Arboretum in September, if not sooner.

Sincerely,

Norbert Kinen  
Senior Vice-president  
J. Frank Schmidt & Son Co.

**Editor's Note:** In the Spring 1996 (Volume 10, No. 1) issue of *Malus*, a formal announcement of nurseryman - Robert C. Simpson's death was published. Well known in the crabapple world for his extensive introduction of ornamental crabapples, the Board of Directors in 1994 put together a set of interview questions to help secure a living legacy of his experiences and knowledge, so pertinent to those interested in ornamental crabapples. The following article is the first part of the interview in which he had written his responses. Some of the relevant responses from the videotaped version are also included where they serve to help illuminate the text portion. The second part of the interview will follow in the fall issue of *Malus*.

The same questions were given by then IOCS president, John Pair, in a videotaped interview recorded by his son, Tom Simpson. Copies of the videotape are available for \$6.00 plus shipping and handling. Please send your requests for a copy of the video directly to Tom Simpson at the address listed below or call him at (812)882-2441.

Tom Simpson  
Simpson Nursery Company  
1504 Wheatland Road  
P.O. Box 2065  
Vincennes, IN 47591

## Robert C. Simpson Revisited: An Interview with a Plantsman

by Robert C. Simpson (Edited by David Guthery)

Please reflect on your parents and childhood?

On my mother's side, my grandfather, Rev. George Knox, was a Presbyterian minister, originally from Sioux City, IA. His wife, my grandmother, was a homemaker who raised 12 children. She was originally from Pennsylvania.

On my father's side, my grandfather, Henry M. Simpson, was a lifelong nurseryman in the Vincennes area of Indiana. He had four sons, all nurserymen and one unmarried daughter. His wife was also a homemaker.

I can clearly remember my grandfather, retired, sitting in the shade next to the office in a high back rocker, watching all the comings and going with interest. At one time in his youth, times were so rough that the entire nursery operation was sold at auction, even the family cow. A neighbor bid on the cow and gave it back to them so the smallest children would have milk.

Dad (Robert Archibald Simpson) lived all his life in the area near Vincennes. Among his close friends were the three Hobbs brothers - Ollie, Harry and Fred Hobbs, all nurserymen themselves from Plainfield. He also had personal friends on the staff of Ohio State University, Purdue University, Iowa State University, the University of Illinois, the University of Wisconsin as well as the US Research Station at Beltsville, Maryland. He was a recognized authority on fruit tree pruning and spoke at numerous fruit grower meetings. Pomology was his profession, his hobby

and his daily pleasure. I especially remember meeting through him such prominent horticulturists as Dr. J.M. Dorsey (IL), Dr. Kraus and R.H. Roberts (WI), Dr. Gourley and Dr. Doulett (OH), F.P. Cullman and C.L. Burkholder (Purdue) and Armstrong (KY).

Dad took me on many of his trips to orchards, fruit grower meetings and universities as well as the USDA at Beltsville from my high school days and even earlier. The family also frequently visited dad's two brothers at the Simpson Nursery Co. in Monticello, Florida during the winter. While there I loved to camp out and fish and hunt in the Flat woods.

Dad was a perfectionist. Attention to detail was emphasized. He was also an innovator. For soft ground, large wooden shoes were strapped to the mules feet as they pulled the spray rigs. Towers were mounted on all spray tanks so as to properly spray 25 foot tall apple trees. We had some of the earliest gasoline powered sprayers as well. For his personal long handled pruners, he welded an extension on them so he could do more of the ground pruning himself.

My mother was a homemaker, raising six children and was a very active church worker. From my mother I learned to love flowering plants. I helped her in trips to our woods to collect wild phlox, bluebells and shrubs such as the native euonymus. I loved to wander local greenhouses just to see and smell the many strange plants.

I had two sisters and three brothers. Only one brother, David, stayed with our business and was a partner for many years while we were entirely fruit growers.

As a youngster, I most clearly remember riding our Hamiltonian race gelding, at the time our buggy horse. We would ride double and bareback. I learned to dog paddle in the local creeks and ponds with soft mud bottoms. Later Dad took me to the local YMCA to swim.

I cannot remember taking grade school seriously. However, in high school I made the National Honor Society, barely. I was also on the track team (high jump) and played on the football team (the first in over 20 years). I cannot remember any subjects of special interest.

Summers - there was never a question about work except "what is to be done today." Ten hours a day, six days a week was normal. Farmers worked from daylight until dark and paid ten cents an hour for help.

I can barely remember the last apple and cherry tree budding as we were phasing out the nursery for all apple and peach orchards. We still had several old timers for nursery help when we started back into nursery propagation, both budding and bench grafting. What worried me the most was the coming shortage of help for harvesting fruit. At one time we had over 100 people on the payroll. With the nursery alone, this was cut to around eight steady men plus around ten

temporary seasonal workers, mostly from a local high school.

During the Depression of the 1930's, my brother and I had to find other work, leaving the nursery to my dad and my uncle. My brother, David, worked for the US Army at Jeffersonville, Indiana. I had kept an Army Reserve Commission active by correspondence and went on active duty with the Civilian Conservation Corps (CCC) in West Virginia. After the CCC was changed to a civilian basis, I had an opportunity for a Lilly fellowship at Purdue in nutrient culture on orchids. I completed work on my Masters degree in 1939 and started on my PhD.

However, I was called to active duty in January, 1942, and because of my CCC experience, I was assigned to Personnel at the New Orleans Army Air Base. Later I was transferred to the aeronautical laboratory at Dayton, Ohio, and spent six months in charge of the hydroponics station at Ascension Island growing fresh vegetables for the joint task force there.

During my childhood, my mother probably influenced me the most with her love of plants. Later on, the business trips with Dad probably were the greatest influence, along with the leading figures in horticulture I met.

#### How about your college years?

I was enrolled at Purdue in 1925. I had been enrolled at Cornell previously; however, why I changed, I am not sure. My first year, as I remember, the Purdue enrollment was 4000 men and 500 women. At that time Purdue had one of the most beautiful campuses in the Midwest with large areas of lawn, hedges and large old trees.

Of the instructors, those I remember as "teachers" were a poultry professor, Prof. Chuck Phillips; a biology lab instructor, who did not always use the best of English; and a biology professor in plant materials, Prof. E.L. Kohl.

#### Who was an early influence in fostering an interest in horticulture and crabapples?

During my graduate years of study, my greatest influence, as well as a personal friend, was Dr. Ralph Shay. He was just starting at Purdue to work on disease resistant apples, scab in particular. As a result of this friendship, I made my first crab varietal crosses. From two years of crosses, I spent the next 20 years evaluating them (around 1000 crosses). This was done on the side, in addition to our full time orchard operation and subsequent change to nursery.

#### Describe the history of your company?

Simpson Nursery Company was founded in 1851 under the name of Knox Nurseries by Archibald Simpson. At first, only fruit trees were grown, but within a



few years the product line expanded into a wide variety of trees and shrubs.

Salesmen traveled by rail and made sales calls by rented horse and buggy.

Years later production was limited to one-year apple and cherry trees. At one time, we were one of the largest growers of one year cherry trees in the country.

About 1912, the emphasis was again shifted to apple and peach orchards with the name being changed to the Simpson Orchard Company. The fruit business continued for almost 60 years.

Around 1947, a limited number of nursery items were added as a side-line, but by 1968 when I became sole owner, the last orchards were phased out and the business was entirely nursery production again. Emphasis was on one-year budded trees, especially crabapples and hawthorns. The aim was to offer the most disease resistant, ornamentally fruited and fine flowering kinds available. A 35 year period of breeding and observations had resulted in many widely acclaimed selections. Named varieties of American and deciduous hollies have since been added. In 1978, Tom Simpson returned to the company as Vice-president and is carrying on the family tradition as the fifth generation member. His daughter, Ann, and son, Matt, are growing up within the nursery and may soon be the sixth generation.

We now propagate over 50 varieties of crabapples and hawthorns, as well as many varieties of deciduous hollies. In 1984, we changed our name again from the Simpson Orchard Company to the Simpson Nursery Company.

We started specializing in crabapples at the suggestion of Fred Hobbs of CM Hobbs & Sons, Indianapolis, Indiana. We had been out of the commercial fruit tree production for so long that when demand dropped off, we were one of the first to go. Crabapples were a success from the start. Many other items were tried, some budded, some from seedling sources; but Hopa, Almey and Eleyi were the standards. However, I was looking for newer and better kinds from many sources. Then disease problems became an important consideration. I also wanted to concentrate on small, ornamental fruits that persisted, in addition to colorful blossoms.

I was interested in plants other than crabapples. We added Winter King hawthorn, my discovery and introduction. Then we added American holly and later the deciduous hollies. All came under the heading of small ornamental plants with persistent fruits.

I used Ralph Shay's procedures for breeding. For the seed parent, blossoms in the balloon stage had the petals and the stamens removed with manicure scissors. Blossoms in the balloon stage, but unopened were the sources of pollen. Anthers were clipped and air dried in glass coasters in the office. As the pollen was shed, it was transferred to test tubes and refrigerated. A soft rounded pencil eraser was used to transfer pollen from the test tubes to tagged blossoms. All but two or three

blossoms had been removed per cluster, the strongest ones being left. No bagging was done as bees did not visit the blossoms without petals or pollen. All nearby blossom clusters had been completely clipped as well. Then as they neared maturity, the fruits were harvested and the seeds extracted.

Seeds were fall sown in wire mesh covered flats for rodent and bird protection and placed on shadehouse beds. We did not sterilize the soil and, as a result, many flats suffered serious losses from damping off. The *Malus zumi* var. *calocarpa* seedlings were conspicuous as there were very few losses. Some other crosses suffered nearly complete loss, while others did better.

Give us your perception of *M. zumi* var. *calocarpa*, as it was so important in your work?

For *M. x zumi* var. *calocarpa*, we used what had been sold to us listed as that. Initially our test plants of *M. x zumi* var. *calocarpa* came from three or four nurseries, four or five plants each. There were distinct differences in vigor, form, fall foliage color and fruiting ability. We selected the one we considered the best overall- the best foliage, fall color and uniformity. My guess is that there is no one true *M. x zumi* var. *calocarpa* available or they are mixed up with the species, *M. x zumi*. For instance, I have seen nurseries list one year seedlings of *M. x zumi* var. *calocarpa*; however, in my experience, from some of our sources, a lot of the seedlings are quite uniform after two years in the field, while on other occasions, there has been a great deal of variation.

#### Simpson Introductions

- M. Brandywine***® [Klehm No. 8] - (*M. ioensis* 'Klehm's Improved Bechtel' X *M. x adstringens* 'Almey') Originally the idea was 'Almey' had nice pink blossoms, while 'Klehm's Improved Bechtel' was somewhat white. Brandywine® was the best of the pink seedlings.
- M. 'Burgundy'*** [Simpson No. 4-17] - (*M. spectabilis* 'Van Eseltine' X *M. x adstringens* 'Almey') Selected for it's grapelike fragrance and masses of dark red blossoms. A nursery on the west coast liked it and asked that we name it. I was not going to originally introduce it as it was somewhat scabby.
- M. 'Canary'*** - Chance seedling that grew up through the deciduous hollies and was selected for it's annual production of small canary yellow fruits which persist late. Disease resistant.
- M. sargentii* 'Candy mint'** - Selected from several thousand seedlings of *M. sargentii* for it's vigor, very dark green leaves and very dark mahogany bark. Red new growth indicated the blossoms would be a dark pink. In balloon the

flower is reddish pink. The color carries over around the edges of the petals giving it a candymint color. It was named by Tom after budded trees had age and size to properly evaluate. It was Tom's selection and patent. Unique form with wild shoots forming "reverse crotch angles" and a flat-top. A specimen on our grounds is currently 12' tall by 24' wide.

- M Centurion®** [Simpson 11-57] - (*M. x zumi* var. *calocarpa* X *M. adstringens* 'Almey') Columnar form with pinkish red fruits and resistant to apple scab. Came out of same cross as 'Indian Summer' and 'Indian Magic'.
- M. 'Ellen Gerhart'** [Simpson No. 14-13] - (*M. spectabilis* 'Van Eseltine' X *M. x zumi* var. *calocarpa*) Semi-double pink blossoms. The small, glossy red fruits are long lasting and marked with a golden cone-shaped calyx scar.
- M. 'Indian Magic'** [Simpson No. 11-63] - (*M. x zumi* var. *calocarpa* X *M. adstringens* 'Almey') Very small, glossy red fruits changing to orange after leaf fall. The fruits are long lasting, unusually ornamental with a rose red bloom. Fruits persist until they soften during the winter and are relished by the birds. Still think bad for scab, but crop of great fruits offset this.
- M. 'Indian Summer'** [Simpson No.11-58] - (*M. x zumi* var. *calocarpa* X *M. adstringens*'Almey')
- M. 'Jewelberry'** [Simpson No. 7-62] - A seedling selection of (University of Illinois No. 656 = *M. floribunda* X *M. x purpurea*) Very small, glossy red fruits which were produced in abundance. Scab resistant, it is one of the more dwarf crabs and was sent from the University of Illinois to us.
- M. 'Pink Satin'** - A chance seedling my son, Tom, selected for it's disease resistance and it's unusually bright, clear pink blossoms which are massed on one-year shoots, annually. Best brilliant pink flowered crab with no leaf diseases in the field, even in high weeds where other crabs were diseased.
- M. 'Prairie Maid'** [Simpson No. 8-29] - (*M. x zumi* var. *calocarpa* X *M. spectabilis* 'Van Eseltine') Good rounded form with pink flowers annually. Highly disease resistant foliage which has been one of the best at the Morton Arboretum in Lisle, Illinois.
- M. 'Ralph Shay'** - (Purdue University No. 15-56 = *M. coronaria* 'Wolf River' X *M. x zumi* var. *calocarpa*) From Dr. Ralph Shay's crosses for scab resistant apples. Fruits large for a crab, producing annual masses of highly ornamental red fruits. Tree is vigorous with limbs that bend, but do not split, and it has disease resistant, dark green foliage. Fruits are the last to discolor and hang on until spring when they break up with a minimum of litter.
- M. 'Red Barron'** [328AA] - An unnamed plant from the Arnold Arboretum which they had dropped from consideration. Donald Wyman personally gave me

permission to name and introduce it. Selected for it's narrow, columnar form, dark rose red blossoms, red fruits and excellent fall foliage color, it nonetheless is subject to scab; however, there is no defoliation so the dark green foliage remained attractive until development of red fall color. The annual fruits persist and are ornamental.

- M. 'Silver Drift'** - It's origin is unknown and was observed on the Vincennes University campus as a group planting. I suspect it was purchased as *M. 'Snowdrift'*, which it closely resembles in form and foliage. An added asset is the small, glossy red fruits that annually persist and are a source for bird food in the winter as they soften. No fireblight.
- M. 'Silver Moon'** [Simpson No. 1] - Purchased from Kohankie as *M. hupehensis*. Mr. Gruleman said his wood had come from a homeowner, who said it was a Tea crabapple. After 10 to 15 years of observation, I decided it was too good to discard. As a young tree, it is oval to columnar and is disease resistant, except for the occasional bout with fireblight. It is distinctive for the masses of large, snow white flowers produced late in the season after the tree is in full leaf and well after all other crabapples are done. The fruits are very small, persist until they soften late and are relished by birds in late fall. It is also unique in that it seems to come true from seed. Outstanding.
- M. 'Sentinel'** [Simpson No. 12-77] - (2C X Dot) Selected for it's slender, upright form, pale pink blossoms, which fade to white, and very small red fruits. Also very disease resistant.
- Numbers 5-28, 7-52** - Trees never sent to fields, lost.
- Simpson 8-36** - (*M. x zumi* var. *calocarpa* X *M. spectabilis* 'Van Eseltine') Cole Nursery had a five year option for it and released it around 1985. Excellent glossy, persistent golden yellow (3/8") fruit. Large double or semi-double, pale pink blossoms. It has disease resistant, dark green foliage and a rounded form. Sister seedling of *M. 'Prairie Maid'*.
- M. 'White Candle'** [Simpson 6-15] - (*M. spectabilis* 'Van Eseltine' X *M. x adstringens* 'Almey') Named and introduced by Interstate Nurseries. It is a narrow, columnar crab with excellent dark green foliage. The semi-double to double flowers are very large. No scab defoliation.
- M. 'Yellow Jewel'** - A seedling selection of (University of Illinois No. 857 = *M. floribunda* X self) Named and promoted by Neuman Nursery, Joliet, Illinois.

Were there other crabapples you helped to popularize?

**M. x adstringens 'Selkirk'** - Sold for many years as Morden 457.

**M. 'Mary Potter'** - Seldom listed until we pushed. Still a great crabapple. Named



for Donald Wyman's daughter.

Many crabapple selections were eliminated upon secondary test plantings in our final selections. One promising selection, No. 8-36, is maintained. Cole Nursery, Painesville, Ohio, had a five year option on several. They dropped on all but *M. 'Royal Ruby'*.

Several crop selections were lost because they were never set in test plantings from storage due to other more pressing work until they were too late to plant.

I worked for years with the Morton Arboretum, the Morden Arboretum, the United States National Arboretum, the Arnold Arboretum, the Brooklyn Botanical Gardens, the Bickelhaupt Arboretum and Michigan State University. Many of our earliest selections were registered with the Arnold Arboretum, including Vaughn and Winter King hawthorns. I have had working relationships and personal friendships with the following people: George Avery - Brooklyn Botanical Gardens (from them I purchased *M. 'Red Jade'*, when the first 100 plants were sold for \$100.00 each); Milton Baron - Michigan State University and the Arboretum; Roy Nordine - Morton Arboretum; Donald Wyman - Arnold Arboretum; Dr. Leslie - Morden Arboretum (Canada); Dr. John Wister - Swarthmore College; Dr. Ralph Shay - Purdue University; Buddy Hubbuch - Bernheim Forest and Arboretum; Dr. Gene Eisenbeiss, Ted Dudley, Donald Egolf - US National Arboretum; Dr. Richard Lighty - Mt. Cuba Center, Greenville, Delaware; Dr. Michael Dirr - University of Georgia - Athens; Dr. Fred Galle - Calloway Gardens; Ferris Miller - Chiollipo Arboretum, Seoul, South Korea; Polly Hill - plant breeder, personal arboretum; Carl Kern Sr. - Springhill Cemetery and Kern Nursery, Ohio; David Leach - North Madison, Ohio, Branch of the Holden Arboretum; Alan Cook - Dawes Arboretum; Joe McDaniel - University of Illinois, plant breeder; Peter Bristol - Holden Arboretum, plantsman, horticulturist; Ken Cochran - Secrest Arboretum, Wooster, Ohio; Elwin Orton - New Jersey AES, New Brunswick, plant breeder; Walter Behrendt - Missouri Botanical Gardens; Elton Smith - Ohio State University; Susyn Andrews - Taxonomist, Royal Botanical Gardens at Kew, England; Theodore Klein - Yew Dell Nursery, Crestwood, Kentucky, plantsman, Cave Hill Cemetery, world traveler and lecturer.

#### What is your favorite crabapple?

I would have to say that *M. 'Indian Magic'* was, except for scab, the best for ornamental fruit. *M. 'Pink Satin'* was the best one as a pink with disease resistance. *M. sargentii 'Candy mint'* was the best crab for the landscape due to it's form. *M. 'Silver Moon'* was the best bloomer. It was a heavy bloomer well after others were gone. You couldn't put your finger in it without touching a blossom.

## Bailey Nurseries Customer Survey on Crabapples

by Jim Stolzenburg

In the spring of 1997, Bailey Nurseries, Inc. conducted a short, four question survey on customer preferences regarding crabapples. A one page survey sheet was sent out in February along with our spring availability list to about 3000 of Bailey Nurseries' customers. Surveys could be returned by mail, fax or E-mail. After six months, 51 surveys had been returned from the following states and provinces: Alaska, Colorado, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Minnesota, Missouri, Montana, Nebraska, North Dakota, Ohio, Ontario, Pennsylvania, Prince Edward Island, Vermont, Wisconsin, Wyoming. All but five of the respondents were in the retail end of the nursery business. Respondents had the following answers to choose from with a ranking of 1 being the most important and a ranking of 8 being the least important. Their responses were as follows:

	Degree of Importance							
	1	2	3	4	5	6	7	8
<b>Question 1: Why do your customers buy a crabapple over another type of tree?</b>								
Fruit for birds	1	5	6	8	12	9	7	0
Hardiness	2	15	9	8	4	8	3	1
Fruit for animals	0	0	0	1	4	2	9	31
Flower display	43	4	4	0	0	0	0	0
Stature	3	17	15	7	2	4	0	2
Colored foliage	0	7	7	9	8	6	11	2
Soil Tolerance	2	1	4	3	11	10	9	8
Fruit Display	0	3	6	14	7	8	8	2
Other	0	0	0	0	1	0	0	0
<b>Question 2: Why are your customers hesitant to buy a crabapple over another type of tree?</b>								
Disease susceptibility	10	24	11	2	2	0	0	0
Fruit litter	37	10	4	0	0	0	0	0
Attracts birds, animals	1	3	11	14	19	0	0	0
Short lived flowers	1	9	11	20	8	0	0	0
Suckering	2	5	12	11	18	0	0	0
Other	0	0	0	0	0	1	0	0

Degree of Importance

1 2 3 4 5 6 7 8

**Question 3: Why do your customers prefer one crabapple over another.**

Flower size	0	8	3	1	10	13	9	2
Fruit color	0	1	3	5	8	21	7	2
Colored foliage	0	9	6	12	10	3	8	0
Fruit size	1	4	8	6	5	7	15	1
Disease resistance	7	6	13	9	8	2	3	0
Stature	6	15	9	13	5	0	2	0
Flower color	35	7	8	0	1	0	0	0
Other	3	2	0	1	0	0	0	0

**Question 4: Items you would find helpful in promoting and selling more crabapples.**

Sales aids	17	14	14	1	0	0	0	0
More cultural information	8	21	13	3	0	0	0	0
Better varieties	19	11	13	1	0	0	0	0
Other	7	0	0	0	0	0	0	0

**Conclusions**

As can be seen by Question 1, flower display remains the number one reason for buying a crabapple with stature and hardiness a distant second and third. Fruit display, colored foliage and fruit for birds followed, respectively. In Question 2 on the other hand, they responded that fruit litter is the main deterrent for not choosing a crabapple, again by a wide margin. Disease susceptibility came in a strong second. Among crabapples, flower color is the main determinant of choice with both stature and disease resistance coming in second and third, respectively. Colored foliage was fourth. Twenty-two surveys included comments, half of these indicated the need for more fruitless varieties. Other comments indicated that there were "too many varieties", there needed to be more good crabapples with red or pink flower colors as well as more crabapples with persistent fruit.

**The "Best" Crabapples for Fall Fruit Display**

by Dr. Jeffery Iles

There is no middle ground when it comes to crabapples. People either love them or hate them. Crabapple supporters point to the spring floral display as the main reason to use this group of ornamental trees. A seemingly equal number of detractors will recount tales of woe in which crabapples have littered the ground with decomposing fruit or have jettisoned their leaves in the middle of summer. In fact, some crabapple selections are very poor trees and deserve induction into the woody plant "Hall of Shame".

Fortunately for the unsuspecting tree buyer, most of these miscreants have been rogued from nurseries and garden centers. Many of the selections available today have much improved disease resistance and bear small, colorful fruit that persist on trees well into winter. So, regardless of past opinions, cast them aside and give crabapples another chance. But do not just take my word for it. Prove it to yourself. Examine the landscape in your city or town. In many instances, the only relief from drab, leafless landscapes in winter comes from the brightly colored fruit of crabapple trees.

But which crabapples are the best for your particular area? This question has been raised countless times, and thanks to two national evaluation programs, answers are now available. In 1983, the National Crabapple Evaluation Program (NCEP) was established with the purpose of testing approximately 50 of the best taxa of flowering crabapples over a broad geographic range (test sites in 21 states).

In 1989, many of these same test sites were enlisted to participate in the National Crabapple Introduction Program (NCIP), for the purpose of evaluating newly introduced crabapple cultivars. The Department of Horticulture at Iowa State University has been a participant in both of these programs. Initially 50 crabapples selections were planted at the ISU Horticulture Research Station north of Ames, but today, over 70 different selections are under scrutiny. Information about disease resistance, flowering traits, growth habits and fruiting characteristics are gathered each spring and fall, and based on these annual observations, the "best" crabapples (those having outstanding fruit displays combined with good to excellent disease resistance) are described as follows.

**M. 'Donald Wyman'** - Named after the famous horticulturist at the Arnold Arboretum in Jamaica Plain, Massachusetts, *M. 'Donald Wyman'* is a rounded tree growing to about 20 feet tall and wide with white spring flowers and small (0.4



inches in diameter), bright red fruits that persist throughout winter. Because the fruit does not soften, birds rarely depend on them for winter food.

***M. Golden Raindrops***<sup>TM</sup> - With its upright open, airy appearance and unusual cutleaf foliage, this selection of Tibetan crabapple is one of the most elegant small trees available for residential or commercial landscapes. White, star-like flowers blanket the tree in spring, while small (0.25 inches in diameter) golden-yellow fruit steals the show each autumn.

***M. 'Indian Magic'*** - Unlike a few of its infamous crabapple predecessors, *M. 'Indian Magic'* truly has multi-season appeal. Rose-pink flowers in spring, handsome fall leaf color (reddish-orange) and a generous crop of small (0.5 inches in diameter), bright red fruits that turn reddish orange after the first few frosts of the season, make this tree a perennial favorite of visitors to the ISU collection. In addition, its low, spreading habit (15 feet tall and wide), gains it entry into landscapes with overhead power and communication lines. Birds will take the fruit of *M. 'Indian Magic'* after they have softened in late fall or early winter.

***M. 'Professor Sprenger'*** - Named for the director of the experimental gardens of the Department of Horticulture, Wageningen, Netherlands, *M. 'Professor Sprenger'* is an upright spreading tree (20 feet tall and wide) with fragrant white spring flowers and a spectacular fall fruit display. Comparatively large (0.5 to 0.7 inches in diameter), the fruits change from green to orange-yellow, and finally to orange-red, persisting into midwinter. While birds are not fond of the fruits, humans have taken an interest in them for use in floral displays and dried flower arrangements.

***M. 'Ralph Shay'*** - Named to honor the late pathologist in charge of breeding programs at Purdue University, West Lafayette, Indiana, this vigorous, horizontally branched tree produces large (1.25 inches in diameter), bright red fruit that cling tenaciously to the tree throughout winter. The fruits are too large for most birds to carry off, but they are appropriate for human consumption either fresh from the tree or in preserves.

***M. Red Jewel***<sup>®</sup> - Unlike many crabapples which have rounded or spreading growth habits, *M. Red Jewel*<sup>®</sup> is an upright, pyramidal-shaped tree (18 feet high and 12 feet wide), perfect for narrow boulevards or other tight spaces. White flowers cover the tree in spring and small (0.5 inches in diameter), bright cherry-red fruit is ornamentally effective from late summer to December. Fruit is quite

persistent, often remaining on the the tree until the following spring.

***M. Sugar Tyme***<sup>®</sup> - An upright, oval tree (18 feet high and 15 feet wide), *M. Sugar Tyme*<sup>®</sup> has white flowers in spring and bright red fruit (0.5 inches in diameter) that persist well into January. Unlike some crabapples that occasionally have off years when fruit crops are light, *M. Sugar Tyme*<sup>®</sup> always produces a bumper crop of bright red fruits.

***M. 'Winter Gem'*** - This selection will be difficult to find in nurseries and garden centers for a while, but the hunt is worth the effort. White flowers cover its rounded frame in spring, followed by masses of small (0.4 inches in diameter), bright red fruit that persist until January when trees are stripped clean by foraging birds.

There are few rules when using crabapples in the landscape. Give them full sun, a well-drained location in the landscape, plenty of room to grow and they will handle the rest. And do not limit yourself to just one selection. In fact, using several selections with contrasting fruit colors can create a spectacle equal in beauty to their spring floral show.

I encourage you to visit the NCEP/NCIP trial site nearest you to judge these ornamental trees for yourself. And by all means, make several trips to the collection. Of course spring is the time to evaluate the flowering characteristics of crabapples, but do not discount the "other" season of beauty from late summer well into winter when trees are loaded with brightly colored fruits.

# Apple Scab Evaluations at the Secrest Arboretum in Wooster, Ohio

by James Chatfield, Erik Draper and Ken Cochran

Apple scab evaluations in the National Crabapple Evaluation Plot at the Secrest Arboretum have been conducted for 44 taxa since the plot was established in 1984, while another 14 taxa, planted in the 1990's, have been evaluated only recently. Data presented below include results of ratings for the period from 1993-1997 and for 1997 alone.

Crabapples were planted in a completely randomized design with three single plant replicates per crabapple taxa and provided with minimal maintenance - limited to minor pruning, initial mulching and regular mowing. Ratings were made on 6-3-97, 7-2-97 and 8-6-97 and for a total of 17 times for the period encompassing 1993 through 1997 for the first 44 taxa.

The rating system was as follows:

- 0 - No scab noted.
- 1 - Slight scab; less than 5% of leaves affected with no negative effect on aesthetics.
- 2 - Moderate scab; 5-20% of leaves affected; some yellowing, little or no defoliation with moderate negative effect on aesthetics.
- 3 - Extensive scab; 20-50% of leaves affected; significant defoliation and/or leaf yellowing with significant negative effect on aesthetics.
- 4 - Heavy scab; 50-80% of leaves affected; severe defoliation and discoloration of leaves with severe negative effect on aesthetics.
- 5 - Extreme scab; 80-100% of foliage is affected; defoliation is complete or nearly complete.

Taxa	1993 - 1997* Scab Ratings	1997*** Scab Ratings
<i>M.</i> 'Adams'	1.7	1.6
<i>M. baccata</i> 'Jackii'	0.0	0.0
<i>M.</i> 'Beverly'	0.0	0.0

Taxa	1993 - 1997* Scab Ratings	1997*** Scab Ratings
<i>M.</i> 'Bob White'	0.0	0.0
<i>M.</i> Weeping Candied Apple®	1.8	2.7
<i>M.</i> Centurion®	1.4	2.1
<i>M.</i> 'David'	0.9	0.6
<i>M.</i> 'Dolgo'	0.0	0.0
<i>M.</i> 'Donald Wyman'	1.2	2.0
<i>M. floribunda</i>	0.4	0.6
<i>M. balliana</i> 'Parkmanii'	0.6	0.9
<i>M.</i> Harvest Gold®	2.4	2.0
<i>M.</i> 'Henningi'	1.9	1.5
<i>M. adstringens</i> 'Hopa'	2.8	2.9
<i>M.</i> 'Indian Magic'	2.6	2.2
<i>M.</i> 'Indian Summer'	2.1	1.6
<i>M.</i> 'Liset'	1.0	1.5
<i>M.</i> 'Mary Potter'	0.5	1.0
<i>M.</i> Molten Lava®	1.1	0.8
<i>M.</i> 'Ormiston Roy'	0.3	0.0
<i>M.</i> 'Prairifire'	0.0	0.0
<i>M.</i> 'Professor Sprenger'	0.8	1.2
<i>M.</i> 'Profusion'	2.7	2.3
<i>M.</i> 'Radiant'	3.1	2.8
<i>M.</i> 'Ralph Shay'	2.0	2.0
<i>M.</i> 'Red Barron'	1.9	2.2
<i>M.</i> 'Red Jade'	1.2	1.4
<i>M.</i> Red Jewel®	0.1	0.0
<i>M.</i> 'Red Splendor'	1.5	1.0
<i>M.</i> 'Robinson'	2.5	2.4
<i>M.</i> 'Royalty'	1.9	2.3
<i>M.</i> 'Ruby Lustre'	1.7	2.0
<i>M. sargentii</i>	0.0	0.0
<i>M.</i> 'Selkirk'	1.6	1.5
<i>M.</i> 'Sentinel'	0.7	1.3
<i>M.</i> 'Silver Moon'	0.0	0.0
<i>M.</i> 'Snowdrift'	2.2	2.1
<i>M.</i> 'Strawberry Parfait'	0.1	0.0
<i>M.</i> Sugar Tyme®	0.7	0.8
<i>M.</i> Velvet Pillar™	2.7	2.4
<i>M.</i> 'White Angel'	0.0	0.0
<i>M.</i> 'White Cascade'	2.2	2.1



Taxa	1993 - 1997* Scab Ratings	1997* Scab Ratings
<i>M.</i> 'Winter Gold'	2.3	2.1
<i>M. zumi</i> var. <i>calocarpa</i>	0.9	0.6
<i>M.</i> 'Adirondack'		0.0
<i>M.</i> Camelot®		0.2
<i>M.</i> 'Canary'		1.4
<i>M. sargentii</i> 'Candymint'		0.0
<i>M.</i> 'Winter Gem'		1.4
<i>M.</i> Golden Raindrops™		0.0
<i>M.</i> Lancelot®		0.4
<i>M.</i> 'Louisa'		0.0
<i>M.</i> 'Naragansett'		1.9
<i>M.</i> 'Pink Satin'		1.6
<i>M.</i> 'Prairie Maid'		0.0
<i>M.</i> 'Purple Prince'		0.0
<i>M.</i> 'Silver Drift'		1.0
<i>M.</i> 'Sinai Fire'		0.0

\* Average of 17 ratings over the five year period from 1993-1997.

\*\* Average of the three ratings from 6-3-97, 7-2-97 and 8-6-97.

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## The 21 Fruit Salute!

by Erik Draper and James Chatfield

As our search began for "the perfect crabapple", we encountered many articles and studies recommending crabapples we knew to be "scab beasts". This was both exciting and frustrating. The excitement for us was to get in on the melee of ideas, discoveries and opinions of which crabapples merited planting. The frustration came upon reviewing any crabapple article, study or research conducted and finding inconsistent results and contradicting recommendations.

Upon close examination, it was noted that most studies were based on one to four yearly observations. What would happen if the observer saw bloom, then could not get back until fall to observe disease effects and fruit color? Was this a true representation of the tree's character? In our opinion, it was not.

What about disease expression which can change over the course of the season? What about landscape values such as fall color, fruit retention, bark character and form? Unlike other research, our intent was to uncover these nuances or subtleties of the crabapples themselves; therefore we concluded that our observations needed to be recorded monthly. We wanted to develop a true characterization or "profile" of each crabapple. Realizing this was a huge commitment; we took a chance and became "profilers" ... of crabapples!

Monthly observations allow a more accurate understanding of disease and insect problems. Both of these problems can cause leaves to fall off prematurely from the trees. However, if the researcher is not there to observe early leaf drop and the thinning canopy, he may inaccurately assume, at summer's end, that trait to be the nature of this particular tree. It has been our experience that to accurately describe disease problems, full seasons of monthly ratings from May to August are imperative.

Monthly ratings also help determine leaf drop due to damage from insects rather than diseases. It can even help to distinguish which disease caused early leaf drop, rather than inaccurately ascribing all the loss to the great "SCAB". Observing which trees normally exhibit somewhat chlorotic foliage can help to not attribute the chlorosis to "poor planting sites or techniques", or even nutrient deficiencies.

Yes, it is time consuming, but well worth the effort to us, as well as nurseries, garden centers, landscapers and homeowners. So as a tribute to all of the friends made and the fun and enjoyment of profiling crabapples - we give you the 21 Fruit Salute! The salute is based on our observations at Ohio State University's Secrest Arboretum in Wooster, Ohio.

**M. 'Adirondack'** - Pluses: Oblong orange-gold fruit darkens to a deep orange-red, effective from early October through mid-December. The red-tinged white blossoms lasted 12 days in 1997. No scab or fireblight noted; columnar, upright tree form. Minuses: Fruit sparse and at the top of the tree.

**M. *baccata* 'Jackii'** - Pluses: Lovely maroon-red fruit effective from late July through mid-December. The white blooms lasted an average of 10 1/2 days. Large uniform round tree with exquisite large, glossy green leaves; fall colors of yellow and rust contrasting with the maroon fruit is outstanding! Bark has an orangish cast; no scab or fireblight. Minuses: Sparseness of fruit clusters and mediocre overall winter appearance.

**M. 'Bob White'** - Pluses: Small firm, yellow-gold fruit matures to orange-gold, effective from mid-October through late January; a real standout in the winter landscape. Exceptional floral display of delicate white blossoms last an average of 14 1/2 days. Rounded tree; no scab or fireblight noted; one of the best yellow-fruiting cultivars. Minuses: Fruit and floral display alternates yearly from profuse to sparse; mediocre summer and early fall appeal.

**M. *sargentii* 'Candy mint'** - Pluses: Small, red-purple fruits are effective from early July through mid-December. Delicate pink, fuchsia-tinged blooms lasted for 14 days in 1997; reliable fruit/flower displays; deep green, purple-tinged foliage. Wonderful "Sargent-like" form; no scab or fireblight noted. Minuses: Very slow growing; dull leaf appearance.

**M. 'Donald Wyman'** - Pluses: Persistent glossy, bright red fruit are effective from mid-September through late March. Wonderful white blossoms last an average of 15 1/2 days. Large, broadly rounded tree; very attractive exfoliating bark; no fireblight noted. Minuses: Fruit mummies can detract during bloom; minor scab on leaves, but can be heavy on fruits, reducing their appeal.

**M. 'Winter Gem'** - Pluses: Sensational profuse, bright red fruit effective from

early September through mid-April. Consistent white blooms lasted 10 days in 1997. Broadly rounded form; incredible winter fruit display; fast growing large tree; no fireblight noted. Minuses: Minor scab on leaves, but not on the fruits; mediocre summer appeal.

**M. Golden Raindrops™** - Pluses: Petite, brilliant yellow fruit effective from mid-October through mid-December. White blossoms lasted 10 days in 1997. Open spreading form; no scab noted; interesting cutleaf foliage and great autumnal color. Minuses: Bland green fruit throughout summer; fireblight may be a problem.

**M. 'Indian Magic'** - Pluses: Outstanding autumnal red-orange fruit display effective from mid-June through late March. Unfailing pink blooms last an average of 13 1/2 days. Rounded tree form; fall foliage is apricot-orange; attractive bark; no fireblight noted. Minuses: Major leaf scab problems yet scab on fruit is minimal; heavy scab years cause almost complete defoliation by mid to late summer; fruit mummies may persist through bloom.

**M. 'Louisa'** - Pluses: Lemon-gold fruit effective from late September through mid-December. Delicate pink blossoms lasted for 10 days in 1997. True weeper form with upswept branches is outstanding anytime; no scab or fireblight noted; fruit develops a rose blush. Minuses: Scattered, sparse fruit.

**M. 'Mary Potter'** - Pluses: Profuse masses of red, petite fruit effective from mid-August through late September. Exquisite white blossoms last an average of 11 1/2 days. Elegant weeping-spreading form; profuse red to pink buds line branches, salmon colored young bark revealed as older bark flakes off; trace of scab. Minuses: Some fruit mummies in winter; some fireblight noted.

**M. Molten Lava®** - Pluses: Small fiery red fruits maturing to red-orange are effective in early August through mid-November. Dependable, attractive white blossoms last an average of 13 days. Spreading-weeping habit; outstanding fiery red fruits melting into fall foliage with cascading branch structure create a "flowing lava" effect; excellent winter ratings due to overall plant structure combining layered horizontal branching with a soft, feathery red pedicel effect; dense somewhat cluttered foliage effect in summer. Minuses: Mediocre summer appeal; minor scab on leaves and fruit.

**M. 'Ormiston Roy'** - Pluses: Persistent orange yellow fruit is effective from mid-September through late March. Reliable white blossoms last an average of 13 days. Broadly rounded consistent tree form; fruit mature to a muddy orange; deep furrowed orangish bark is nice in winter; trace of scab. Minuses: Mummified fruit can detract at bloom time; some fireblight noted.



**M. 'Prairifire'** - Pluses: Firm purple-red fruits age to cherry-red and are effective from early July through mid-November. Spectacular coral-red blossoms last an average of 13 days. Rounded airy tree form; unbelievable show of contrasting flowers with newly emerged red-tinged green foliage; orangish spur leaves contrasts with fruit and other fall foliage; lenticel-speckled maroon bark; no scab or fireblight noted. Minuses: Mediocre winter and early summer appeal.

**M. 'Prairie Maid'** - Pluses: Abundant clusters of orange-red fruits are effective from early July through late December. Reliable, splendid deep pink blooms lasted 13 days in 1997. Broadly rounded tree form; no scab or fireblight noted. Minuses: Lacks winter appeal; waxy coating on fruit dulls display until weathering removes it.

**M. 'Purple Prince'** - Pluses: Prolific, unusual deep purple (almost black) fruit are effective from early July through late December. Beautiful rose-red blossoms lasted 13 days in 1997. Broadly rounded form; foliage is purple-tinged and deep green; no scab or fireblight noted. Minuses: Fast growing; lacks winter appeal.

**M. 'Red Jade'** - Pluses: Attractive red fruit effective from early September through mid-November. Consistent, large white blooms last an average of 13 days. Graceful spreading-weeping form; prolific red buds swell to pink balloons and finally open to white. Minuses: Minor scab on leaves and fruit; unsightly fruit rot and mess in January; scab on fruit dull their appearance.

**M. Red Jewel®** - Pluses: Bright cherry red fruits are effective jewels from early September through mid-April. Snowy white blossoms last an average of 13 days. Upright narrow form; persistent fruit remain firm throughout the winter; no scab noted. Minuses: Lacks summer appeal; fruit mummies can detract during bloom; fireblight may be a problem.

**M. sargentii** - Pluses: Profuse, tiny red fruit are effective from mid-August through late November. Reliable white blooms last an average of 11 days. Attractive dwarf, wide-spreading form; no scab or fireblight noted. Minuses: Fruit rapidly deteriorates and shrivels by mid fall; raisin-like mummies persist into winter.

**M. 'Sentinel'** - Pluses: Attractive, firm red fruits are effective from early September through early mid-February. Sensational pink-tinged white blossoms last an average of 13 days. Unique vase-shaped tree form; red-pink buds line upright branches; pleasing yellow fall foliage contrasts with persistent fruit. Minuses: Fruit mummies may detract during bloom; mediocre summer appearance, minor scab.

**M. 'Strawberry Parfait'** - Pluses: Profuse red-cream fruits are effective from early June through late January. Reliable pink blooms last an average of 14½ days.

Unusual erratic, upright-spreading form; red-tinged newly emerged foliage; pleasing fall foliage contrasts with firm fruits, no scab or fireblight noted. Minuses: Some late winter fruit mummies; unusual shape not for every landscape.

**M. Sugar Tyme®** - Pluses: Brilliant red fruits are effective from mid-September through mid-March. Stunning sugar-white blossoms last an average of 13 days. Rounded tree form; reliable yearly fruit and flower displays; persistent large firm fruits mature to red-brown; trace of scab. Minuses: Fruit drops all at once before bloom.

We have fired our salvo in the 21 fruit salute! Our ammunition is just a few of the crabapples we enjoy observing and which, in our opinion, merit use in the landscape. Please note this is not solely a list of "scab resistant" crabapples. There are certain "scab resistant" plants which are alternative disease nightmares (e.g. fireblight, frog eye leaf spot). If a crabapple is simply touted as "scab resistant", this should not imply it is worthy of inclusion in the landscape. Scab resistance must not be universally equated with ornamental excellence. There are many crabapples which exhibit a trace of scab or have minor scab problems that are wonderful trees if you know, understand and accept some level of scab.

Admittedly, our choices also tend to rate highly in scab resistance because it is a parameter of our aesthetic evaluations. However, scab and it's effects are only a part of our aesthetic criteria of fruit, foliage, form and other features. First and foremost, we salute the frequently forgotten facet of crabapples' fantastic fruits. Remember, "A fruitless crabapple is an oxymoron!" We welcome any salvos fired back at us because there is nothing more enjoyable than a good, old fashioned crabapple fight!

For more of our comments on our aesthetic evaluations of over 60 crabapples, rated monthly over the past five years, including information on fruit color, season of fruit impact, blossom color, number of days in bloom, tree form, scab ratings, average aesthetic ratings on a 1-5 basis and more of our pluses and minuses, see:

Draper, E.A., Chatfield, J.A., Cochran, K.D., Bristol, P.W., and Allen, D.E. 1998. Comprehensive aesthetic evaluations of crabapples at Secrest Arboretum in Wooster, Ohio: 1993-1997. Ohio Agricultural Research and Development Center and Ohio State University, Special Circular 157. Ornamental Plants: Annual Reports and Research Reviews, pp. 83-94.

Scab ratings: Trace=a few leaves or fruit affected; minor=significant defoliation and/or leaf yellowing with negative effects on aesthetics; Major=severe defoliation and discoloration of leaves with serious negative effects on aesthetics.

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