MALUS

International
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ACKNOWLEDGMENTS

Cover Photo:	Malus sargentii: Nearly indistinguishable from M. zumi calocarpa, Lester P. Nichols
Malus 'Madonna' Photos:	Lake County Nursery, Perry, Ohio; Kodakrome 64
Editorials:	Dr. Tom Green
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MALUS "OBSCURUS"

A series featuring some of the lesser known crabapples.

Malus 'Hyslop'

Craig Alan Hyslop

It is the year 1863 and the [American] Civil War is in "bloom". Hyslop's Crab has been one of the most widely cultivated of the Crabapple species for many years. But you say you have never heard of the Hyslop's Crab? Don't feel as if you're alone; you just joined the majority of modern day Crabapple enthusiasts! I find it amazing that a plant that was for many years, a premier example of its species, has faded into near obscurity and is almost unknown by today's Crabapple users. I hope this article can rekindle some enthusiasm for this truly historic Malus cultivar.

The origin of the Hyslop's Crab is unknown, according to Downing's book published in 1869; though in it he remarks: "This variety has been long and pretty extensively cultivated. It is commonly listed by nurserymen throughout the country. It is one of the best known and most widely cultivated of the Crabapples". This cultivar was also studied and discussed in over a dozen horticultural journals published prior to the year 1900. In more modern times it has been discussed in Donald Wyman's book, *Crabapples for America*, (1955), in W.J. Bean's book, *Trees and Shrubs Hardy in the British Isles*, (1976), and in Hillier's *Manual of Trees and Shrubs (4th edition)*.

In the Massachusetts Agricultural Experiment Station Publication *Descriptions of Apple Varieties*, (1943), J.K. Snow asserts that Hyslop's crab is, "a distinct variety seldom confused with others". It is described as a tall tree with yellowish bark, zigzag shoots, and yellowish, crenate, rather sharply serrated leaves. The detailed description of the plant is as follows:

TREE GROWTH - Quite vigorous, tall, ascending, moderately curving upward, openly branched with a stocky trunk. "It is a good grower and very hardy," according to S.A. Beach in his 1905 work, The Apples of New York.

BRANCHING - Medium stocky, zigzag in nature with long, curved, slender branchlets with long internodes.

BARK - Olive green in color, tinged with reddish brown, lightly streaked with scurf-skin; twigs slightly pubescent near the tips.

LEAVES - 4 " x 2 3/4" in size; large flat; oval; acute; medium stiff; dark green, glabrous above; light green, pubescent below. The leaf edges are coarsely crenate. Leaves fall fairly early.

BUDS - Exceptionally large and prominent, very long, narrow, plump, acute, free and slightly pubescent.

FLOWERS - Occur after leaves appear, buds open somewhat purplish, and flowers are medium sized, 3.5 cm wide, single, flat and white in color (occasionally tinged with pink on margin), in dense clusters of 6-7 per bud.

FRUIT - Yields biennially or in some cases annually, matures in late September and October, fruits 4 cm wide, above medium to large in size, round-ovate or obovate and sometimes inclined to be oblong but very uniform in shape. Skin color is clear pale yellow, almost completely blushed with lively dark red, shading to deep carmine or purple carmine. Beach describes them as "brilliantly colored" in his book. The flesh is creamy yellow, sometimes with a tinge of red near the skin, very firm, fine, at first juicy, but becoming dry and mealy, subacid, astringent with age.

DISEASE RESISTANCE - Moderately to severely affected by fire blight in some regions but not considered a severe problem for the Midwest.

ECONOMIC USES - Fruits are excellent for culinary purposes and are very good for making jellies and for pickling purposes by private and commercial growers. They are somewhat tart when eaten off the tree.

The Arnold Arboretum located in Jamaica Plain, Massachusetts has a few of the Hyslop's Crab's close cousins. One cultivar was known as Malus x adstringens 'Hyslop', the Siberian Crab Hyslop, for which I have no technical information, died in 1924 after 23 years of growth there. Another variety they currently have is known as Malus x adstringens 'Hyslop's Sport'. This cultivar has semi-double pure white flowers similar in size to those of Malus ioensis. Planted in 1938, this variety is still in their collection. Another interesting note concerning cultivars of Malus 'Hyslop', that they are growing, is that the fruits were 1 " to 2" in diameter; this is much larger than the 1" fruits that most researchers seem to note.

The Hyslop Crabapple is one of the oldest American Crabapple cultivars. It has significant historical and economic value. Hyslop Crab has been grown continuously since 1896 by the New York State Agricultural Experiment Station. The only wholesale source I have been able to find, as of January 1988, has been Hilltop Orchards and Nurseries, Inc., Route 2, Hartford, Michigan 49057, (616)621-3135. They had some liners on M-111 rootstock available for spring of 1989. This find was the result of contacting over 15 leads all over the United States. Through my search, I have found quite a few nurseries that had discontinued the Hyslop Crab within the last few years due to lack of sales. (In this issue of Malus Hollyhedge Nursery in Monmouth County, New Jersey, is noted as growing Hyslop).

It would be ridiculous to say that the Hyslop Crab is the ultimate Crabapple for every horticultural situation, as no single crabapple can be. The Hyslop Crab is definitely worth a try in special situations for special purposes by any modern day Crabapple user. This crab is truly a part of America's horticultural history and deserves to be "rediscovered" by Crabapple users.

I would like to express special thanks to the following individuals for this article:

*Mr. Jock Ingels, of LaFayette Home Nursery, for informing me that the Hyslop Crab did exist, which initially spurred my interest.

*Dr. Thomas L. Green, of the International Ornamental Crabapple Society, for providing me with basic information on the plant and possible sources.

*Mr. Roger D. Way, Professor of Pomology Emeritus, of the New York State Agricultural Experiment Station, who provided me with extensive detailed information and reference materials on the Hyslop Crab, and was the basis for much of my data. Without the above individuals' help, and the help of others, this article would not have been possible, and the Hyslop Crab might have stayed obscure forever in the minds of all Crabapple enthusiasts.

FURTHER NOTES ON THE OREGON CRABAPPLE, MALUS FUSCA, WHICH WAS FEATURED IN "MALUS", SUMMER 1985, Vol. 1 No.1.

James N. Cummings, Professor of Pomology, *New York State Agricultural Experiment Station, Cornell University, Geneva, NY 14456*

In our apple rootstock breeding program, we seek resistances to a number of pests and diseases. Where appropriate, we screen potential parents directly; in cases in which this is not feasible, we test progenies of potential parents.

1. Crown Rot Susceptibility - We routinely screen tens of thousands of *Malus* seedlings for susceptibility to *Phytophthora cactorum*, the fungus which incites crown rot. In searching for resistant germ plasm to be used as parents, we subjected *M. fusca* seedlings of Oregon provenance to our standard inoculation procedures, using zoospores of 13 isolates of the pathogen. Every seedling was killed within 100 hours. This is the highest level of susceptibility we have ever encountered.

2. Fire Blight Susceptibility - Our basic procedure is to use a fine hypodermic syringe to inoculate succulent shoot tips with isolate 273 of *Erwinia amylovora*, the fire blight incitant. Among seedlings of Oregon provenance, approximately 20% demonstrated very high levels of resistance; about 20% were very susceptible. An F_1 selection of *M. fusca* (see no. 4 below), maintained for many years by Cornell Plantations, Ithaca, is almost immune to the bacterium. Among our hybrids between the very resistant F_1 and the very susceptible rootstock Malling 9 *(M. x domestica)*, about 15% were very resistant, about 25% susceptible, and the remainder intermediate. As a species, *Malus fusca* should be considered as a source of fire blight resistant genetic material, but not as a wholly resistant species.

3. Susceptibility to Wooly Apple Aphids - We use the insecticide Mesurol to eliminate predators, then inoculate with young aphids. All clones and seedlings of *Malus fusca* that we have tested have been susceptible to Eriosoma lanigerum. However, aphid population levels have consistently been much lower than those observed on, e.g., the very susceptible apple rootstock Malling 26. Seedlings derived from the F_1 x M.9 and F_1 x M.27 hybrid families were more susceptible than the F_1 parent.

4. Identification - Among the fruiting arboretum trees I have observed, only one -- the F_1 from the Ithaca collection -- appears to be a true *Malus fusca*. Some are *M. x dawsoniana*, and some appear not to have been derived from *M. fusca* at all. (This throws considerable doubt over the susceptibility of M. fusca to fireblight since the F_1 from Ithaca is the only certain M. fusca which is nearly immune. I have never seen fireblight on M. fusca after years of observation all over this country.)

5. Virus Sensitivity - The F_1 clone and almost all the Oregon seedlings of *M. fusca* are very sensitive to at least one of the common latent viruses with which Malling 7 is infected.

ORNAMENTAL CRABAPPLE TREES IN MONMOUTH COUNTY, NEW JERSEY

Jan Palven

Below is a subjective evaluation of ornamental crabapples for landscape use in Monmouth Co., New Jersey, including information obtained from a study of many of the cultivars most highly rated by the International Ornamental Crabapple Society. These trees have been grown in containers at Hollyhedge Nursery over a two-year period.

History

Approximately 25 to 30 species of *Malus* exist in Europe, Asia, and North America. Hybrids of these species have given rise to thousands of named varieties of apples (apples are arbitrarily defined as having fruits over 2" in diameter) and upwards of 700 Crabapple taxa. Many cultivars of Malus have been lost over the centuries, and dozens of new ones are named each year.

The apples of today are suspected to have much genetic material from *Malus pumila* (Wild Apple), a species native to eastern Europe and Western Asia, along with that of *Malus sylvestris* (French Crabapple), *Malus baccata* (Siberian Crabapple), and other species. Some of the newest apple breeding programs incorporate *Malus floribunda* (Japanese Crabapple) (M. zumi-calocarpa) and other species in order to increase resistance to various diseases.

Most of the wild species of crabapples have contributed to some modern cultivars, while many modern cultivars of unknown origin and are probably complex hybrids. Some straight species of Crabapple are also used as ornamentals, notably *M. floribunda*, *M. baccata*, *M. hupehensis* (Tea Crabapple), and *M. sargentii* (Sargent Crabapple). Cultivars of crabapples with relatively large fruits ('Centennial', 'Dolgo', 'Geneva', 'Hyslop', 'Whitney', 'Young America') are grown primarily for jellies, pickling, and other culinary uses, while the great majority are grown primarily for ornamental or conservation (bird food) purposes.

Because of the ornamental qualities of their flowers and fruit, and their general ruggedness and adaptability, crabapples have found favor with gardeners and nurserymen for centuries.

Ancient oriental landscapers, the great French nurseryman Victor Lemoine, the American nurseryman Arie den Boer, and Niels Hansen of the South Dakota Agricultural Experiment Station, among others, made major contributions to the development of our modern ornamental crabapples.

More recently, Simpson Nursery Co. of Vincennes, Indiana, various agricultural experiment stations, and others have been involved in breeding better crabapples. Lake County Nursery Exchange, Ohio; Moller Nursery, Oregon; J. Frank Schmidt & Sons Nursery, Oregon; and others have been instrumental in evaluating new cultivars and introducing them to the trade.

Much of the recent interest in better Crabapple cultivars can be attributed to the work of the late Professor Les Nichols, Penn State University, who for years systematically studied the disease susceptibility of crabapples grown in the United States and published his results. His efforts culminated in the formation of the International Ornamental Crabapple Society in August 1985, which will be based at the Morton Arboretum in Lisle, Illinois, under the management of Dr. Tom Green. The IOCS will evaluate crabapples and solicit evaluations from the nursery trade and will publish results of their findings for use by the industry and amateurs.

Crabapple Characteristics

Lake County Nursery Exchange asks in its catalog, "What makes a better crab?", and answers, "In our estimation, it is disease resistance, form, foliage, fruit, and flower, in that order." Although laymen might tend to think of flowers first, the professional and interested amateur recognizes that such trees as the Willow Oak, possessed of no ornamental flowers or fruit, are exceedingly ornamental by virtue of form and foliage alone. On the other hand, 'Hopa' Crabapple, a reliable beauty for one week each spring when it is a mass of pink flowers, is a reliable eyesore every summer when it is defoliated by the fungus called apple scab.

Let's discuss disease resistance, form, foliage, fruit, and flower in that order.

1. Disease Resistance

   Many, many insects and diseases may injure flowering crabapples, but most do little, if any, permanent injury. By contrast with dogwoods, birches, and many other small ornamental trees, crabapples seem almost indestructible. The diseases scab, cedar-apple rust, and fire blight are the major Crabapple problems in the landscape.

   a. Scab, a leaf fungus, may defoliate extremely susceptible cultivars such as 'Hopa' and 'Almey' almost every summer here in the humid Northeast. It is also a major problem for apple growers, requiring many costly sprays. Less susceptible cultivars may be defoliated or partially defoliated by scab every couple of years, while some cultivars are virtually immune.

   b. Cedar-apple rust is similar to scab in that it is a leaf fungus that defoliates the trees without doing any permanent harm. Again, susceptibility varies from extremely susceptible to immune.

   c. The most potentially damaging disease of *Malus* in the landscape is the bacterial disease fire blight, which is spread by wind and rain, by bees visiting flowers, and sometimes by pruning shears. Outbreaks of fire blight may occur every few years in the Northeast, depending upon weather conditions, while areas of the west may have severe outbreaks almost every year. Some crab taxa are immune to fire blight. In a slightly susceptible cultivar, flowers infected by bees may be killed, and soft terminal growth may be killed back for an inch or two. In areas where fire blight is a severe problem, branches or even entire trees may be killed on susceptible cultivars. Les Nichols listed 'Snowdrift', among others, to have had severe fire blight in the arboreta he evaluated in 1983. Other cultivars were listed as having very severe fire blight. In New Jersey the cultivar 'Snowdrift', which has been popular here for decades, does not exhibit what home owners and nurserymen would call severe fire blight. While pears in this area may lose large limbs or be entirely lost to fire blight, 'Snowdrift' and Tea Crab, (also listed with severe fire blight) seldom, if ever, develop extensive die back of the terminals from fire blight. 'Snowdrift', however, and even *M. tschonoskii*, which Nichols' listed as being severely susceptible to fire blight present no problem in this area, but I would still hesitate to recommend those otherwise excellent cultivars that Nichols lists as being severely susceptible to fire blight. (Editor's Note: In 1987 many nurserymen lost most or all of their M. 'Snowdrift' in the Midwest.)

      Previously, a deficiency existed in Nichols' scab evaluations. Due to the great numbers of trees he was evaluating, his work was spread over a long period in the summer. He may have examined cultivars 'Indian Magic', 'Red Barron', and 'Hopa', for example, in June, and found leaves on all heavily infected with scab lesions and rated all severely susceptible. But, during July or August, the 'Hopa' tree might have been completely leafless, while the other two retained most, if not all, of their foliage.

      It is known that 'Indian Magic' and 'Red Barron' generally retain most of their foliage, despite infection, and since scab lesions on the leaves are not nearly so unsightly as a leafless tree in summer, rating 'Indian Magic', 'Red Barron', and 'Hopa' as severely scab susceptible while only 'Hopa' defoliates is misleading.

      Les Nichols' disease rating has now evolved, through Dr. Tom Green, into a summer and fall aesthetic rating, which is a better indicator of ornamental qualities. Furthermore, the new overall rating takes into account other factors which previously appeared as notations in Nichols' work. For instance, for whatever reasons, some cultivars may be much more seriously damaged by mites, Japanese beetles, scale insects, leafhoppers, mildew, or other problems than other cultivars. The newer aesthetic rating tells the nurseryman, landscape architect, landscaper, and home owner what he wants to know most -- what is the tendency of the tree to look good year in and year out. One last disease, root and collar rot (Phytophthora) will be discussed later, as will rabbit and vole (pine mouse) injury, which are basically problems in nurseries only.

2. Form

   Crabapple trees come in a variety of forms, from weeping forms to narrow-upright to shrub forms such as 'Sargent' and 'Jewelberry', which may attain only 6-8' in height and a much larger spread. Among the weeping forms are those which are extremely pendulous; and among the more common rounded or upright forms, differences may be seen in symmetry and density of foliage. Some, such as 'Snowdrift' and 'Donald Wyman', have a great tendency toward a straight trunk and symmetrical growth. Others are the opposite and require much staking and pruning to attain a neat-looking tree. However, trees that are very vigorous growers tend to be popular, despite the fact that they may have less desirable ornamental qualities than other less vigorous crabapples. *Editor's Note: Nurseries can obtain a marketable tree faster, and home owners tend toward fast-growing trees.*

3. Foliage

   The foliage of crabs ranges from light green to dark green and purple to reddish-purple in some cultivars and from large leaves to small leaves, giving a fine-textured plant. In general, the very dark green, healthy-looking foliage of 'Ralph Shay' or 'Donald Wyman' is preferred today to the lighter green of 'Snowdrift'. The purple-leaved and fine textured cultivars have their places in specific settings. Most crabapples have little fall color, but certain plants such as 'Indian Magic' and 'Tschonoski' have good fall color, which must be considered an additional ornamental attribute. 'Candied Apple' foliage tends to cup up in the heat of the summer, which may be unattractive to a professional because the tree looks dry, but this may not be noticeable to the average home owner.

4. Fruit

   The fruit of ornamental crabapples is being considered more and more as the major ornamental attribute. Selections are being made with brilliant yellow, orange, or red fruit which may keep the tree ablaze in the winter when there is little color in the landscape. The persistence of the fruit of some cultivars may be counted in months, while in most years the persistence of flowers is counted in days. Warm fall weather or alternating warm and cold weather will cause faster deterioration of the fruit than consistent cold. On the negative side, the large fruit of some cultivars may drop, causing a maintenance problem, or hang on the tree in an unattractive mummified condition; some cultivars may be alternate bearers, under some or all conditions, and only produce fruit every other year.

5. Flowers

Most crabapples, even alternate bearers, put on a good flower show, even in "off" years, when there is little fruit production. 'Mary Potter' falls into this category. Flower color varies from pure white to shades of pink or red. Some red cultivars may have the undesirable trait of fading to an unattractive grayish-pink. Most cultivars have single flowers, but petal count may also be double or semidouble. To date, there are no really disease resistant double crabs. *(Editor's Note:* 'Malus 'Madonna' is extremely resistant to all diseases so far in tests near Chicago. There are some reports of fire blight, but these are not confirmed. It is also extremely fragrant and is a heavy fruiter.) All exhibit heavy scab or some other undesirable trait. Work is being done to develop better double cultivars, but some single cultivars already rival the flowering cherries in flower display. Some cultivars, such as 'Burgundy' and *M. floribunda*, are noted for having especially fragrant flowers. Included in Attachment 1 are the results of the 1985 crabapple survey conducted by Dr. Nichols with assistance from other pathologists and horticulturists. It should be noted that of over 700 different species and cultivars examined, they chose to describe only 48. These are the very best to date. Of the listed cultivars, we are growing 29. We omitted cultivars exhibiting severe fire blight, those which we came to believe through observation and description were similar to, but not superior to, other varieties, and some that are as yet unavailable.

In addition to these 29 cultivars we wanted to look at the varieties 'Hyslop', 'Geneva', and 'Whitney', which along with 'Dolgo' are grown for their edible fruit. We are also growing the newer varieties 'Ralph Shay', 'Ellen Gerhardt', 'Burgundy', 'Anne E.', and the old varieties 'Katherine' and 'Van Eseltine', making a total of 38 cultivars we have been working with, trying to narrow them down to the very best for our area.

Nursery Production

It should be noted that what we consider "best" is often purely subjective and that our tastes run to the showy. What we might consider to be spectacular fruit display might be considered an excessively gaudy tree by others, so the reader is advised. Because we are attempting to establish a commercial nursery, we are forced to take other factors into consideration besides the previous five factors. These include: whether the cultivar is a vigorous and reliable grower under nursery conditions, and how it competes with other cultivars and with other types of flowering trees used in the landscape trade. For instance, the weeping cultivar, 'Red Jade', is a very slow grower, often exhibits graft incompatibility problems in the nursery, and requires staking while young. But, because of 'Red Jade's' distinctive habit and excellent fruit, it is very popular and widely grown despite its high production costs and cost to the consumer. We are not growing 'Red Jade' at present because we have 'Anne E.', a new cultivar from Manbeck Nursery, which is touted as improved 'Red Jade'. We should probably be growing 'Red Jade' for direct comparison purposes at least.

Because we are growing only the most disease resistant cultivars of crabapples, we do not use any fungicide sprays in our nursery. However, insecticidal sprays are necessary for best production because insects can build up to a greater degree in nurseries than would be expected under general landscape conditions, and we are pushing for fastest possible growth. The Agricultural Extension Service provides spray recommendations. Rabbits and voles are also very serious problems in the nursery, but are not a problem for larger trees in the landscape. We prevent the girdling of the trees by rabbits with the use of commercial plastic tree collars. Voles also eat the bark and roots of the trees and may girdle small trees below ground level. We use commercial mouse bait for voles.

Crabapples in general are extremely cold-hardy trees, able to withstand temperatures in the upper Midwest and Canada, where flowering cherries and other ornamental trees are not hardy. The roots of most plants are not nearly as hardy as the tops, but soil temperatures do not go much below freezing even where air temperatures go to -30 or -40 degrees Fahrenheit. So hardiness is not generally a problem for crabapples. Root hardiness is, however, a problem for us because we grow all our crabapples in containers above ground. Our original stock plants obtained from commercial nurseries had been grafted onto common apple rootstocks, which are usually grown from seed from cannery waste. These rootstocks are not particularly hardy, and while fine grown in the ground, may be injured or killed in containers when air temperatures and temperatures in the containers reach -10° F. Thus, we have been grafting our trees onto 'Antonovka' seedlings, which are extremely hardy, and popular in Canada, Poland, and Russia. We are also trying some 'Selkirk', 'Bittenfelder', and 'Borowinka' seedling rootstocks. 'Bittenfelder', very popular in Europe, and 'Borowinka', a domestic selection, are like 'Antonovka', very hardy, and are said to have improved resistance to root and collar rot (*Phytophthora*). *Phytophthora* is more of a nursery problem in crabapples and seldom shows up in the landscape except under very poorly drained conditions. Lawyer Nursery, a very large grower of rootstocks in Montana, claims that 'Borowinka' is more tolerant of poor drainage than other rootstocks. What is interesting though, is that the variety of scion on the rootstock may influence susceptibility. It has long been known that some apple cultivars are highly susceptible to root rot, regardless of what rootstock they are grown on. 'Grimes Golden', for example, is short-lived in orchards. Due to mismanagement in our container culture, we have identified some crab cultivars with similar susceptibility. We grew five 3-4' whips of the previous cultivars for one year in 5-gallon containers in good peat-bark mix with trickle irrigation. All showed good growth. The following year they were moved up to 15-gallon containers of a heavier, more slowly draining mix. Due to the larger volume and wetter mix, we had some root problems. No fungicides were used. While it is likely that few plants grew to their fullest potential, we had few casualties. However, 4 of 5 'Anne E.' (the improved 'Red Jade'), 'Centurion', and *M. tschonoskii*, and 3 of 5 'Prairiefire' died of root and/or collar rot. All of these varieties were on common apple roots and all were treated similarly. We suspect that this was more than a coincidence; but since 'Anne E.' and 'Centurion' are regarded as excellent new cultivars by several nurseries, who so far have apparently had little trouble growing them, this may be more to indicate how terrible our conditions were. Conversely, though, if this is the case, it also shows just how tough the other cultivars are which grew fairly well.

One further problem in nursery production is excessive fruiting on young trees. This was particularly evident on 'White Angel', of which we have 100 in 15-gallon containers. Those few trees of this cultivar, which for whatever reason, were stunted last year and set few fruits this year overtook the others in height and caliper, which had a heavy fruit set. In addition to sapping the energy from the trees, the heavy fruit loads have bent the leaders and branches on most trees, causing misshapen trees. Next year, we will go to either chemical or hand removal of the flowers.

Suckering from the rootstock is a problem of crabapples in the landscape. Some trees are produced by cuttings and tissue culture to alleviate the problem. While offering great potential, these techniques may present their own problems with root rot and transplant recovery in the future. Schmidt Nursery offers a line of crabapples grafted onto MM 106 rootstock because this clonal rootstock does not sucker. However, this rootstock is very susceptible to *Phytophthora*, so it is not the ultimate answer to suckering. Volumes have been written on the various clonal rootstocks and a great amount of research is being done to improve them for orchardists. 'Novole', a new rootstock from the Geneva Research Station, may be of use in Crabapple production when it becomes available. Generally, (except for disease resistance, ultimate size, shape, suckering, and growth rate) the method of propagation has relatively little relevance to the final customer who uses the tree in the landscape.

Remember that alternate bearers may show up better one year than the next, and that some trees that alternate in other parts of the country do not alternate elsewhere.

Conclusion

In conclusion, all the crabapples listed by Dr. Nichols are excellent ornamental trees, and, with the exception of those listed as highly susceptible to fire blight, one should not hesitate to grow any of them. Other than new cultivars, these crabs not listed are either unremarkable, or very poor specimens.

Crabapples grown in Monmouth County nurseries appear in the following list. We would like to narrow the list down as far as possible and still be able to offer the distinctly different types: spreading, shrubby, upright, and weeping; pink and white flowers; yellow and red fruit. We want to grow only those that we consider the very best, and also make things easier for ourselves.

Based on our limited experience and subjective judgments, we like the following cultivars the best. This list will almost certainly change in the future as newer varieties are developed and tested.

Rounded Trees

'Donald Wyman' - Annual profuse white flowers and abundant small glossy red fruit which persist into late winter. Compact grower with shiny dark green foliage. A chance seedling discovered at the Arnold Arboretum in the 1940's. 20-25' tall.

'Indian Magic' - Showy rose-red blossoms and profuse glossy red fruit which changes to brilliant orange and persists for months after the foliage drops. Good orange-red fall color. A recent introduction from the Simpson Nursery crabapple breeding program.

'Ralph Shay' - A vigorous sturdy grower with very dark green, clean foliage. Has white flowers and relatively large 1 " brilliant red fruit which retains color very late and does not drop. A cross between *Malus x zumi* calocarpa and the huge old apple variety 'Wolf River 1881'. Developed by the fruit breeders at Purdue University and introduced by Simpson Nursery Co.

Upright Trees

'Harvest Gold' - A vigorous, disease-resistant tree with white flowers and abundant bright yellow fruit which changes to yellow and persists into December. A recent Lake County Nursery introduction.

'Red Barron' - A very narrow, upright tree with dark red flowers and abundant glossy red fruit which changes to orange and persists into December. Good fall foliage color. Discovered at the Arnold Arboretum and introduced by the Simpson Nursery Co. *Editor's Note*: Bob Simpson came up with the name by chance *not* because of Milton Baron of Michigan nor because of the apple cultivar 'Red Baron'. The Crabapple has two "r's" in the name.

Weeping Trees

'Weeping Candied Apple' - Irregular horizontal branching tree with pink flowers, followed by persistent cherry-red fruit. Developed and introduced by Lake County Nursery.

'White Cascade' - Very pendulous, graceful branching habit. Pink flower buds opening to pure white flowers. Small yellowish fruit that is not very showy.

Shrub Form

M. sargentii - Six to eight feet tall maturity with up to twice that in spread. A native of Japan which breeds true from seed. Suckering from the base can be a severe problem on grafted trees. Abundant white flowers and 1/2" red fruit which softens and browns early and is eaten by birds.

Crabapples Grown In Monmouth County, 1985

Bobbink Nurseries
'Arnoldiana'
M. floribunda
'Hopa'
'Radiant'
'Royalty'
'Scheideckeri
'Snowdrift'
'Van Eseltine'

Brock Farms
M. floribunda
'Hopa'
'Radiant'
'Snowdrift'

George Ehrle Nursery
'American Beauty'
'Pink Perfection'
'Red Jade'
'Snow Cloud'

Hollyhedge Nursery
'Adams'
M. baccata
'Bob White'
'Burgundy'
'Callaway'
'Calocarpa'
'Centurion'
'David'
'Dolgo'
'Donald Wyman'
'Ellen Gerhardt'
M. floribunda
'Geneva'
'Golden Hornet'
'Harvest Gold'
'Hyslop'
'Indian Magic'
'Indian Summer'
'Jewelberry'
'Mary Potter'
'Prairifire'
'Profusion'
'Red Barron'
'Red Splendor'
M. sargentii
'Selkirk'
'Sentinel'
'Snowdrift'
'Sugar Tyme'

Hollyhedge Nursery, cont.
'Tschonoski'
'Van Eseltine'
'Weeping Candied Apple'
'White Angel'
'White Cascade'
'Whitney'

F and F Nurseries
M. floribunda
'Pink Perfection'
'Red Radiant'
'Royalty'
'Snowcloud'
'Snowdrift'
'Van Eseltine'

Baier Lustgarten Nurseries
'Almey'
'Arnoldiana'
'Atrosanguina'
'Calocarpa'
'Dolgo'
'Dorothea'
'Eleyi'
'Echtermeyer'
'Evelyn'
M. floribunda
'Hopa'
M. hupehensis
'Katherine'
'Lemoine'
'Purple Wave'
'Radiant'
'Red Jade'
'Red Silver'
'Royalty'
M. sargentii
'Scheideckeri'
'Van Eseltine'
'Vanguard'
'White Angel'

Continued on following page:

Princeton Nurseries (Allentown)

'American Beauty'
'Atrosanguinea'

M. baccata
'Calocarpa'
'Centurion'
'Eleyi'

M. floribunda
'Hopa'

M. hupehensis
'Katherine'
'Pink Perfection'
'Radiant'
'Red Jade'
'Red Splendor'

M. sargentii
'Scheideckeri'
'Snowcloud'
'Snowdrift'
'Spring Snow'
'Strawberry Parfait'
'Van Eseltine'
'White Cascade'

NOTE: This list is not inclusive. Other nurseries offer one to several crab cultivars, sometimes listed by flower color only.

THE MOST POPULAR SHADE AND FLOWERING TREES

By Jim Green, Deciduous Plants Section Editor for:
"Ornamentals Northwest Newsletter"

The National Landscape Association has surveyed members to determine the most popular shade and flowering trees over a 26-year period (1956 through 1982). The survey asked, "From your observations of established landscape plantings in your area, what are the best shade and the best flowering trees, considering hardiness, maintenance and aesthetics?" The results are summarized in tables 1 and 2.

In addition, the report contains individual rankings of the top ten shade and flowering trees as reported by the Northeast, Southeast, Great Lakes, and Great Plains regions respectively. Although the flowering trees did not make the national top ten, they were sufficiently popular in the regions where they are adapted that they were close contenders for the national top ten: Shade Trees - ginkgo (Great Lakes region), willow oak (Southeast), sycamore (SE, Great Lakes, NE) and tulip tree (SE); flowering trees - Kousa dogwood, crepe myrtle (Southeast), tree lilac (Great Plains), mountain ash (Great Plains) and star magnolia (Great Lakes).

A copy of this survey summary may be obtained from: American Association of Nurserymen, 1205 I Street NW, Suite 500, Washington, D.C. 20005, (202) 789-2900.

Table 1: Top Ten Shade Trees

Rank	Through 1982	1976	1970	1956
1	Red Maple	Norway Maple	Pin Oak	Pin Oak
2	Sugar Maple	Ash	Red Maple	Sugar Maple
3	Honey Locust	Sugar Maple	Honey Locust	Honeylocust
4	Ash	Red Maple	Sugar Maple	Silver Maple
5	Pin Oak	Linden	Red Oak	Sweet Gum
6	Linden	Honey Locust	Linden	Norway Maple
7	Norway Maple	Pin Oak	Ash	Red Maple
8	Red Oak	Red Oak	Norway Maple	Sycamore
9	River Birch	Sweet Gum	Sweet Gum	White Birch
10	Sweet Gum	Sycamore	White Birch	American Elm

Table 2: Top Ten Flowering Trees

Rank	1982	1976	1970	1956
1	Crabapple	Crabapple	Crabapple	Crabapple
2	Callery Pear	Hawthorn	Dogwood	Redbud
3	Hawthorn	Dogwood	Hawthorn	Magnolia
4	Dogwood	Fl. Cherry	Redbud	Hawthorn
5	Redbud	Callery Pear	Magnolia	Dogwood
6	Fl. Cherry	Fl. Plum	Fl. Cherry	Fl. Cherry
7	Amelanchier	Redbud	Fl. Plum	Fl. Plum
8	Fl. Plum	Saucer Magnolia	Mountain Ash	Tree Lilac
9	Magnolia Saucer Magnolia	Ash Crepe Myrtle	Callery Pear	Amelanchier
10	Golden Rain	Amelanchier	Amelanchier	Mountain Ash

THE WORST LANDSCAPE TREES

In a recent issue of Grounds Maintenance Magazine (which, in our opinion, is the best horticultural trade journal currently being published, with lots of highly practical articles), six extension and university horticulturists from across the country listed their choices of which ornamental trees not to plant in their respective areas. Here's a summary of the anti-recommendations, with justifications. We invite criticism of and additions to the list. Has a favorite of yours received short shrift? Has a real loser been left out? Note that several trees show up on more than one regional list -- these species are perhaps the worst of the worst.

Northeast (Richard Weir, Extension Agent, Nassau County, NY):

Acer platanoides, Norway Maple (gets too big for many sites; extremely dense canopy makes it difficult for undergrowth; possible problems with shallow roots)
Acer saccharinum, Silver Maple (gets too big for many sites; brittle limbs subject to wind damage)
Aesculus hippocastanum, Horse Chestnut (leaf blotch disease, fruit litter)
Betula populifolia, Gray Birch (leaf miners)
Cercis canadensis, Redbud (good in suburbs, but not in cities)
Cornus florida, Flowering Dogwood (susceptible to Driscula fungus)
Crataegus oxyacantha, English Hawthorn (susceptible to fungal leaf spot)
Liquidambar styraciflua, Sweet Gum (fruit litter)
Malus species, Crabapples (most cultivars are susceptible to scab)
Morus species, Mulberries (weedy; fruit litter)
Picea pungens 'Glauca', Blue Spruce (over-planted; susceptible to spider mites, Wooly spruce gall adelgids, and Cytospora canker)
Pinus nigra, Austrian Pine (susceptible to Diplodia twig blight)
Platanus occidentalis, Sycamore (susceptible to anthracnose)
Populus species, Poplars (except for Populus alba, susceptible to diseases; short-lived; weak-wooded; invasive roots) *Editor's Note* P. alba susceptible to cankers, see Michael Dirr.
Pyrus calleryana 'Bradford', Bradford Pear (narrow branching makes training difficult and often leads to susceptibility to storm damage when mature)
Quercus palustris, Pin Oak (over-planted; susceptible to galls and chlorosis)
Salix species, Willows (short-lived, due to disease and insect susceptibility; tendency to clog sewers and drains)
Sorbus aucuparia, European Mountain Ash (susceptible to insects and disease)
Ulmus pumila, Siberian Elm (weak-wooded; susceptible to elm leaf beetles)

Southeast (Ted Bilderback, Associate Professor, Department of Horticultural Science, North Carolina State University, Raleigh)

Acer negundo, Box Elder (attracts box elder bug; female trees are messy)
Acer saccharinum, Silver Maple (susceptible to aphids and scales)
Albizia julibrissin, Mimosa (susceptible to mimosa webworm and mimosa wilt; messy)
Gleditsia triacanthos 'Sunburst', Sunburst Thornless Honeylocust (susceptible to Mimosa webworm and Mimosa wilt; messy)
Pinus strobus, White Pine (short-lived in Piedmont soils, intolerant of high heat)
Ulmus species, Elms (some species are susceptible to Dutch Elm disease)

Midwest (Curt Peterson, Department of Horticulture, Michigan State University, East Lansing):

Acer negundo, Box Elder (weak-wooded; attracts box elder bug; weedy)
Betula pendula, European White Birch (susceptible to leaf miners and bronze birch borer)
Elaeagnus angustifolia, Russian Olive (short-lived; susceptible to Verticillium wilt)
Picea pungens 'Glauca', Colorado Blue Spruce (susceptible to Cytospora canker)
Populus species, Poplars (susceptible to aphids, borers, cankers, galls, leaf blisters, powdery mildews, rusts and scales; weak-wooded)
Prunus cerasifera, Cherry Plum (susceptible to several diseases and insects)
Salix species, Willows (susceptible to twig blight, crown gall, cankers, borers, leaf spots, powdery mildews, scales, aphids, galls, and imported willow leaf beetle)
Sorbus aucuparia, European Mountain Ash (susceptible to scales, mountain ash sawfly, scab, cankers, borers, and fire blight)
Ulmus pumila, Siberian Elm (weak-wooded; susceptible to elm leaf beetle)

Plains (Philip Hoefer, Staff Forester, Colorado State Forest Service, Colorado State University, Ft. Collins)

Acer negundo, Box Elder (weak-wooded; weedy; attracts box elder bug)
Acer saccharinum, Silver Maple (weak-wooded; foliage tends to become chlorotic)
Ailanthus altissima, Tree-of-Heaven (weak-wooded; weedy)
Betula pendula 'Dalecarlica', Cutleaf White Birch (short-lived; susceptible to birch borer; easily damaged bark; shallow roots; foliage tends to become chlorotic)
Populus deltoides var. **occidentalis**, Plains Cottonwood (female cultivars have cottony seeds that clog radiators, air conditioners, and gutters, and aggravate allergies; weak-wooded; invasive roots)
Populus nigra 'Italica', Lombardy Poplar (short-lived; tends to sucker; shallow, invasive roots)
Salix species, Willows (weak-wooded; require much water)
Ulmus pumila, Siberian Elm (weak-wooded; weedy)

Southwest (James Sais, Extension Urban Horticulturist, New Mexico State University, Albuquerque):

Acer saccharinum, Silver Maple (susceptible to salt burn and chlorotic foliage when grown in alkaline soils; weak-wooded)
Ailanthus altissima, Tree-of-Heaven (weedy; weak-wooded)
Populus nigra 'Italica', Lombardy Poplar (weak-wooded; tends to sucker; requires much water)
Populus wislizenii, Rio Grande Cottonwood (female cultivars have cottony seeds which pose a fire hazard and aggravate allergies; weak-wooded; susceptible to borers; short-lived)
Salix matsudana, Peking Willow (weak-wooded; susceptible to aphids and borers; foliage tends to become chlorotic; shallow root system)
Ulmus pumila, Siberian Elm (weak-wooded; susceptible to elm leaf beetle; invasive roots; aggravates allergies when blooming)

Pacific Coast (James Clark, Associate Professor of Environmental Horticulture, University of Washington, Seattle)

Araucaria araucana, Monkey-Puzzle Tree (gets too big for many sites; sharp foliage and pineapple-like fruit can be dangerous)
Fraxinus oxycarpa 'Flame', Narrowleaf Ash (narrow branching makes training difficult and often leads to susceptibility to storm damage when mature)
Gleditsia triacanthos f. inermis, Thornless Honeylocust (susceptible to midge pod gall; often stunted, with crown dieback, in the Pacific Northwest)
Pinus monticola, Western White Pine (susceptible to white pine blister rust)
Prunus subhirtella, Higan Cherry (susceptible to brown rot)
Pyrus calleryana 'Bradford' (narrow branching makes training difficult and often leads to susceptibility to storm damage when mature)
Ulmus pumila, Siberian Elm (weak-wooded; susceptible to elm leaf beetle; messy)

Reference: Anonymous, "Trees to Avoid", Grounds Maintenance 22(9), September 1987, 38, 42, 44, 46-47. (Intertec Publishing Corp., 9221 Quivira Rd., Oakland Park, KS 66215.)

ATTENTION !!
ACHTUNG !!
ATTENZIONE !!
HEY Y'ALL !!

Wanted: Nurseries carrying native crabapples.

Wanted: Exact locations of native crabapples.

I have received requests for seed from native crabapples. I have begun collecting from known locations in Michigan (M. coronaria), Wisconsin, and Illinois (M. ioenis). Some seed is available upon request.

Flowers are required to differentiate M. ioensis from M. coronaria. Therefore, I need pressed flowers and their locations for identification. If possible, provide county maps with the exact location. I am interested in collecting seed in the fall as I travel to various arboreta and botanic gardens, evaluating their Crabapple collections.

Tom Green

MERITORIOUS MALUS

Tom Green

Malus x zumi and Malus x zumi var. calocarpa

Many nurseries offer Malus "zumi" in their catalogs. Are they selling Malus x zumi or Malus var. calocarpa? I believe most are offering calocarpa, the Redbud Crab. Does it make any difference?

Malus x zumi and M. x zumi var. calocarpa are very different trees, and it does make a difference. I know I would be most unhappy if I purchased M. x zumi thinking I was getting the Redbud Crab. Although there is some question to their true taxonomic identity, it is quite easy to separate them from each other.

Table 1.

Malus x zumi	Malus x zumi var. calocarpa
-petals 7-11 mm	-petals 12-15 mm
-flowers 32-38 mm dia.	-flowers 35-45 mm dia.
-calyx tube 2 mm or less dia. at greatest width of ovary	-calyx tube more than 2 mm dia. at greatest width of ovary
-leaf margins entire to serrate, at flowering time appear entire	-leaf margins crenate-serrate, to serrate at flowering time
-fruit 7-10 mm dia.	-fruit 10-15 mm dia.
-calyx scars occasionally umbonate at their center	-calyx scars flat or only slightly depressed (Huckins, 1967)
-habit pyramidal	-habit spreading
-styles 4-5	-styles 3-4
-leaves on vigorous shoots lobed	-leaves on vigorous shoots more deeply lobed (Bailey, 1949)
	-tight bud darker red (Rehder, 1926)

There is a major discrepancy on flower size. Several taxonomic tests (Bailey [1949], Hortus Third [1976], Krussmann [1977], and Rehder [1940]) indicate that the flowers of calocarpa are smaller than x zumi. However, no flower measurements on calocarpa are given. I tend to agree with Huckins (1967) that the flowers of calocarpa are larger than x zumi.

The best taxonomic description for x zumi can be found in Rehder [1905]

Excellent taxonomic descriptions for x zumi var. calocarpa can be found in Rehder [1915] and Rehder [1926]

"zumi" Taxonomy:

Many plantsmen believe that M. x zumi is a hybrid of Malus sieboldii, the Toringo Crab, and Malus baccata var. mandshurica, the Manchurian Crab. The size and color of the fruit and cut leaf margins on vigorous shoots definitely resemble the Toringo Crab. Malus x zumi is native to Japan (Honshu). It was introduced to the Arnold Arboretum by Professor Sargent in 1892.

For calocarpa to be a variety of x zumi, it would have to have some unique features(s) distinguishing it from M. x zumi and yet grow true from seed. The original plant on which the description was based was introduced into the United States (Arnold Arboretum) as seed by Dr. William Sturgis Bigelow from Japan in 1880. I have not been able to find any reference of this plant growing naturally in Japan. It would be interesting to know where Dr. Bigelow collected his seed, from the wild or from something cultivated?

If the seed came from a single tree, can it be considered a true variety? (At the time the calocarpa was described, nomenclatural "fashion" often described varieties as cultivars with Latin names, adding greatly to present day confusion).

The Morton Arboretum obtained its first calocarpa as seeds from an Arnold Arboretum plant in 1922 (accession #2974-22). By 1940, there were at least 12 trees on the Arboretum grounds from this seed lot. Three of the 12 trees were selected for propagation. Today there are numerous trees scattered about the Arboretum grounds from these three trees (accession #'s 966, 967, 968-40). All trees of the original accession are dead.

It is interesting to note that 966-40 and 967-40 have red fruit and 968-40 has yellow fruit. It appears that the seed of x zumi var. calocarpa tend to remain true. However, there is always a risk when using seed, even with those species that are supposed to remain true (*e.g.* M. sargentii and M. hupehensis). Malus are notorious for hybridization. Hybridization with other Malus is one problem. The fact that M. x zumi is already a hybrid is another.

When using seeds from a hybrid, the progeny often show characteristics of one parent more than another. Both Malus sieboldii and M. baccata var. mandshurica are known to have red, orange, and yellow fruit. The genes for yellow fruit are present in both original parents (assuming this is a hybrid). Therefore, a certain number of M. x zumi and M. x zumi var. calocarpa seeds should produce trees bearing yellow fruit. I believe this is a possible source of the "Yellow Zumi" crabapples that can be found in the nursery trade. Mr. Robert Simpson, Simpson Nursery, Vincennes, IN, has commented to me that he has received "zumi" crabapples from three different sources and the trees were not identical. I believe the difference was due to a seed source rather than cutting or bud (cultivar) source.

Jefferson (1970) reported that 'Professor Sprenger', an orange-fruited cultivar, and 'Winter Gold', a yellow-fruited cultivar, are known progeny from M. x zumi. 'Golden Hornet', a yellow-fruited cultivar, is a known progeny from calocarpa. I'm sure there are other examples of red, orange, and yellow-fruited progeny of M. x zumi and calocarpa. The 968-40 progeny of calocarpa at the Morton Arboretum has proven to be an outstanding cultivar and soon will be described in a later issue of Malus and introduced as 'Morning Sun'.

There are at least three other features that distinguish M. x zumi from calocarpa: susceptibility to disease, especially scab, flower abundance, and fruit persistence. However, these characters may not be reliable for taxonomic distinction.

According to the records (1961-1985) of Professor Les Nichols, M. x zumi is definitely more susceptible to scab; on occasion calocarpa shows susceptibility to powdery mildew while M. x zumi is resistant; calocarpa appears slightly more susceptible to fire blight; and both are resistant to cedar-apple rust.

Based upon my observations with only the M. x zumi trees located at the Morton Arboretum, I would say that calocarpa consistently produces a more abundant floral display than M. x zumi.

Fruit persistence and post-frost fruit color may be a genuine taxonomic character for crabapples. Calocarpa fruit is very persistent, remaining on trees with a nice reddish color the entire winter. Is is one of a few crabs with excellent post-frost fruit color. Birds migrating north in the spring, especially waxwings and robins, feed on the over-wintering fruit. The fruit of M. x zumi is not known to be persistent throughout the winter and lack post-frost color. Most crabapples with persistent fruit lacks an attractive post-frost color. Some of the yellow-fruited cultivars have excellent post-frost color (*e.g.* 'Morning Sun', 'Winter Gold', 'Ormiston Roy', and 'Goldfinch').

It would be much less confusing if the nursery industry would stop using the name "zumi" unless they are growing Malus x zumi. Yellow "zumi" should be given a cultivar name. It is also desirable to stop growing calocarpa seedlings and selling them as x zumi var. calocarpa. Those that produce yellow fruit cannot be taxonomically identified as Malus x zumi var. calocarpa because the taxonomic description only specifies red fruit.

Final Notes: It is my opinion that Redbud crab is one of the best crabapples. I would rate it in my top ten. If you have the space for a tree that grows 20-25 feet tall by 30-35 feet wide, like red buds, white flowers, bright red fruit (before frost), colorful fruit after frost, and a tree that is attractive to spring migrating birds, the Redbud crab makes a good choice. It is also carried by most nurseries who sell crabapples. I would advise against its use only where fire blight is a serious problem.

Recently, in my evaluation of crabapples at the Holden Arboretum, Mentor, OH, I encountered a M. x zumi with yellow fruit. The source was Hill Nursery, Dundee, Illinois. Hidden Lake Gardens, Tipton, MI and MSU have a 'Yellow Fruit zumi Calocarpa! These trees originated at Clavey (Ravinia Nursery), Ravinia, IL (Near Woodstock).

Nomenclature History

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Synonym
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Malhumor

I bought a new long barreled lens for my camera so that I could take better pictures of crabapples. I call it my "zumi lens". *John Sabuco*

AN UPDATE REPORT:
Disease monitoring of New Crabapple Releases

Site:	Arborcrest Gardens, Boone, North Carolina
Elevation:	3500'
Winter Temperatures:	-10° to -20° F
Record Low:	-24° F 1984
Rainfall:	52" average
Snowfall:	30-45" average (before condensation)
Rain (Warm Season):	28" (April-Sept.)

Cultivars in Question	Scab	Fruit Persistence If Known	
'Harvest Gold'	Severe	December	S 87
'Mary Potter'	None	January	S 87
'Donald Wyman'	None		S 88
'Red Jewel'	None		S 87
'White Angel'	None	November, May	S 87
'David'	None	March	S 87
'Madonna'	None		S 88
'Molten Lava'	None	December	S 87
'Selkirk'	None		

'Harvest Gold', though severely infested with scab, has not defoliated (August 31) and appears to be quite tolerant.

CRABS YOU SHOULD KNOW

Malus 'Madonna'

Elizabeth A. Mackey

He was a large man in a checkered polyester suit. His hair screamed for a comb, and his tie pleaded to be retired. He seemed to study me carefully and pulled a cigar from his mouth. "Have I got a deal for you," he began. "Ya want da newer model, right?" I nodded and followed him through the crowded lot. "It's a 1987, practical, durable, and good looking". We stopped beside a beautiful Crabapple tree with large double white blossoms. It smelled wonderful. I looked away and tried not to fall in love with it; it would be too expensive, the kind of crab you only dream about. "See, she's practical, durable, and good looking. It's 1987's Malus 'Madonna'. "Will there be a trade-in?" he asked, confident of the sale. I did not answer, and I tried desperately to tune him out. Only it was too pretty and..... "Ya can't beat dis price!" His voice sounded far away. Its fragrance was hypnotic. I succumbed to the tree's charm. "I must have one!" I concluded. He had me!

Lake County Nursery in Perry, Ohio, introduced Malus 'Madonna' in 1987, a new cultivar developed by Father John Fiala. This exciting new Crabapple tree proves to be an ideal landscape or street tree. Malus 'Madonna' offers a practical and attractive shape, large double white blossoms, an abundance of fruit, and disease resistant foliage.

The shape changes as the tree matures. In its earlier stages, Malus 'Madonna' will form a compact upright head and grow 18-20 feet high and 15-20 feet wide, giving way to a linden-like appearance. Not as fast as 'Adams', this Crabapple will grow approximately 5 feet in two years. Aesthetically pleasing, the large double white blossoms greatly enhance Malus 'Madonna'. These slow-opening blossoms resemble roses and will be one of the first trees to show color in the spring, and one of the last to go out of bloom. It flowers over a 3 1/2-week period and its pleasant fragrance, similar to that of a jasmine or gardenia, can be smelled 50-60 feet away.

Malus 'Madonna' is unlike most double flowering crabs. Each year, this cultivar produces fruit from each flower and it will remain on the tree from September to November, at which time it will be conveniently removed by birds after softening. Malus 'Madonna' is also special, in the fact that it is suitable as a street tree; very few Malus are considered good street trees, due to their overly wide posture.

There is nothing new about the care or maintenance of this new crab tree adaptable to zone 4. Malus 'Madonna' is treated like any other Crabapple. It is, however, interesting to note that those trees planted to the west of Indiana will change to an eye-pleasing orange in the fall.

Malus 'Madonna' will undoubtedly impress serious Crabapple tree shoppers, and continuously prove its value as knowledge of it expands. Its attractive and practical shape, large double blossoms, consistency in bearing fruit, and immunity to disease, create an exciting new landscape or street tree.

The 1987 Malus 'Madonna' -- practical, durable and good looking!

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INTERNATIONAL ORNAMENTAL CRABAPPLE SOCIETY OFFICERS

SOCIETY COMMITTEES

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Lisle, IL 60532

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Fall 1988

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