MALUS

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CRABAPPLE, GEORGIA

Eugenia B. Abernathy
Crabapple, GA

The Crabapple community is located in northwest Fulton County, Georgia. The community derived its name from an unusually beautiful and large crabapple tree that grew in the yard around the first schoolhouse.

The Cherokee Indians were the first inhabitants of this area, now identified as North Fulton County. During the Dahlonega Gold Rush, many white men came, seeking the gold, and took much land from the Indians. Because of this, the Governor of Georgia said that no white man could live in Cherokee County without a permit. When William Lumpkin became governor in 1831, he urged white men to enter Cherokee County and promised them protection. The first settlers came to what became the community of Crabapple in 1833. Many descendants of those hardy people still live in the community.

Crabapple community, in the very early days, was said to be the "night stopping" place for travelers coming from the mountains and needing to rest for the night. As more and more settlers came into the area, coming from Alabama, South and North Carolina, Tennessee and other areas, the demand for homestead sites steadily increased. After the Gold Lottery of 1832 Drawing began, the settlers flowed into Cherokee County, which included this area and the Alpharetta area that was thought to be a trading post where Indians and white men exchanged goods. The people came with wagons or ox-carts piled high with their goods and families, The poor roads made homesteads hard to reach and hard to leave; their lives were totally occupied with day by day living, their means of existence. Social activities were usually centered around risings and religious gatherings. Pioneer life was no "picnic" and was hard work for the men, women, and children. Building houses from hand-hewn logs, clearing up virgin timberlands and laboriously tilling the new soil, living without what would now be

utter necessities, and taking hardship and effort "in one's stride" went along with existence in every part of the country. In all parts of the county, barter and trade were carried on between whites and Indians, and many settlers had grist mills at which the Indians had their corn ground into meal.

Regarding the relations in general, between the early settlers and Indians, it may be said that the attitude of the whites was, in the main, one of tolerance and even protectiveness. The Indians were quick to show their appreciation of any kindness done them.

The Federal Government and the Cherokee Indians made a treaty in 1835 and the Cherokees gave up claim to all lands east of the Mississippi River. They were given two years to leave the state. That, of course, they did not want to do. Even before the signing of the treaty, Georgia began giving away the beautiful mountain land of the Cherokees. During this time the Federal Military came and drove then in groups to lands west of the Mississippi River. Many Indians died, and we know this heartbreaking journey today as "The Trail of Tears." According to the treaty, the government was to pay the Indians for any improvements on the land such as building homes and clearing forests to make farm lands. To accomplish this, a survey had to be made. The original maps of this survey are kept in the archives building in Atlanta.

Stories handed down from one generation to the next tell of the everyday happenings in the first days of this area. The year 1838 had a very cold winter, and the Indians killed great numbers of pigeons. They made a dish that they called "connahaynee", which was very good.

In 1857, Milton County was formed from parts of Cobb, Cherokee, and Forsyth counties and named for John Milton, Georgia's first Secretary of State, who saved the official records of the state when the British occupied it in the Revolutionary War. He carried the records to Charleston, then to New Bern, N.C., and afterward to Maryland, where they remained until the end of the War. He was a lieutenant in the Battle of King's Mountain, and after the surrender at Fort Howe, he was confined as a prisoner in the old Spanish Fort at St. Augustine, Florida. He was Secretary of State for Georgia three times and received several votes at the election

of the first president of the United States.

Early settlers of Milton included William and Johnson Rogers, ancestors of Will Rogers, the humorist; also Clarke Howell, the father of Evan P. Howell, once the owner of the Atlanta Constitution. Jack Graham and J. C. Street represented Milton County in the secession convention held in Milledgeville in 1861. Walter L. Bell, a grandson of William Rogers, who signed the treaty with the Cherokee Indians at New Echota, in Gordon County, in 1835, represented the county in the legislature for many years. It is related that Will Rogers' grandfather came to Milton and married a beautiful Indian girl. He went with the Indians to western territory, and there his son, Clem Van Rogers, the father of Will Rogers, became the leading citizen of Claremore. He helped in drawing the constitution of Oklahoma, and the county of Rogers, which includes Claremore, was named for him.

Several young men from the Crabapple Community served in the War Between the States, the most notable being John Rucker, who sneaked off and joined during the first outbreak of the Civil War. Within seven days he was wounded and served in the hospital. Afterward, he came home and served as a Conscript Officer. John Rucker was here when Sherman came through Atlanta. He would shoot at the Yankees. One day when John saw some Yankees coming, he jumped on his horse, ran into an empty house and hid until they went by. While waiting he carved his name on the facing of the door. After he left the house he met up with the Yankees again. He climbed a tree and the officers went right under him, enabling him to get away. While he was in the tree, he carved his initials in the tree, and they were still there in 1975.

Following the Civil War, the settlers farmed and went about their everyday chores. A few of the young men did not return. Milton County's rich farming lands produced fine varieties of cotton and corn and many flourishing truck farms. John B. Broadwell of the Crabapple Community developed a very prolific variety known as "Broadwell's Big Boll Cotton," which produced the phenomenal crop of twelve bales on four acres of land. A stalk of this cotton, bearing seven hundred bolls, is among exhibits at the state Capitol in Atlanta.

FLOWERING CRABAPPLES FOR THE 21ST CENTURY

Maria Zampini-Pettorini

Quite often I am asked, "Why does Lake County Nursery keep selecting and introducing new crabapples? Aren't there enough on the market already?" Good questions. I'd like to take a few moments to answer and share some additional thoughts with you on the subject of new crabapple cultivars.

Lake County Nursery is excited about the future of flowering crabapples. As America's favorite flowering tree, we believe its popularity will continue to expand because of the intense energy being put into the careful selection of new hybrids.

Over the past 25 years, Lake County Nursery has been heavily involved in the testing, production, and introduction of many new flowering crabapple cultivars. When selecting new cultivars, we look for superiority in disease resistance, foliage, flower, and form in that order.

Yes, some people think that flowering crabapples have reached a plateau, therefore we should put a halt to new introductions. We don't believe we should stop searching and/or selecting for the ultimate crabapple. Rather, our vision is to enhance the enduring aesthetic qualities of the flowering crabapple of yesterday and at the same time open a more diverse range of uses for the crabapple in the landscape. Uses as standards, dwarfs, espaliers, top grafts, clumps, and hedge forms need to be continually evaluated.

We also believe that plants that retain their form and beauty with little or no maintenance are especially desired by today's customer. We believe this for two reasons. First, as we enter the era of environmental concerns, trees that do not need to be pruned every year or every couple of years are essential. Not only is pruning time consuming and costly, now the disposal of the waste material is very expensive. Therefore, you can see that a tree's structure has become ultra-important.

Secondly, in today's fast-paced society, flowering crabapples can be that anchor plant in a landscape setting that helps to provide a bit of calmness with their four seasons of beauty, while not making the consumer be "tied" to their yard and allowing them more time for other activities.

The 21st Century will bring even more exciting new crab selections into the world. Lake County Nursery is proud to be playing a small part in this by being better beautification stewards.

At Lake County Nursery we use the very simplest method for growing and selecting possible new flowering crabapples: the open-pollination method. First in late fall we pick a bushel of ripened seeds from a chosen species or cultivar. Next we clean the seeds thoroughly and let them air dry in a cool, dry room. In late November or early December the seed is planted in 5' beds with 5 marked rows per bed. All seed is sown by hand. Sown seed is then covered with a 1" layer of peat-moss. Prior to planting, the field is analyzed to produce a balanced fertilizer nutrition program.

Starting in March, the first application of fertilizer is applied with a follow-up application monthly during the growing season. Starting in late July, we start the selection process. At this stage we are selecting solely for leaf attributes. Even on this young plant it's possible to detect immunity to common crabapple diseases. It is also possible to judge growth structure. The following June or July they are moved to spaced beds or field liner rows for observation for the next three years. When the plants become dormant in November, the selected ones are then potted into 1-gallon containers and set in a cool-growing greenhouse to establish their root systems.

Within this period, those that do not meet the criteria are discarded. Of those that do continue to show promise, approximately 25 to 50 of each selection are budded, depending on the availability of understock. For the next 3 years each crop is then transplanted to field production rows for continued observation. If any selection shows an undesirable trait during any one of these years, it is discarded.

Each year we document our observations on all selections. After approximately 10 to 15 years of observation a decision is made whether to introduce a certain selection or not. If so, a production number is agreed on, and the new cultivar goes into the production schedule.

One important point to keep in mind is that even after 10 to 15 years of promising evaluations, selections may only then show susceptibility to common crabapple diseases and must be discarded.

This can also be true for "new" selections currently on market. For example, when we introduced Weeping Candied Apple® in 1975, it was considered disease resistant. But over the years mother nature has taken its course, and we have begun to receive reports that indicate in specific geographic locations, under certain weather conditions, it may be susceptible to apple scab. While still an outstanding weeping crab, we know that some day this highly popular tree will be replaced by a superior one, and rightly so.

Once a selection fulfills our criteria for superiority, we file for a trademark and/or patent. We feel our research time, marketing investment, and production savings merit the royalty fee charged licensees for the propagation and/or use of the trademark used in conjunction with these improved cultivars. We work very hard to come up with a meaningful trademark that people can relate to and that conjures up an image of what the tree looks like. Two examples are Harvest Gold® (because of its outstanding gold fruit) and Weeping Candied Apple® (for its weeping form and fruit that resembles bright red candied apples).

During the evaluation period we invite visiting horticulturists to our nursery for the opportunity to view and give us their evaluations of our possible future introductions. We also work closely with several green industry professionals from across the United States, sending them plant material so they can make observations in their geographic area. Before introduction we send information on to licensees who may have an interest in new introductions.

At this time we also look at the marketing of a certain cultivar. We gear up to tell the benefits of the new cultivar through our catalog and other types of literature, along with display ads in trade journals and by word-of-mouth at trade shows. We also work with trade publications and garden writers to publish articles that tell about the new introductions and the many positive benefits they have.

If we are to obtain the perfect flowering crabapple, we must try to reach the goal of having a more stringent criteria of selection. The following is a list of proposed criteria we are striving to incorporate in the coming years for the selecting of new flowering crabapple cultivars:

Blooms

A. Extended bloom period
B. Larger size blooms
C. More prolific head mass of blooms
D. Blooms with a richer and more prolific fragrance
E. Sensitive to petal count - possibly more double blooming cultivars
F. Possible perpetual flowering selections

Fruiting

A. Extended fall color displays
B. Higher sugar content for higher quality fruit
C. The combined above for better bird attraction
D. Fruit size 1/2" and smaller

Structures

A. Rapid growth in production years
B. Reaching ultimate growth in 10 years
C. Compact scaffolding of the secondary branches
D. Trunk only part of the tree needing maintenance

Diseases and Insects

A. Immunity to common apple diseases
B. Tolerant to common apple insect attacks

All these possibilities are what make the flowering crabapple work exciting.

We highly recommend that you incorporate any new cultivars (ours or someone else's) modestly, but do so. No doubt you do not want to miss out on a tree that provides better opportunities, not only for growers but also for those who support and appreciate a higher standard of beautification of the world we live in.

CRABAPPLE TREES AND THE GREAT FLOOD OF '93

John H. den Boer

The Great Flood of '93 did not spare the Arie den Boer Arboretum at the Des Moines Water Works. All of the crabapple trees there were under water, some in at least 7 feet of water and others in as much as 12 feet of water. The shallower areas were under water for about 7 to 10 days while the deeper areas were under water for over 3 weeks.

The losses are considerable. A flood in 1990 caused a complete loss of all the crabapple trees in the nursery. The flood this year caused again a complete lost of trees in the nursery. There were approximately 250 crabapple trees and 250 evergreen trees in the nursery. That is everything that was planted in the nursery since the last flood in 1990. Alan Downs, Supervisor of Building and Grounds, estimated that over 10 percent of the crabapple trees in the Arboretum are lost. Grass was killed in the areas that were under water for more than about a week.

On the 12th of August 10 people from the city of Garner and Hancock County arrived with a County truck and 5 chain saws and worked 8 hours to help in the cleanup of the arboretum. They removed the trees that were obviously destroyed, and cleaned up the debris that floated in and settled in the arboretum.

Those branches of the crabapple trees that were under water for more than a week lost their leaves, but resilience of these trees is already evident. Many branches that lost their leaves are putting out growths of new leaves.

MALUS OBSCURUS

Malus niedzwetzkyana Dieck, Redvein Crab

Thomas L. Green
Western Illinois University

The nomenclature of this crabapple varies depending upon the taxonomic source used for identification. Bean (1), Yuzepchuk (2), and Hemsley (3) recognize this crabapple as a distinct species. Dieck was the introducer and the first to use the name *Malus niedzwetzkyana* (4). It is classified as *M. pumila* 'Niedzwetzkyana' by Schneider (5), Rehder (6), Krussmann (7), and Bailey (8). Yu (9) recognizes it as a variety of *M. pumila*.

Yuzepchuk (2) makes the following comment.

> Note. This interesting form should perhaps have been grouped with *M. sieversii* (Ldb.) M. Roem., from which it is distinguished only by the very strong anthocyan coloration of its parts. In addition, transitional forms (hybrids) may be found between them.

It is my personal view that this crabapple should be given species designation because of its unique pigmentation. No other crabapple species has this character. There are other taxa in the genus which are recognized as species with fewer distinguishing characteristics.

According to Hemsley (3), this tree was named by Dieck in 1891 after Niedzwetzky, who collected it in the wild in the Ili District of southwest Siberia. It has a wide distribution in western and central Asia, both wild and cultivated. Its local name is Kisilalma, meaning red apple.

His information was taken from The Gardeners' Chronicle (10). In this article Mr. Niedzwetzky's name was incorrectly spelled, which resulted in this crabapple having the name *M. Medwietzkyana* as a synonym.

> *M. Medwietzkyana* - This curious wilding has, as a wild or a cultivated plant, a wide distribution in West and Central Asia, and has apparently not yet been described. Dr. Dieck obtained it from Kashgar and the Talgar plateau in South-west Siberia, but it is probable that under the name of Kuzugjoran an identical form exists in the lesser Caucasus, which is highly esteemed by the Swabian colonists in Trans-Caucasia. Except for the old leaves, all parts of the tree are red, bark and wood, as well as flowers and fruits, which resemble small Sina-apples; Even the pulp, which has a fine flavor, is of a dark rosy color. In Kashgar the cultivated form bears the name Kisil alma; the wild variety is to be named after President Medwietzky, who collected it with many other interesting shrubs in South-west Siberia.

Roger Vick (11) reported that Niels Hansen from the South Dakota State Agricultural Station, Brookings, visited Mr. Niedzwetzky in 1897, looking for plants suitable for the northern Great Plains. There he was introduced to a shrub of 12' from the Tian-Shan Mountains with reddish leaves; red blossoms, bark, and wood; and a fruit with a deep red-purple inside and out. He noted that the fruit measured 2" and described it as a "good, juicy, subacid eating apple." Hansen named the crabapple *Pyrus malus niedzwetzkyana.* Hansen also named a selection of this crabapple that he found near the city of Alma Ata as 'Almata.' This tree does not differ from the species and could be considered a synonym.

Donald Wyman (12) reported that *M. pumila niedzwetzkyana* was introduced into the U.S. by the Arnold Arboretum in 1896. The source of the Arnold Arboretum introduction is unknown. It is believed that the source was from Europe. It is not known whether it was brought in as seed or plant. The guess would be it was brought in as a plant, since there were only five years

between its introduction in Europe and its introduction in the U.S. A plant introduction would reduce the chance of hybridization.

If both accounts are true, there were two introductions into the U.S., originating from the same discoverer but from different sources at different times. It is not known if Hansen knew that the tree had been previously named by Dieck. It is interesting and a rather rare occurrence that both plantsmen gave the tree the same name.

Hansen crossed the redvein crab with *M. baccata.* He also selected open pollinated seedlings. The most famous cultivar selected by Hansen from the redvein crab was 'Hopa', which means beautiful in the Sioux Indian language. Hansen's introduction was also used by Miss Isabella Preston as a seed parent for crabapple improvement at the Arboretum and Botanic Garden of the Central Experimental Farm in Ottawa, Canada, and similar programs in Minnesota (11). This tree is directly or indirectly responsible for every one of the purple-leaved and purple-flowering hybrids (13).

There are good taxonomic descriptions in Hemsley (3), Yezepchuk (2), and Bean (1). The following description is taken from Bean (1) and Yezepchuk (2).

> A small tree of about the size and character of the ordinary apple; young bark reddish-purple. Leaves 3 to 5 in. long, 2 to 2½ in. wide, ovate or oval, round-toothed, downy all over the lower surface when young, afterwards on the midrib only; stalk downy, to 1½ in. long. The stalk and midrib are bright red; the blade also is of a decided red tinge when young, becoming purplish later in the season. Flowers in apple-like clusters, deep red-purple, 1½ in. across, flower-stalks ½ to ¾ in. long and, like the calyx, covered with whitish wool (1); hypanthium white-tomentose; sepals lanceolate, acuminate; styles slightly shorter than stamens, more or less tomentose-lanate at base; pome dark violet-red with pink-purple flesh (2). Fruits are conical, with a few broad grooves running lengthwise; 2 in. long, of a deep vinous red (1).

> This apple occurs in the mountains of Russian Central Asia and bordering parts of China. It is recognized as a species in Fl. SSSR, near to *M. sieversii*, of which it may only be a color variant. It has also been suggested that it is really a form of the orchard apple (*M. domestica)* (2).
>
> Five seedlings from it were raised at Kew, and of these, three came as green in branch and leaf as the ordinary apple, and the flowers were merely pink - not the beautiful red that makes this one of the most striking of its group. It was introduced to cultivation by Dr. Dieck, of Zoeschen, in Germany. The fruit is not of high quality as we know apples, being of rather turnip-like consistency. So completely is the tree permeated with red coloring matter that the young wood, when cut, shows red right through, as does also the fruit. It was introduced into England in 1894(1).
>
> *M. niedzwetzkyana* is uncommon in gardens, for it does not flower freely and is subject to scab. But many garden hybrids owe to it the reddish or purplish coloration of their flowers, fruits and foliage (1).

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SCOTT POLAND #1861

On the cover is a copy of a postage stamp issued by the Polish Government in 1971. The stamp is the second of a series of 10 stamps depicting blossoms in natural color. It has minimum value. The Scott Publishing Company's "Standard Postage Stamp Catalogue" has this stamp listed as #1861.

The other stamps in the set include photographs of:

Cherry
Pear
Japanese Magnolia
Red Hawthorn
Apple
Red Chestnut
Acacia robinia
Cherry

CRABAPPLE EVALUATION STUDIES IN COLORADO

Dr. James E. Klett
Department of Horticulture
Colorado State University

Colorado State University is one of the twenty plus cooperating sites evaluating over 60 different crabapple taxa for various disease resistance and ornamental characteristics. Data taken from these sites in the spring and the fall each year are tabulated and summarized at the Morton Arboretum in Lisle, Ill. We started taking performance data at Colorado State University in 1986, but only in the last three years have many of the trees reached adequate size to observe their ornamental features and their disease resistance. I think in the past three seasons (1990-92) we have really started to observe trends developing on various taxa of crabapples. I would first like to discuss six cultivars that over the years have shown to be more outstanding in our trials. We had some severe outbreaks of fire blight in the past three years at this plot, which have been helpful for testing fire blight resistance.

1) *Malus* cv. Centurion is a registered cultivar from the Lake County Nursery Exchange that has an upright branch habit that becomes more oval to round with maturity. It appears to have good disease resistance. We haven't observed any major fire blight problems on the cultivar to date. The flower buds are abundant and red. They open to a rose-red color. The fruit is also prolific. It has a glossy red color, and is about a half inch or so in size. It appears that the tree will hold its fruit for a fairly long time.

2) *Malus* cv. David was named by Arie F. den Boer in 1957. It has pink blossoms that change to a pure white bloom. In our plots, it consistently ranks very high in overall aesthetics, with very abundant fruit. The fruit is scarlet, about ½ inch in diameter, and does persist on the trees into the winter months. It has more of a round to globe shape growth habit and is a fairly vigorous grower. To date, we have not seen any major fire blight affected twigs or other diseases on the plants in our plots. It definitely would be one that could be used for attracting birds or wildlife into a landscape.

3) Another cultivar that has shown good fire blight resistance and flower quality in abundance is *Malus* cv. Indian Summer, introduced by Simpson Nursery. This plant has more of a broad globe shape with rose-red flowers that cover the plant. Fairly abundant red fruit of approximately ¼ inch in size develops following flowering. We ranked it very high aesthetically, in the fall of 1991, since it had a lot of fruit set and good fall foliage color.

4) Molten Lava® Crabapple, a Lake County Nursery introduction, is another crabapple cultivar that has looked good in our plots. It has a wide spreading to weeping growth habit with a yellowish attractive bark in the winter months. Overall, it ranked very high aesthetically in the falls of 1991 and 1992 in our plots. The flowers are deep red in buds that open to single white flowers. The tree is more of an annual bloomer. The fruit is very abundant, red-orange in color, and remains on the plant later into the fall and into the winter months. We observed a little fire blight on the plant, but its general ornamental characteristics still ranked very high in our fall 1991 and 1992 evaluations.

5) *Malus* cv. Profusion ranked very high aesthetically in the fall of 1991. This cultivar has purple foliage color in the spring that fades to a more bronze color as the leaves mature. The flowers are single, open a deep red color, and fade to more of a pink color. The red fruit is quite abundant in mid to late fall. The plant has a dense growth habit and it has shown good resistance to fire blight in our plots.

6) An introduction by C. M. Hobbs, from Indianapolis, Indiana is *Malus* cv. Robinson. All three specimens in our plot of this cultivar ranked very high aesthetically in the fall of 1991 and 1992. The flowers are single, crimson color in bud, which open to a pink flower. *Malus* cv. Robinson has an upright spreading growth habit. The fruit is dark red in color, approximately a half inch in diameter, and very abundant on our plants in 1991 and 1992. It appears to be more resistant to fire blight, since none of our plants are infected to date.

These six cultivars of crabapples all appear to have outstanding ornamental features, along with good fire blight resistance as of

the fall 1991. As mention earlier, we observed many severe cases of fire blight in out crabapple test plots in 1990, 1991 and 1992. I feel we are now able to observe some differences in resistance to fire blight in our plots. Certain cultivars that continually shown extremely bad infections of fire blight should probably be taken off recommended lists. Some of our more commonly planted cultivars of crabapples that have had severe fire blight infections in our plots include Dolgo, Mary Potter, Ormiston Roy, Red Barron, Red Jade, Royalty, Sentinel, Silver Moon, and Strawberry Parfait. Serious fire blight was observed in the 1991 and 1992 seasons on all of these cultivars in our plots. Many of these also had serious infections in 1990.

Approximately 60 different cultivars of crabapples are planted in these plots, and I have discussed only six that appear to be outstanding for disease resistance along with good fruit and flower abundance. I have also listed many crabapple cultivars that have very serious disease problems in our plots, especially fire blight, which appears serious enough to warrant not granting our recommendations for planting in this area. However, many other cultivars not listed in either of these two lists need further testing for overall disease resistance and ornamental characteristics.

DISEASE EVALUATIONS OF ORNAMENTAL CRABAPPLES AT THE LONGENECKER GARDENS UNIVERSITY OF WISCONSIN-MADISON ARBORETUM

David E. Guthery & Dr. Edward R. Hasselkus
Johnson Nursery, Menonomee Falls, WI and
University of Wisconsin, Madison, WI

During the 1990 growing season, the ornamental crabapples in the collection of the Longenecker Gardens in the University of Wisconsin-Madison Arboretum were evaluated for the presence and defoliation from apple scab (*Venturia ineaqualis*). Fire blight and cedar/apple rust infections were noted as well as the presence of frog-eye leaf spot and powdery mildew.

Apple scab infection was very heavy during 1990 due to high humidity and ample precipitation. Several taxa, such as *Malus* cv. American Beauty, *M.* cv. Oekonomierat Echtermeyer, and *M.* cv. Radiant, were totally defoliated by late August from apple scab. Both *M.* cv. Snowcloud and *M.* cv. Sparkler actually flowered in September due to the heavy defoliation from apple scab.

After the 1990 season, several crabapples were removed from the Longenecker Gardens' collection because of their poor disease resistance and their poor overall performance. They were as follows: *M.* cv. American Beauty, *M.* cv. Barbara Ann, *M.* cv. Dorothea, *M.* cv. Erie, *M.* cv. Pink Cascade, *M.* cv. Royalty (two of three plants), *M. sargentii* cv. Rosea, *M.* cv. Snowcloud, and *M.* x *sublobata*.

The table that follows is a list of all the crabapples in the Longenecker Gardens' collection during 1990. Apple scab ratings follow each taxon for each of the five observation dates. The last column identifies other diseases that were observed on the taxon, specifically, fire blight, cedar/apple rust, powdery mildew, and frog-eye leaf spot.

The ratings system used for apple scab is as follows:

0 - No scab observed
1 - Scab present, but no defoliation
2 - Scab present and less than 25% defoliation
3 - Scab present and less than 50% defoliation
4 - Scab present and 50% or greater defoliation

Intermediate ratings were also assigned. For example, a 0/1 rating indicates scab was observed, but was present in so little quantity over the entire plant that it was difficult to locate.

Finally, something should be said about "scab-tolerant" crabapples. Scab-tolerant crabapples such as *M.* cv. Harvest Gold® and *M.* cv. Indian Summer never rated higher than a "1" and never defoliated. However, other previously promoted scab-tolerant crabapples such as *M.* cv. Indian Magic nearly defoliated entirely.

Taxa	6/2	7/1	8/5	9/3	9/27	Other
M. cv. Adams	0	0	0/1	0	0	-
M. cv. Adirondack	0	0	0	0	0	-
M. x adstringens cv. Pink Beauty	1/2	2/3	2/3	3	4	-
M. cv. Amberina	0	0	0	0	0	-
M. cv. American Beauty	2	3	4	4	4	-
M. cv. Amerispirzam	0	0	0	0	0	-
M. cv. Ames White	0	0	0	0	0	-
M. angustifolia f. plena Prince Georges	0	0/1	0/1	0	0	Cedar/apple rust
M. x arnoldiana	1	2	2	2	2	-
M. asiatica	0	0	0	0	0	-
M. x atrosanguinea	1	2	3	3	4	Fire blight
M. cv. Autumn Glory	0	0	0	0	0	-
M. baccata columnaris	0	0	0	1	1	-
M. baccata var. gracilis	0	0	0	0	0	Powdery mildew
M. baccata f. jackii	0	0	0	0	0	-
M. baccata cv. Walters	0	0	0	0	0	-
M. baccata PI #213351	1	1	1	1	1	-
M. cv. Barbara Ann	0/1	2	4	4	4	-
M. cv. Baskatong	0	0/1	1	1	1	-
M. cv. Beverly	0	0	0	0	0/1	-
M. cv. Blanche Ames	0/1	0/1	0/1	0/1	0/1	-
M. cv. Bob White	0	0	0	0	0	Fire blight

Taxa	6/2	7/1	8/5	9/3	9/27	Other
M. cv. Branzam	1	1	1	1	1	Cedar/apple rust
M. cv. Callaway	0	0	0	0	0	-
M. cv. Camzam	0	0	0	0	0/1	Fire blight
M. cv. Cascole	0	0	0/1	1	1	-
M. cv. Cashmere	1	1	1	1	1	-
M. cv. Canterzam	0	0	0	0	0/1	-
M. cv. Centennial	1	1	0/1	0/1	1	-
M. cv. Centurion	0	0	0/1	0/1	0/1	-
M. cv. Chrishozam	0	0	0	0	0	-
M. cv. Cinzam	1	1	1	1	1	-
M. cv. Coralcole	0	0	0	0	0	Frog-eye leaf
M. coronaria	1	2	3	2	2	Cedar/apple rust & fire blight
M. cv. Dainty	1/2	2	2	1/2	1/2	-
M. cv. Dauphin	0	0	0	0/1	1	-
M. cv. David	0	0	0	0	0	-
M. cv. Dolgo	0	0/1	0/1	1	1	-
M. cv. Donald Wyman	0	0	0	0	0	-
M. cv. Dorothea	1	3	4	4	4	-
M. cv. Doubloons	1	1	1	1	1	-
M. cv. Ellwangeriana	0	0	0	0	0	-
M. cv. Evelyn	1	1/2	2	2	1/2	-
M. cv. Excazam	-	0	0	0	0	-
M. floribunda	0	0	0	0	0/1	-
M. cv. Gibb's Golden Gage	0	0	0	0	0/1	-
M. x gloriosa	1	2/3	3	4	4	-
M. cv. Golden Hornet	0	0	1	1	1	-
M. cv. Gorgeous	0	1	1	0/1	0/1	-
M. cv. Gwendolyn	0	0	0	0	0	-
M. cv. Hamzam	0	0	0	0/1	1	-
M. cv. Hargozam	0	1	1	1	1	-
M. x hartwigii	1	1	1	0/1	0/1	-
M. cv. henningii	0	0	0	0	0	Leaf Scorch
M. cv. Henry F. DuPont	1	1	1/2	2	3	-
M. cv. Henry Kohankie	0	0	0	0	0	-
M. cv. Indian Magic	1	1/2	2	3	4	-
M. cv. Indian Summer	0	0/1	1	1	0/1	-
M. ioensis	1	2	2	1/2	1/2	Cedar/apple rust & fire blight
M. ioensis f. fimbriata	0/1	2	1/2	2	2	Cedar/apple rust
M. ioensis cv. Klehm's Improved Bechtel	1	1	1	2	2	Cedar/apple rust & fire blight
M. ioensis var. Nevis	1	2/3	3	3	3	Cedar/apple rust
M. ioensis f. plena	1	2	2	2	2	Cedar/apple rust
M. cv. Jewelberry	0	0	0	0	0/1	-
M. cv. Jewelcole	0	0	0	0	0	Fire blight
M. cv. Katherine	1	3	3	3	3	-

Taxa	6/2	7/1	8/5	9/3	9/27	Other
M. cv. Kibele	0	1/2	1	1	1	-
M. cv. Kinarzam	0	0	0	0	0	-
M. cv. Kirk	0	0	0	0	0	-
M. cv. Lanzam	0	0	0	0	0/1	-
M. cv. Leprechaun	1	2	2	1	2	-
M. cv. Liset	0	0	0	0	0	-
M. cv. Louisa	0	0	0	0	0/1	-
M. cv. Lullaby	1/2	2	1/2	2	1	-
M. cv. Manbeck Weeper	0	0	0	0	0	-
M. cv. Mazam	1	1	1	1	1	-
M. cv. Makamik	0	0	0	0	0	-
M. mandshurica	1	2	2	2/3	3	-
M. mandshurica cv. NA #44110	0	0	0	0	0	-
M. mandshurica cv. NA #44111	0	0	0	0	0	-
M. mandshurica cv. NA #49317	0	0/1	0	0	0	-
M. mandshurica cv. NA #49327	0	0	0	0	0	-
M. mandshurica cv. NA #51192	0	1	0	0	1/2	-
M. mandshurica cv. Midwest	0	0	0	0	0	-
M. cv. Maria	1	2	1	1	2	-
M. cv. Mary Potter	1	1/2	1/2	1/2	1	-
M. cv. Molazam	0	0	0	0	0	-
M. cv. Mount Arbor	0	0	0/1	0/1	0/1	-
M. cv. Naragansett	0	0	0/1	1	1	-
M. cv. Oekonomierat Echtermeyer	1	1/2	2/3	4	4	-
M. cv. Ormiston Roy	0	0	0	0	0	-
M. cv. Parrsii	0	0	0	0	0	-
M. cv. Pink Cascade	1	1	2	2/3	3	-
M. cv. Pink Dawn	1	1	1	1	1	-
M. cv. Pink Spires	0/1	0/1	1	1	1	-
M. cv. Prairie Maid	0	0	0	0	0	-
M. cv. Prairifire	0	0	0	0	0	-
M. x moerlandsii cv. Profusion	0	0/1	0/1	0	0	-
M. prunifolia f. fastigiata	0/1	1	2	3	3	-
M. prunifolia var. xanthocarpa	0	0	0	0	0	-
M. x purpurea cv. Lemoine	1	2/3	2/3	3	3	-
M. cv. Pygmy	1	1/2	3	3	3	-
M. cv. Radiant	1	2/3	4	4	4	-
M. cv. Ralph Shay	0	0	0	0	0	-

Taxa	6/2	7/1	8/5	9/3	9/27	Other
M. cv. Red Barron	0	1	1	0/1	1	-
M. cv. Red Jade	1	1	1	1	1	-
M. cv. Red Splendor	0/1	0/1	0/1	0/1	0/1	-
M. cv. Red Swan	0	0	0	0	0	-
M. cv. Robinson	0	1	0/1	0/1	0/1	-
M. x robusta var. persicifolia	0	0	0	0	0	-
M. rockii	0	1	1	1	1	-
M. cv. Rosseau	0	0/1	0	0	0	-
M. cv. Royal Ruby	0/1	1/2	2	2	2	-
M. cv. Royscezam	1	1/2	1	1	1	-
M. cv. Royalty	1	2/3	3	3	3	-
M. cv. Ruby Luster	1	2	3	3	3	-
M. sargentii	0	0	0	0	0	-
M. sargentii cv. Candymint	1	2	2	3	2/3	-
M. sargentii cv. Rosea	1	2	1/2	1	1/2	-
M. sargentii cv. Tina	0	0	0	0	0	-
M. cv. Selkirk	0/1	0/1	0/1	1	1	-
M. cv. Sentinel	0	0	0	0	0	-
M. cv. Serenade	1	1	0/1	0/1	0/1	-
M. sieboldii	0	0	0	0	0	-
M. sieboldii cv. PI#316711	0	0	0	0	0	-
M. sieboldii var. Fuji	0	0/1	0	0	0	-
M. sieversii var. niedzwetzkyana	1/2	2/3	3	4	4	-
Erie						
M. sikkimensis	0	0	0	0	1	-
M. cv. Silver Drift	0	0	0	0	0	-
M. cv. Silver Moon	0	0	0	0	0	-
M. cv. Sinai Fire	0	0	0	0	0	-
M. cv. Sirgazam	1/2	-	2	1	-	-
M. cv. Snowcap	0	0/1	0/1	0/1	1	-
M. cv. Snowcloud	1/2	2	4	4	4	-
M. cv. Snowdrift	0	0	0	0	0	-
M. cv. Snow Magic	0	0	0	0	0	-
M. x soulardii	1	0	0/1	0	0/1	-
M. cv. Sparkler	1	2/3	4	4	4	-
M. spectabilis alba	0	1	1	0/1	0	-
M. spectabilis cv. plena	0	0	0	0	0/1	-
M. spectabilis cv. Van Eseltine	1	1/2	1	1/2	1/2	-
M. cv. Spring Snow	1	1/2	1	2	0/1	-
M. cv. Spring Song	1/2	2	1	1	1	-
M. cv. Strawberry Parfait	0	0	0	0	0	-
M. x sublobata	1	2	4	4	4	-
M. cv. Sutyzam	0	0	0	0	0	-
M. cv. Susan	1	1	1	1	0/1	-
M. cv. Thunderchild	1	2	1/2	1	1	-
M. toringoides	0/1	1	1/2	1	1	-
M. cv. Turesi	0/1	2	3	3	3	-

Taxa	6/2	7/1	8/5	9/3	9/27	Other
M. cv. Velvetcole	0/1	0/1	0/1	1	1	-
M. cv. Weepcanzam	0	0/1	0/1	0/1	1	-
M. cv. White Angel	0	0	0	0	0	-
M. cv. White Candle	1	2	1	1	1	-
M. cv. Wintergold	0	0/1	0	0/1	0/1	Fire blight
M. cv. Zumarang	0	0	0	0	0	-
M. x zumi	0/1	0	0	0	0	-
M. x zumi var. calocarpa	0	0	0	0	0	-
M. x zumi cv. Professor Sprenger	0	0	0	0	0	Frog-eye leaf spot
M. x zumi cv. Winter Gem	0	0	1	1	1	-
M. x zumi cv. Wooster	0	0	0	0	0	-

TYPAR® SOLVES WEED AND ROOT SPROUT PROBLEMS

F. K. & R. E. Bickelhaupt

The Bickelhaupt Arboretum, of Clinton, Iowa, was made aware of Typar® by one of its Board of Directors, Dr. Ed Hasselkus, of the University of Wisconsin-Madison. Through friends at the local DuPont plant, we received samples of various grades of Typar® thought to be applicable for landscaping. Typar® is a pervious, spun-bonded polypropylene that allows air and water to penetrate, neither of which is true of black plastic. In the past, Typar® was used in construction of highways, erosion control, soil stabilization and drainage application, and as a filter fabric. The original versions of Typar® would deteriorate when exposed to sunlight. In 1988, DuPont introduced Typar® #3301 that is guaranteed UV proof for five years. We are now using that here in the Arboretum.

All of our pendulous conifers had been mulched with two to four-inch washed river rock, four to six inches deep. This is necessary to keep bottom foliage from rotting; hand weeding is most time consuming. Therefore, we felt that this was an excellent place to test Typar®.

DuPont sent us four large samples, style #3201, nine mils thick; #3341, 13 mils thick; #3401, 15 mils thick and #3601, 18 mils thick.

On August 4, 1981, these Typar® samples were installed under the mulch in the pendulous conifer collection, To date, we have had no weed grow through this material. The only weeds in the mulched areas, are from seeds blown in or those dropped by birds. Of course, these are readily removed.

Root sprouts in mulched areas are always a problem. We have many ornamental *Malus* varieties and cultivars where this is true. Mulch must be raked back and the sprouts cut off at ground level at least twice each year. In 1982, we did not cut the root sprouts on four plants, in preparation for the Typar® test.

All orientation at The Arboretum is done on a basis of 12 o'clock being due North. In May 1983, #3201 was placed in a different half moon under each plant, so that sunlight could not affect the test

Malus x *arnoldiana*	6 to 12 o'clock
Malus x *atrosanguinea*	12 to 6 o'clock
Malus hupehensis	3 to 9 o'clock
Malus sargentii	9 to 3 o'clock

The Typar® was covered with four to six inches of wood chips, and the other half of the circle, as a control, had an equal amount of wood chips on the bare soil.

We are so convinced of the value of Typar® that in 1983 we purchased 1,250 sq. yds. of style #3401. This material comes in rolls of 151 inches wide and 100 yds. long. We cut it with a small chain saw into three and four-foot rolls, laying it under rock and wood chips throughout the 13-acre arboretum, except where we want ground covers to spread by stolons, self seeding or self-layering (where it would inhibit the plant's growth). We found #3601 a good product, but it is heavier than needed. Typar® #3201 is now called their landscape grade and is fine for the homeowner, but we feel #3301 (the replacement of #3401) is best suited for an arboretum's use, where foot traffic on the mulched areas is a problem.

INFORMATION EXCHANGE: THE NEWSLETTER SYSTEM

Roger Vick, Curator
The University of Alberta
Devonian Botanic Garden
Edmonton, Alberta, Canada

If we knew everything there was to know about apples and apple trees, edible and ornamental, we could put it all in a single book and disband the Society. As it is, the definitive work has yet to be written on this subject (for that matter on any subject), and the search for facts and personal opinion continues apace.

This article pertains specifically to the gathering and determination of information on edible apples in northern climates, but a similar process might be applied to similar topics.

In prairie Canada and the Northern Great Plains region, the challenges associated with the growing of apple trees have always centered on winter survival. Although some fruit research is taking place at one or two institutions in the region, and some fruit-grower organizations do exist, there remains a niche for a "clearing house" operation specifically designed to gather and report news and views regarding apple production (and ultimately marketing) in a harsh climate.

The need became evident at an informal gathering of fruit growers at the Sprout Farms Fruit Tree Nursery, Bon Accord, Alberta. It was September 1990, and the proprietors had invited fruit-growing enthusiasts to bring their apples, plums, and other fruits for display. The public was also invited to attend, to sample the produce, and to swap fruit-growing stories and recipes. The gathering has become an annual two-day event, with the first two or three hours intended for the participation of those providing samples, and the remainder of the weekend for the benefit of the public at large.

At the 1990 meeting, this writer had a draft of a publication in preparation, listing the names of all apples and crabapples known to have been grown across prairie Canada. The short descriptions associated with this list proved to be popular with those present, and soon a few rough drafts of the list were sent to keen growers who had observations to make on many of the cultivars listed. Ultimately, grower feedback was included in the resulting publication Edible Apples in Prairie Canada. (1)

During the preparation of that publication, a few apple notes were sent out by the author to local growers to elicit their opinions on the subject. A number of apple growers responded with feedback on such topics as "the best" apples for the area, descriptions of obscure selections, and some notes on cultural procedures. With the publication in print (September 1991) the Apple Notes Newsletter continued quarterly, remaining a medium for information exchange. To date there have been twelve issues of Apple Notes: "A Prairie Pomologists' Letter Exchange." Each issue includes an eclectic mixture of opinions on such specifics as pest control, cultural advice, and cultivar descriptions. Most items are based on submissions from apple growers in various regions of Canada and the USA, where apple production is an ongoing challenge.

The response to the format has been very encouraging. By personal communication between growers, the mailing list has gradually expanded to include orchardists in Alaska, Montana, and the Dakotas, as well as the three prairie provinces of Canada. As the address list expanded, it became evident that the budget of the University of Alberta Devonian Botanic Garden (DBG) was not going to support this free publication indefinitely. While it was intended to be a platform for the ready exchange of apple information, more than half of those asking to be placed on the mailing list were at the stage of seeking information, and with little or nothing to contribute. It was therefore decided, early in 1993, that free distribution could continue only to those who would contribute articles or information.

(1) Vick, Roger "Edible Apples in Prairie Canada" Friends of the University of Alberta publication No. 21, Revised June 1993. 80 pp.

Consequently, Apple Notes is currently being sent free of charge only to those who have supplied items published during the previous year. A charge of $2 per issue ($8 per year) to non-contributors is being used to pay for printing and distribution costs.

The response of the readers to this arrangement has been positive. The Devonian Botanic Garden will continue to serve as a clearing house for news and views associated with edible apple growing in this region, and thus remain involved in some "grass-roots" research. Experienced growers, both professional and amateur, can use the notes as an arena in which to air their views, or to ask for specific information. The novice can benefit from the experience of those who have gone before, and all have the opportunity to contact fellow growers concerning, for example, the availability of scion wood.

The big bonus, as far as this writer is concerned, is that we now have the benefit of hearing from longtime growers who would otherwise not publish their findings and observations. The participation of experienced amateur orchardists is one aspect of this exchange that is most enlightening, and thoroughly appreciated by novice growers and experienced producers alike.

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