A Classification of Hardy North American Apple Cultivars Based on Hardiness Zones[1]

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In the past, apple cultivar hardiness has been predominantly reported as either a minimum survival temperature or in general descriptive terms, such as: tender, hardy, very hardy, and extremely hardy. When hardines is reported as a specific minimum survival temperature, the researcher loses information on cultivar-environment mediated hardiness fluctuations. For example, if cultivar hardiness is characterized by a minimum survival temperature obtained in the fall or winter, no information is available to show that the injury might be due to a cultivar tendency to prematurely deharden in response to midwinter or early spring warm temperatures

A more complete, but often time consuming technique for a large number of cultivars is to monitor hardiness throughout the fall, winter, and early spring and to correlate this with actual environmental temperature fluctuations. Fall tests using this method determine the hardening rate, as well as the point when hardening is initiated. Winter measurements determine the minimum temperature that a variety is capable of withstanding, midwinter tests can measure ability to resist dehardening following warm temperatures and early spring tests produce information on dehardening rates and resistance to late spring freezes, Emmery and Howlett (29).

The general means of reporting apple hardiness through the use of descriptive terms lacks precision and presents difficulties in interpretation. With this method there are no set increments of injury for determining whether a twig is hardy, very hardy or extremely hardy. Consequently, observations made by one individual may vary from those made by another. Furthermore, there are no means of predicting whether a cultivar considered hardy in southern Minnesota will grow in Saskatoon, Saskatchewan, Canada or even in northern Minnesota.

An alternative hardiness classification method which combines the merits of the previous methods is one in which apple cultivars are placed into hardiness zones according to the most northern area in which they have been reported to grow and incur little or no injury. With this system, the cultivar is tested under actual environmental conditions of a specific location for several years. Thus, factors such as fall hardening rate, minimum temperature survival, resistance to dehardening following midwinter warm trends and early spring dehardening are accounted for if the given conditions occurred in its history. Thus it is possible to predict, with reasonable accuracy, additional locations in the same or in warmer hardines zones where a variety would be reasonably well adapted. However, there are also local and microclimatological factors such as rainfall, soil type, frost occurrence, wind exposure,

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and humidity that should be considered, before making this type of decision.

Table 1, is a list of apple cultivars that have been reported to grow without or with minimal (up to approximately 6 inches of dead wood) injury in the hardiness zones ranging from 4b (—30° to —20°F) to 2a (—50° to —40°F). Cultivars were placed into zones only if they had grown in a location for several years. In the case of named cultivars it was assumed that testing was adequate at its place of origin or at an experiment station prior to being released. Cultivar selection dates and release dates are included, when available, to indicate the period of observation. There are a number of instances where a cultivar was found to grow successfully in a more northern location than its place of origin as shown in Table 1. Conversely, it was assumed that a cultivar would not originate in a hardiness zone in which it was not adapted. There are a number of cases where cultivars shown may be hardier than the zone for which they are listed, but no records of their survival further northward were found.

Additional information in Table 1 includes: parentage; whether a cultivar is a crab apple and/or an ornamental; whether it is used as an interstock or a dwarfing rootstock; the principle uses of the fruit; and a subjective fruit quality rating.

Figure I is a USDA, plant hardiness zone map, which is divided into zones of 10°F temperature differentials according to the approximate range of the average annual minimum temperatures. Each zone is subdivided into two sections which indicate 5°F differentals. The north section is the colder of the two. Numbers on Fig. II correspond to the numbers depicting locations in Table 1 where cold hardy apple cultivars were originated or grown.

In interpreting the hardiness zone maps (Fig. I, II) and Table 1 it is necessary to take into account the proximity of adjacent hardiness zones, since the environment between two zones becomes progressively similar towards their boundary. Furthermore there are localized temperature variations due to cities, altitude differences, and other microclimatological factors.

Figures III and IV depict pedigree charts in which 'McIntosh' and *M. baccata* have played major roles in the inheritance of cold hardiness. When 'McIntosh' (Fig. III) which has a hardiness zone clossification of 4a (—30 to —20°F) is used as the female parent, it can be seen that the hardiness zones of its progeny selections may range from 4b (—30 to —20°F) to 2a (—50 to —40°F). Obviously pollen parents have contributed cold hardiness supporting the theory of Watkins and Spangelo (43) that cold hardiness in apples is predominantly additive, and also implicating, at least in this case, that maternal inheritance is less of a determining factor (Wilner 44). We should recognize that this study is based on response of selected individuals rather than entire progeny which have been subjected to the strong selection pressure of winter freezing. Consequently, progeny lacking hardiness in a particular area were eliminated. It is also apparent that many of the hardier apple cultivars have 'McIntosh' incorported into their genetic make-up, probably because this relatively hardy cultivar has also been a popular choice as a parent for fruit quality.

A pedigree chart of hardy cultivars with *M. baccata* as a parental source of cold hardiness is shown in Figure IV. Here the greatest increase in cul-

tivar hardiness was obtained when relatively hardy cultivars such as 'Melba' (an offspring of 'McIntosh') and 'Tetofsky' were used as the male parent. This may again reflect the necessity to use the hardiest parents with good quality as suggested by Watkins and Spangelo (43).

This study provides a fairly broad overview of apple hardiness in the United States and Canada. Since the introduction of hardy *M. baccata* germplasm, great strides have been made in breeding for cold hardiness. Consequently, we now have many first and second generation hybrids that exhibit increased cold hardiness. Further breeding should emphasize the crossing of these hybrids with high quality apple cultivars and selections possessing the highest degree of hardiness available. This should lead to increased quality and size of the fruit with cold tolerance.

It is hoped that this paper will facilitate the breeding for cold hardiness and the exchange of apple cultivars between areas possessing similar hardiness problems.

Literature Cited

1. Brooks, R. M. and H. P. Olmo. 1944. Register of new fruit and nut varieties list no. 1. *Proc. Amer. Soc. Hort. Sci.* 45:469-471.
2. _____, _____. 1947. Register of new fruit and nut varieties list no. 3. *Proc. Amer. Soc Hort Sci.* 50: 426-428.
3. _____, _____. 1949. Register of new fruit and nut varieties list no. 4. *Proc. Amer. Soc. Hort. Sci.* 53: 573-575.
4. _____, _____. 1950. Register of new fruit and nut varieties list no. 5. *Proc. Amer. Soc. Hort. Sci.* 56: 510-513.
5. _____, _____. 1951. Register of new fruit and nut varieties list no. 6. *Proc. Amer. Soc. Hort. Sci.* 58: 387-390.
6. _____, _____. 1952. Register of new fruit and nut varieties list no. 7. *Proc. Amer. Soc. Hort. Sci.* 60: 498-499.
7. _____, _____. 1953. Register of new fruit and nut varieties list no. 8. *Proc. Amer. Soc. Hort. Sci.* 62: 514-516.
8. _____, _____. 1954. Register of new fruit and nut varieties list no. 9. *Proc. Amer. Soc. Hort. Sci.* 64: 537.
9. _____, _____. 1955. Register of new fruit and nut varieties list no. 10. *Proc. Amer. Soc. Hort. Sci.* 66: 446-447.
10. _____, _____. 1956. Register of new fruit and nut varieties list no. 11. *Proc. Amer. Soc. Hort. Sci.* 68: 612-616.
11. _____, _____. 1957. Register of new fruit and nut varieties list no. 12. *Proc. Amer. Soc. Hort. Sci.* 70: 558-561.
12. _____, _____. 1958. Register of new fruit and nut varieties list no. 13. *Proc. Amer. Soc. Hort. Sci.* 72: 521-523.
13. _____, _____. 1959. Register of new fruit and nut varieties list no. 14. *Proc. Amer. Soc. Hort. Sci.* 74: 760-765.
14. _____, _____. 1960. Register of new fruit and nut varieties list no. 15. *Proc. Amer. Soc. Hort. Sci.* 76: 727-731.
15. _____, _____. 1961. Register of new fruit and nut varieies list no. 16. *Proc. Amer. Soc. Hort. Sci.* 78: 623-626.
16. _____, _____. 1962. Register of new fruit and nut varieties list no. 17. *Proc. Amer. Soc. Hort. Sci.* 81: 570-578.
17. _____, _____. 1963. Register of new fruit and nut varieties list no. 18. *Proc. Amer. Soc. Hort. Sci.* 83: 864-867.
18. _____, _____. 1964. Register of new fruit and nut varieties list no. 19. *Proc. Amer. Soc. Hort. Sci.* 85: 699-703.

19. _____, _____. 1965. Register of new fruit and nut varieties list no. 20. *Proc. Amer. Soc. Hort. Sci.* 87: 587-594.

20. _____, _____. 1966. Register of new fruit and nut varieties list no. 21. *Proc. Amer. Soc. Hort. Sci.* 89: 774-776.

21. _____, _____. 1967. Register of new fruit and nut varieties list no. 22. *Proc. Amer. Soc. Hort. Sci.* 91: 908-910.

22. _____, _____. 1968. Register of new fruit and nut varieties list no. 23. *Proc. Amer. Soc. Hort. Sci.* 93: 880-883.

23. _____, _____. 1969. Register of new fruit and nut varieties list no. 24. *HortSci.* 4:345-347.

24. _____, _____. 1970. Register of new fruit and nut varieties list no. 25. *HortSci.* 5:383-384.

25. _____, _____. 1972. Register of New Fruit and Nut Varieties 2nd edition. University of California Press, Los Angeles. pp. 7-120.

26. _____, _____. 1973. Register of new fruit and nut varieties list no. 28. *HortSci.* 8:378-379.

27. Cummins, J. N. and H. S. Aldwinckle 1974 Apple rootstocks for colder climates. *Fruit Var. J.* 28:9-11.

28. Dorsey, M. J. 1919. Some characteristics of open-pollinated seedlings of Malinda apple. *Proc. Amer. Soc. Hort. Sci.* 16:13-18.

29. Emmert, F. H. and F. S. Howlett. 1953. Electrolytic determinations of resistance of fifty-five apple varieties to low temperatures. *Proc. Amer. Soc. Hort. Sci.* 62:311-318.

30. Green, S. B. 1903. Apples and apple growing in Minnesota. *University of Minnesota Agr. Exp. Sta. Bull. No. 83.* pp. 18-31.

31. Hilborn, M. T. and W. C. Stiles. 1973. Low temperature injury to apple trees in Maine. *Life Sciences and Agriculture Experiment Station, University of Maine at Orono Technical Bull. 64.*

32. Macoun, W. T. 1906. The relation of winter apples to hardiness of tree. *Proc. Amer. Soc. Hort. Sci.* 4:7-11.

33. _____. 1918. Winter injury in Canada. *Proc. Amer. Soc. Hort. Sci.* 15:13-17.

34. _____. 1928. Progress in apple breeding in Canada. *Proc. Amer. Soc. Hort. Sci.* 25:117-122.

35. _____ and M. B. Davis. 1919. Progress in apple breeding for the Canadian prairies. *Proc. Amer. Soc. Hort. Sci.* 16:13-18.

36. Morrison, J. W., C. R. Ure, R. H. Anderson, R E. Harris, and P. D. Hargrave 1963. Hardiness and vigor of apple seedlings grown on the Canadian prairies. *Proc. Amer. Soc. Hort. Sci.* 83:113-119

37. Robinson, D. R. 1966. Winter injury to apples, plums, and certain other fruits in Saskatchewan. *Report, 1966.*

38. _____. 1967. Winter injury to apples, plums, and certain other fruits in Saskatchewan. *Report, 1967.*

39. _____. 1970. Winter injury to apples, plums, and certain other fruits in Saskatchewan. *Report, 1970.*

40. Stushnoff, C. 1974. *Personal communication.*

41. University of Minnesota Horticultural Research Center Records. 1974.

42. Agricultural Research Service, United States Department of Agriculture. 1972. Plant Hardiness Zone Map. U. S. Government Printing Office, Washington, D.C. *Misc. Pub. No. 814.*

43. Watkins, R. and L. P. S. Spangelo. 1970. Components of genetic variance for plant survival and vigor of apple trees *Theor. App. Gen.* 40:195-203.

44. Wilner, J. 1965. The influence of maternal parent on frost-hardiness of apple progenies. *Can. J. Plant Sci.* 45:61-71.

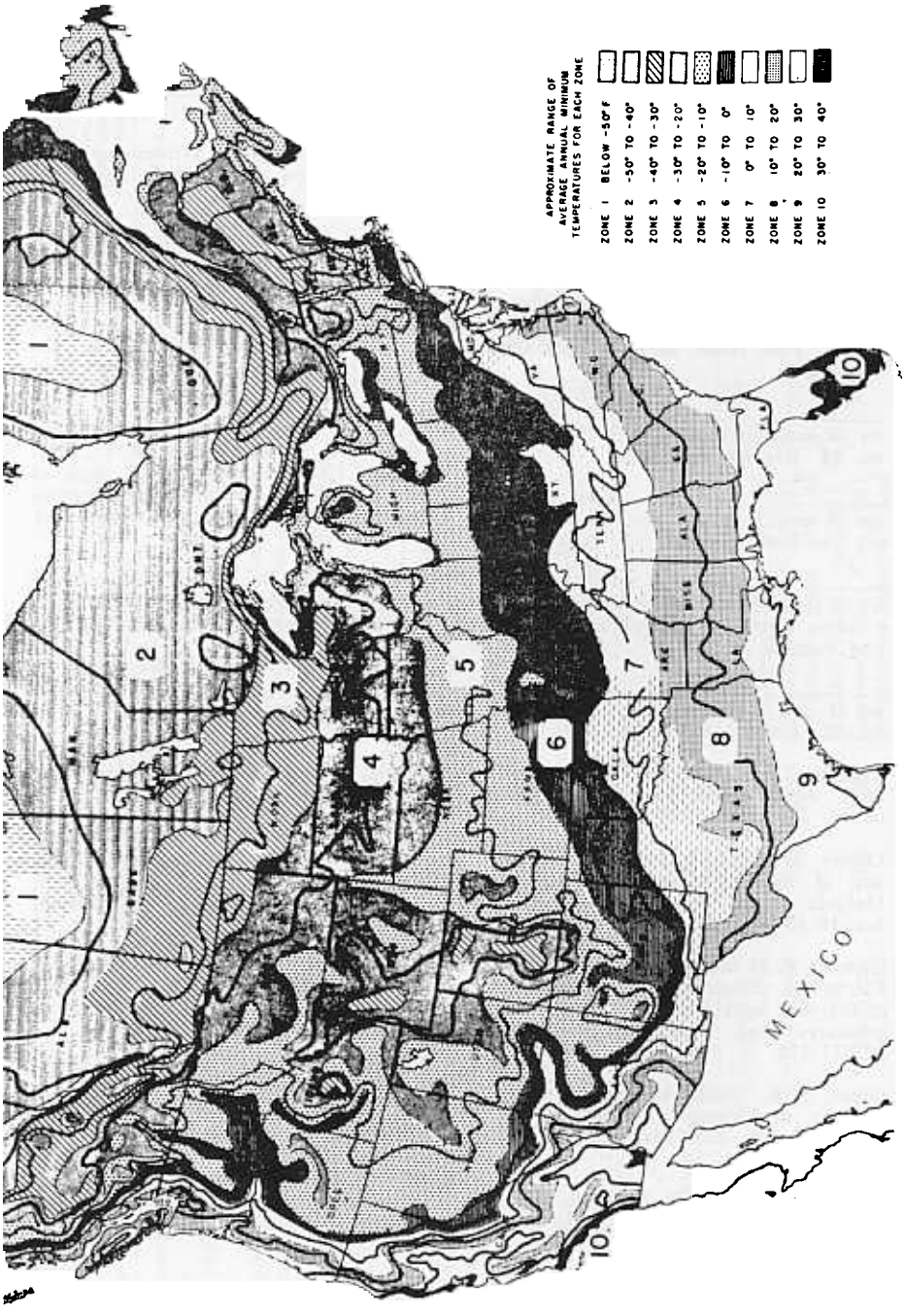

Figure 1. Plant Hardiness Zone Map (42), with solid lines dividing each zone into northern (a) and southern (b) sections (refer to Table 1).

Figure 1) where cultivars originated ▪where records indicate survival (refer

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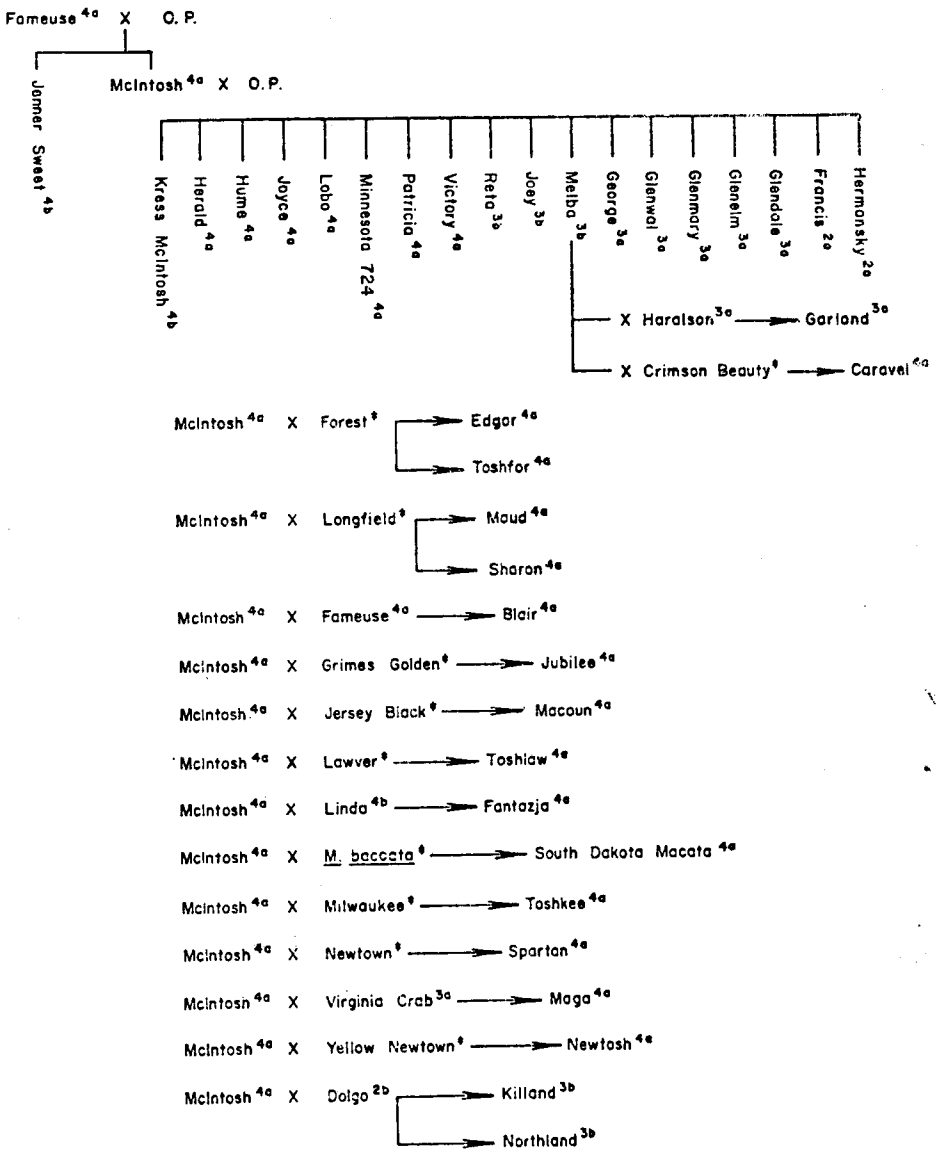

Figure 3. A pedigree chart of the cultivar 'McIntosh', depicting cold hardiness of resultant cultivars based on the coldest hardiness zones in which they have survived with little or no injury. Cultivars for which hardiness zones were not found or fell outside the 4b to 2a hardiness zone range are identified by ‡. O.P. refers to open pollinated.

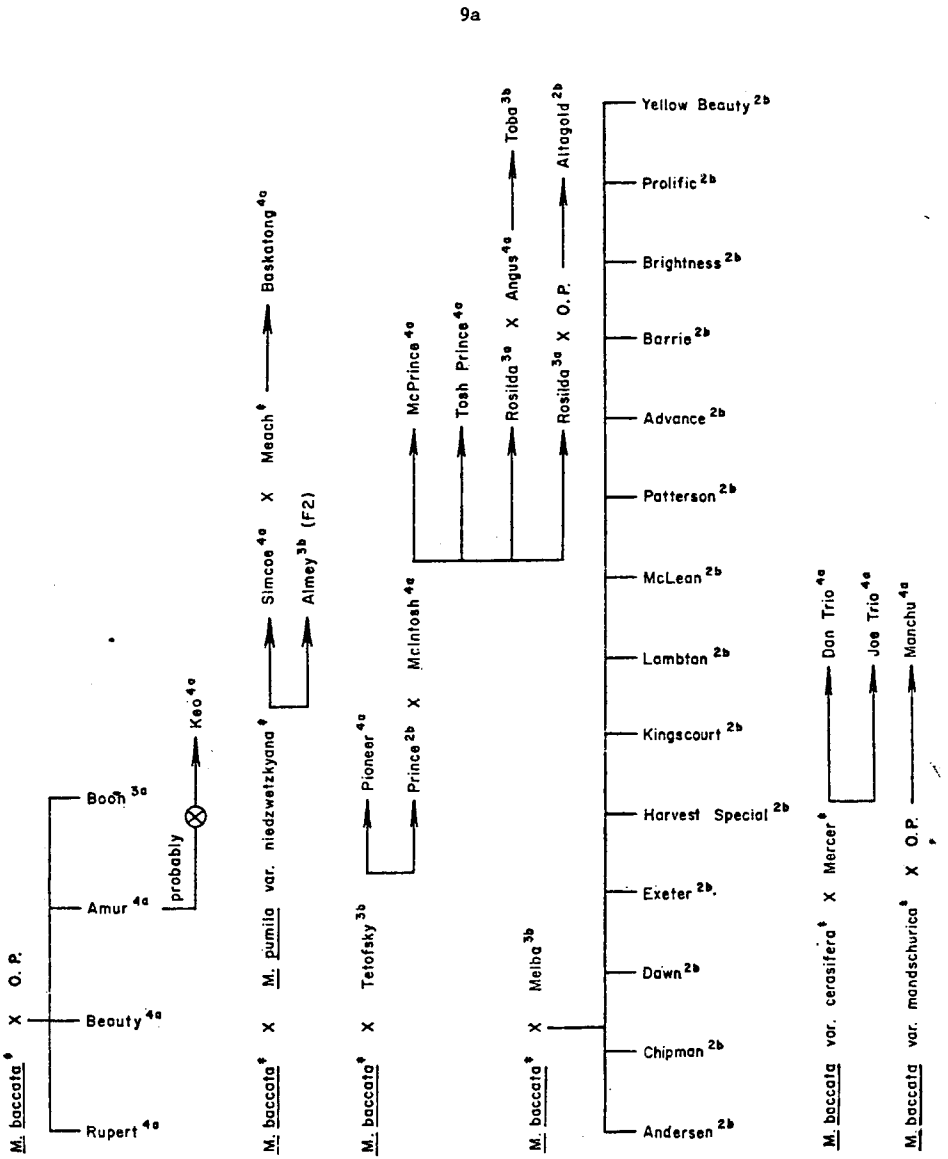

Figure 4. A pedigree chart of *Malus baccata* depicting the cold hardiness of resultant cultivars based on the coldest hardiness zones in which cultivars survive with little or no injury. Cultivars marked by ‡ are those for which hardiness zones were not found or fell outside the 4b to 2a hardiness zone range of this study. O.P. refers to open pollinated.

Table 1. Hardiness zones, parentage, origin, and characteristics of hardy apple cultivars.*

HARDINESS ZONE 4b (−30 to −20°F)

Cultivar	Parentage	Date Selected	Date Introduced	Origin 'of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Alnarp[2] (A-2)	Doucin tree Selection	1920	1949	Alnarp, Sweden Gr. Excelsior, MN (27)	(VH)	—	Rs., Sdf.	16
Antonovka Shafran	——	—	—	Russia Gr. Monmouth, ME (50)	—	—	In.	31
Antonovka Zheltaia	——	—	—	Russia Gr. Monmouth, ME (50)	—	—	In.	31
Autumn Arctic (Ashworth)	O. P. Arctic	1952	1956	Barnard, VT (7)	(VH)	Sept.	In.	25
Belfer Foenicks (Bellefleur Phoenix)	——	—	—	Russia Gr. Monmouth, ME (50)	—	—	—	31

***Abbreviations for Table 1**

H = Hardy
VH = Very Hardy
EH = Extremely Hardy

S = Season
Cr = Crab Apple
Rs = Rootstock
In = Interstock
Df = Dwarf
Sdf = Semi Dwarf
Orn = Ornamental
( ) = Synonym

Sp = Spur Type

D = Dessert
P = Preserving, Jelly, Canning
S = Sauce
B = Baking and Pies
C = Culinary
Bm = Bud Mutation
Gr = Grown
OP = Open Pollinated
Ob = Obsolete Variety

Fruit Quality Rating

1 = poor
2 = fair
3 = good
4 = very good
5 = excellent

HARDINESS ZONE 4b (−30 to −20°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Bessemianka	——	—	—	Russia Gr. Monmouth, ME (50)	—	—	—	31
Brechsteinia	Unknown	—	1931	Lander, WY (42)	(VH)	Oct. 1	—	25
Bridgham Delicious	Bm. Delicious	1930	1950's	First Creek, WA Excelsior, MN (27)	(H)	—	—	25 & 40
Coombs Wealthy (Large Wealthy)	Bm. Wealthy	1942	—	Henniker, NH (36)	(H)	—	(4)	25
Dodd	O. P. Tolman Sweet	1958	1962	De Peyster T. S., NY (20)	(H)	—	—	19
Eastman Sweet	Unknown	1860	1953	De Peyster T. S., NY (20)	(H)	—	(3 D)	19
Empire Red	Unknown	1928	1942	Grand Forks, B.C., Can. (31)	(H)	early	(3 C, D)	3
Fremont	Unknown	—	1933	Lander, WY (42)	—	Sept. 15	—	25
Golden Sunset	Unknown	—	1932	Winlaw, B.C., Can. (87)	—	Aug. 1	—	14
Goldo	Duchess x Grimes Golden	—	1922	Brookings, SD (11)	(H)	—	(2)	25
Hadlock Reinette	Unknown	1963	1964	Hammond, NY (34)	(VH)	—	(3)	19
Hardi-Spur Delicious (Lonely)	Bm. Starking Red Delicious	1958	1962	Dryden, WA Excelsior, MN (27)	(H)	Oct. 15		16 & 40
Jenner Sweet	O. P. Fameuse	1924	1964	Colton, NY (17)	(EH)	mid autumn	Sp. Sdf.	19
Kress McIntosh (Stark McIntosh)	O. P. McIntosh	1920	1934	Hamilton, MT (33)	(EH)	Aug.-Sept.	(3 DC)	21
Kulon Kitaka	——	—	—	Russia Gr. Monmouth, ME (50)	—	—	In.	31
Laking	Unknown	1920	1925	Guelph, Ont., Can. (32)	(H)	—	Ob. (3)	14
Lennoxville	——	—	—	Gr. Monmouth, ME (50)	—	—	In.	31
Linda	O. P. Langford Beauty	1914	1935	Ottawa, Ont., Can. (66)	(H)	—	(3)	7
Margaret	Unknown	—	1933	Lander, WY (42)	—	Sept. 25	(3 DC)	25
Mart	Unknown	—	1933	Lander, WY (42)	(H)	Sept. 25	—	25
May Sweet	Unknown	1958	1960	Hammond, NY (34)	—	—	—	19

HARDINESS ZONE 4b (−30 to −20°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
(Yellow Rose)								
Nelson	Unknown	—	1933	Lander, WY (42)	—	Sept. 25	(4)	25
Poposia	Unknown	—	1931	Lander, WY (42)	—	Oct. 1	—	25
Quebec Belle (Belle de Quebec)	O. P. Northern Spy	1948	1956	Hemmingford, Que., Can. (35)	(H)	—	(4)	11
Red King Delicious	Bm. Starking Delicious	1941	1953	Riverside, WA (73) Excelsior, MN (27)	(H)	Oct. 1	(5)	25 & 40
Richared Delicious	Bm. Delicious	1915	1926	Wenatchee, WA (86) Excelsior, MN (27)	(H)	Oct. 1	(5)	25 & 40
Roberts (John Roberts)	Unknown	1915	1932	Lander, WY (42)	—	Sept. 10	(4 DC)	25
Sawyer Baldwin (Baldwin Double Red) (Baldwin Scarlet) (Black Baldwin) (Double Red Baldwin) (Red Baldwin)	Bm. Baldwin	1924	1927	Salisbury, NH (76)	—	—	(5)	25
Starking Delicious (Double Red Delicious) (Extra Red Delicious) (Starking)	Bm. Delicious	1921	1924	Monroeville, NJ (51) Excelsior, MN (27)	(H)	Oct. 15	(5 D)	25 & 40
Tangowine	Unknown	before 1950	1965	Petiticodiac, N. B., Can. (69)	(H)	late Sept.	(3)	19
Tayezhnoie	——	—	—	Gr. Monmouth, ME (50)	—	—	In.	31
Truax Greening	O. P. Tolman	1955	1957	Hammond, NY (34)	(VH)	—	—	19
Vance Delicious	Bm. Delicious	1930	1935	Albemarle Co., VA (2) South, MN	(H)	Oct. 15	(5 D)	25 & 41
Viking (D. B. Gurney's Viking)	Scandinavian Selection	—	1925	Yankton, SD (90)	(EH)	—	(3)	12
Waldorf	Unknown	—	1957	Arena, WI (4)	(H)	Sept. 10-Nov.	—	12
Washakie (Chief Washakie)	——	—	1932	Lander, WY (42)	—	Sept. 25	—	12
Wellspur (Azwell)	Bm. Starking Delicious	1952	1958	Wenatchee, WA (86) Excelsior, MN (27)	(H)	—	Sp. (5 D)	25 & 40

HARDINESS ZONE 4a (−30 to −20°F)

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Aitkin	——	—	—	Gr. Excelsior, MN (27)	(H)	—	—	41
Almata	(Beautiful Arcade x Fluke 38 Crab) x Redflesh Crab	1941	1942	Brookings, SD (11)	(VH)	—	—	7
Amsib	*M. ioensis* x *M. baccata*	—	1932	Brookings, SD (11)	(VH)	—	Cr. Orn.	19
Amur	O. P. *M. baccata*	1925	1929	Russia Gr. Brookings, SD (11)	—	—	Cr. Ob.	19
Angus	——	—	—	Gr. Ottawa, Ont., Can. (66)	—	—	—	34
Anis	Unknown	—	1888	Russia Gr. Ottawa, Ont., Can. (66)	(EH)	—	Df. In.	5
Anisette	——	—	—	Gr. Ottawa, Ont., Can. (66)	—	—	—	34
Anism (Borsdorf) (Zusoff) (Good Peasant) (Swedish Borsdorf) (14 M) (18 M)	——	—	—	Russia Gr. Excelsior, MN (27)	(VH)	—	Cr. (2)	30
Ann Trio	Tony x Mercer	—	1938	Brookings, SD (11)	—	—	Cr.	19
Anoka (Champion Supreme)	Mercer x Duchess	1918	1920	Brookings, SD (11)	(VH)	—	Cr. (1)	10
Atlas	O. P. Winter St. Lawrence	1912	1924	Ottawa, Ont., Can. (66)	(VH)	—	(3 C)	25
Bancroft	Forest x McIntosh	1930	1935	Ottawa, Ont., Can. (66)	(H)	—	Cr. (3)	5
Baskatong	Simcoe x Meach	—	1948	Ottawa, Ont., Can. (66)	—	—	Cr. Orn.	11
Baxter	——	—	—	Brockville, Ont., Can. (10)	—	—	—	32
Beacon (Fenton) (MN No. 423)	O. P. Malinda	—	1936	Excelsior, MN (27)	(VH)	Aug.	(3)	3
Beauty	O. P. *M. baccata*	1925	1929	Russia Gr. Brookings, SD (11)	—	—	Cr. Orn. Ob. (3 DP)	19
Bedford	——	—	—	Gr. Ottawa, Ont., Can. (66)	—	—	—	36
Bellflower Kitaika	——	—	—	Russia Gr. Monmouth, ME (50)	—	—	—	31
Ben Davis	——	—	—	Gr. Excelsior, MN (27)	—	—	(2)	40
Ben Trio	Progress x Mercer	—	1938	Brookings, SD (11)	—	—	Cr. (4D, 3S)	19

HARDINESS ZONE 4b (−30 to −20°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Bismer	Pedigree Bismark x Mercer Crab	—	1927	Brookings, SD (11)	—	—	(3 S)	7
Blair	McIntosh x Fameuse	1944	1973	Ottawa, Ont., Can. (66)	(H)	Sept. 15	(4)	26
Budagovsky	——	—	—	Near Moscow, USSR	—	—	Rs. Df.	27
Cal Trio	Mercer x Sweet Russet	—	1938	Brookings, SD (11)	—	—	Cr. Ob.	25
Calumet	——	—	—	Calumet Island, Ottawa River, Que., Can. (14)	—	—	—	32
Canada Baldwin	——	—	—	Quebec, Can.	—	—	—	32
Caputa	Ivan x Kentucky Mammoth	—	1923	Brookings, SD (11)	—	—	Cr. Ob.	19
Caravel (Portia) (Ottawa 277)	Melba x Crimson Beauty	—	1964	Ottawa, Ont., Can. (66)	(H)	summer	(3 D)	19
Centennial (MN 1472)	Dolgo x Wealthy	1940	1957	Excelsior, MN (27)	(H)	Aug. 21-Sept. 5	Cr. (4D, 2S, P)	12
Champion	——	—	—	Gr. Excelsior, MN (27)	(H)	early Aug.	(3)	41
Charlamoff (Petersons Charlamoff) (Champanskoe) (Pointed Pika 361) (112M) (Champagne)	——	—	—	Russia Gr. Ottawa, Ont., Can. (66)	(VH)	—	—	30 & 32
Chinook	Baldwin x Elk River	1924	1924	Brookings, SD (11)	—	—	Cr. Ob.	25
Choka	*M. ionsis* x Alexander	—	1922	Brookings, SD (11)	(H)	late fall	Cr.	19
Connell Red (Red Fireside)	Bm. Fireside	1949	1957	Dunn Co., WI (22)	(VH)	—	(5)	12
Cortland	Ben Davis x McIntosh	—	1915	Geneva, NY (29) Gr. Excelsior, MN (27)	(VH)	—	(5)	25
Cowichan	O. P. *M. pumila* var. niedzwetzkyana	—	1928	Ottawa, Ont., Can. (66)	—	—	Cr. Orn.	11
Currie	O. P. Northern Spy	1916	1921	Ottawa, Ont., Can. (66)	—	early fall	—	15

HARDINESS ZONE 4a (−30 to −20°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Dakota Beauty	O. P. *M. pumila* var. niedzwetzkyana	1938	1944	Brookings, SD (11)	(VH)	—	Cr. Orn. (P)	25
Daniels Red Duchess (Bardwell Red Duchess) (Minnesota Red Duchess) (Starks Red Duchess)	Bm. Duchess	1902	1925	Excelsior, MN (27)	—	—	—	25
Daniels Redstreak	Unknown	1960	1964	Oswegatchie, NY (65)	(H)	early	(3)	19
Dan Trio	*M. baccata cerasifera* x Mercer	—	1938	Brookings, SD (11)	—	late	Cr. Ob. (3S)	16
Davies	O. P. Yellow Transparent	1936	1961	Norfolk, NY (62)	(H)	early	—	19
Duchess (Oldenburg) (Duchess of Oldenburg)	——	—	—	Russia Gr. Excelsior, MN (27)	(H)	Aug.	(4-C)	30
Dummer	——	—	—	Gr. Excelsior, MN (27)	(VH)	early Aug.	(2-3)	41
Early Red Bird	——	—	—	Gr. Excelsior, MN (27)	(H)	early Aug.	(2)	41
Edgar	McIntosh x Forest	1929	—	Ottawa, Ont., Can. (66)	—	—	Cr. (4)	10
Elk River	O. P. *M. ioensis*	—	1930	Elk River, MN (25)	—	—	Cr. Orn. Sdf. (3P)	15
Elta	O. P. Wealthy	—	1927	Brookings, SD (11)	—	—	Ob.	15
English Russet	—	—	—	Gr. Excelsior, MN (27)	—	—	—	28
Erl Trio	(Fluke 10 x *M. baccata)* x Dolgo	—	1938	Brookings, SD (11)	—	late	Cr.	16
Fameuse	——	—	—	Gr. Excelsior, MN (27)	(H)	—	(3)	41
Fantazja (Phantasy)	McIntosh x Linda	1954	1960	Skierniewice, Poland	(H)	Nov.	(4 D)	24
Fay Trio	Fluke 10 x Yellow Siberian	—	1938	Brookings, SD (11)	—	—	Cr. Ob. (3, 4S)	19
Fireside (MN 993)	Unknown	1917	1943	Excelsior, MN (27)	(H)	Oct.	(5 D)	2
Flame (MN 635)	Unknown	1920	1943	Excelsior, MN (27)	(VH)	—	Cr. Orn. (3)	25
Folwell (MN 237)	O. P. Malinda	1913	1922	Excelsior, MN (27)	(H)	late fall	(3)	3

HARDINESS ZONE 4a (−30 to −20°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Geneva	O. P. *M. pumila* var. niedzwetzkyana	1928	1930	Ottawa, Ont., Can. (66)	(H)	—	(5 P)	4
Glenton	O. P. Northern Spy	1909	1946	Ottawa, Ont., Can. (66)	—	late Sept.	(5 D, C)	12
Haas (Fall Queen) (Gros) (Pomier)	——	—	—	MO	(H)	late fall	(2)	33 & 30
Hans Trio	Fluke 29 x Yellow Siberian	—	1938	Brookings, SD (11)	—	—	Cr. (1 C)	25
Herald	O. P. McIntosh	—	—	Ottawa, Ont., Can. (66)	—	—	—	34
Honeygold	Golden Delicious x Haralson	1947	1969	Excelsior, MN (27)	(H)	early Oct.	(5 D)	23
Hopa	*M. pumila* var. niedzwetzkyana x *M. baccata*	—	1920	Brookings, SD (11)	—	—	Cr.	10
Horace	O. P. Langford Beauty	1912	—	Ottawa, Ont., Can. (66)	—	Sept.	(3)	4
Hume	O. P. McIntosh	1916	1920	Ottawa, Ont., Can. (66)	(H)	late Sept.	Cr. (3)	5
Idared	Jonathan x Wagener	1935	1942	Moscow, ID Gr. Excelsior, MN (27)	(H)	early Oct.	(5 D, C)	25 & 41
Joe Trio	*M. baccata cerasifera* x Mercer	—	1936	Brookings, SD (11)	—	—	Cr. (3 S)	16
Johnsib	Jonathan x Irkutsk	—	1938	Brookings, SD (11)	—	late fall	Cr. (3 S)	7
Jonadel	Jonathan x Delicious	1928	1958	Ames, IA (3) Gr. Excelsior, MN (27)	(H)	R. late Sept.	(5 D)	25 & 41
Joyce	O. P. McIntosh	1912	1924	Ottawa, Ont., Can. (66)	—	mid Sept.	Cr. (4)	5
Jubilee	McIntosh x Grimes Golden	1936	1939	Summerland, B.C., Can. (81)	(H)	mid Oct.	(2-3)	3
Kazan	O. P. Anisim	—	1934	Brookings, SD (11)	—	—	Cr. Ob.	25
Keetosh	——	—	—	Gr. Excelsior, MN (27)	(H)	—	(4)	41
Keo	probably Amur Crab x Selfed	—	1940	Brookings, SD (11)	—	—	Cr. (4)	7
Kit Trio	Mercer x Sweet Russet	—	1938	Brookings, SD (11)	—	late	Cr. Ob. (S, P)	25
Kola	Elk River x Duchess	—	1922	Brookings, SD (11)	—	—	Cr. (1)	11

HARDINESS ZONE 4a (−30 to −20°F) *(Continued)*

Cultivar	Parentage	Date Selected/Introduced		Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Lakeland Red Lakeland Bm.	O. P. Malinda	1927	1950	Excelsior, MN (27)	(H)	mid Sept.	Cr. (4 B, S)	5 & 41
La Victoire	——	—	—	Quebec, Can.	—	—	—	32
Lawfam	Lawver x Fameuse	1921	1935	Ottawa, Ont., Can. (66)	(H)	—	Cr. (3)	5
Lee Trio	Hamilton Morning Star x *M. baccata*	—	1942	Brookings, SD (11)	—	—	Cr. Ob. (3 S)	25
Lemon (Linonoe)	Unknown	—	1922	Russia, Brookings, SD (11)	(H)	—	(1)	14
Lina	O. P. Malinda	—	1933	Brookings, SD (11)	—	late	Ob.	25
Linda Sweet	Malinda x Sweet Russet	—	1922	Brookings, SD (11)	(H)	late fall	Cr.	15
Lindel (T-397)	Richard Delicious x Linda	1953	1971	Smithfield, Ont., Can. (80)	(H)	late Oct.	(D, C)	26
Lobo	O. P. McIntosh	1906	1930	Ottawa, Ont., Can. (66)	(H)	—	(3)	4
Lodi (Early Golden) (Golden Lodi) (Improved Early Transparent) (Large Transparent)	Montgomery x Yellow Transparent	—	1924	Geneva, NY (29) Gr. Excelsior, MN (27)	(H)	July	(D, C)	25 & 41
Macoun	McIntosh x Jersey Black	1918	1923	Geneva, NY (29) Gr. Excelsior, MN (27)	(VH)	late Oct.	(4 D)	25 & 41
Macross	——	—	—	Ottawa, Ont., Can. (66)	—	—	—	34
Maga (Into)	McIntosh x Virginia Crab	1919	1933	Brookings, SD (11)	—	Aug.	Ob. (3)	16
Makamik	Unknown	—	1932	Ottawa, Ont., Can. (66)	—	—	Cr. Orn.	12
Malinda	——	—	—	Orange County, VT Gr. Ottawa, Ont., Can. (66)	—	late winter	(2, 3)	30, 36, 28
Manchu	O. P. *M. baccata* var. mandschurica	—	1960	Harbin, Manchuria Gr. Brookings, SD (11)	(EH)	—	Rs. Sdf.	19
Maud	McIntosh x Longfield	—	1921	Ames, IA (3) Gr. Excelsior, MN (27)	(H)	early Sept.	(2)	25 & 41

HARDINESS ZONE 4a (−30 to −20°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
McIntosh	O. P. Fameuse	—	1796	Dundas Co. Gr. Ontario, Can. (21)	(H)	late Sept.	(5)	34
McPrince	Prince x McIntosh	—	1922	Ottawa, Ont., Can. (66)	—	Oct.-Jan.	Cr. (3)	25
Minjon (MN 700)	Wealthy x Jonathan	1923	1942	Excelsior, MN (27)	(VH)	mid Sept.	(3)	3
Minnehaha (MN 300)	O. P. Malinda	1914	1920	Excelsior, MN (27)	(H)	Nov.-Feb.	(3)	3
Minnesota 724	O. P. McIntosh	1929	—	Excelsior, MN (27)	(H)	mid Sept.	Ob. (3 D, S)	17
Minnetonka Beauty	O. P. Northwestern Greening	1928	1941	Excelsior, MN (27)	(H)	Oct.-Mar.	(3 D, C)	1
Monroe	Jonathan x Rome Beauty	—	1949	Geneva, NY (29) Gr. Excelsior, MN (27)	(H)	late Sept.	(3 P, D, 4 C)	25 & 41
Moscow Pear	——	—	—	Gr. Excelsior, MN (27)	(EH)	summer	(2)	41
Nebo	Alexander x Mercer Crab	—	1940	Brookings, SD (11)	—	—	Cr.	7
Nepean	O. P. Salome	1910	1923	Ottawa, Ont., Can. (66)	—	winter	Cr.	5
Newtosh	McIntosh x Yellow Newtown	1922	1923	Ottawa, Ont., Can. (66)	—	—	—	10
Niagara (NY 50-2)	Carlton x McIntosh	1950	1962	Geneva, NY (29) Gr. Excelsior, MN (27)	(H)	mid Sept.	—	25 & 41
Nocalyx	O. P. Esopus Spitzenburg	—	1920	Brookings, SD (11)	—	Sept.	Cr. Ob.	25
Norspy	Northwestern Greening x Northern Spy	—	1929	Ottawa, Ont., Can. (66)	—	late	(3)	14
Northwestern Greening (MN 714)	——	—	—	Gr. Excelsior, MN (27)	—	Oct.	(3)	28 & 30
Oriole	Unknown	1923	1949	Excelsior, MN (27)	—	early Aug.	(4 C, D)	4
Ostrekoff (4M)	——	—	—	Russia Gr. Excelsior, MN (27)	(MH)	—	—	35
Ottawa	O. P. Swayzie	—	1921	Ottawa, Ont., Can. (66)	—	—	(4)	16
Ottawa 3	Robin x 'M.9'	—	—	Ottawa, Ont., Can. (66)	—	—	Rs. Df.	27
Oxbo	Roxbury Russet x Duchess	—	1922	Brookings, SD (11)	—	late fall	Ob.	25

HARDINESS ZONE 4a (−30 to −20°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Patricia	O. P. McIntosh	1920	—	Ottawa, Ont., Can. (66)	(H)	—	Cr. (4)	25
Patten Greening (Duchess No. 3)	——	—	—	IA Gr. Excelsior, MN (27)	(VH)	late fall	—	28 & 30
Pioneer	*M. baccata* x Tetofsky	—	—	Ottawa, Ont., Can. (66)	—	—	—	35
Prairie Spy (MN 1007)	Unknown	1923	1940	Excelsior, MN (27)	(H)	Oct.	(4 C, D)	3
Quinte (Ottawa T-441)	Crimson Beauty x Red Melba	—	1964	Ottawa, Ont., Can. (66)	(H)	summer	(4 D)	19
Ranger (Ottawa 342)	Crimson Beauty x Melba	1944	1964	Ottawa, Ont., Can. (66)	(H)	summer	—	19
Red Atlas	Bm. Atlas	1945	1950	Kakabeka Falls, Ont., Can. (39)	—	—	(3 D, B, S, C)	25
Red Baron (MN 1500)	Golden Delicious x Red Duchess	1940	1969	Excelsior, MN (27)	(H)	late Sept.	(3 D, B, S)	23
Redflesh	*M. pumila* var. niedzwetzkyana x Elk River	—	1928	Brookings, SD (11)	—	—	Cr. (1)	25
Redflesh Winter	Sasha x Redflesh	—	1946	Brookings, SD (11)	—	—	Cr.	25
Red Soviet	Unknown	—	1934	Russia Gr. Brookings, SD (11)	(EH)	—	Ob.	16
Red Standard	Unknown	—	1934	Russia Gr. Brookings, SD (11)	(H)	—	(1-2)	16
Redwell (MN 638)	O. P. Scotts Winter	1923	1946	Excelsior, MN (27)	(H)	mid Oct.	(3 D, C)	3
Regent (MN 1430)	Daniels Red Duchess x Delicious	1937	1963	Excelsior, MN (27)	(H)	mid Oct.	(4 D, B, S)	18
Reid	Unknown	—	1950	Silver Park, Sask., Can. (79) Gr. Swift Current, Sask., Can. (82)	(H)	—	(3 D)	14
Rhoda	——	—	—	Gr. Excelsior, MN (27)	(H)	mid Oct.	—	41
Robusta #5	*M. baccata* x *M. prunifolia* probably	—	1947	Ottawa, Ont., Can. (66) Gr. Monmouth, ME (50)	—	—	Rs.	31 & 27

HARDINESS ZONE 4a (—30 to —20°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Rogers McIntosh (Red McIntosh) (Double Red McIntosh) (Rogers Red McIntosh)	Bm. McIntosh	—	1932	Dansville, NY (19) Gr. Excelsior, MN (27)	(H)	late Sept.	(5)	25 & 41
Rosseau (Red Canada)	O. P. *M. pumila* var. niedzwetzkyana	—	1928	Ottawa, Ont., Can. (66)	—	—	Cr.	11
Rupert	O. P. *M. baccata*	—	—	Ottawa, Ont., Can. (66)	—	—	—	34
Russian White	Unknown	—	1924	Russia Gr. Brookings, SD (11)	(H)	late Aug.	(3 C)	16
Sandow	O. P. Northern Spy	1912	1935	Ottawa, Ont., Can. (66)	(H)	winter	Cr. (4)	5
Sapina	Winesap x Virginia	—	1920	Brookings, SD (11)	(H)	late fall	Cr. Ob.	25
Scott Winter	——	—	—	VT Gr. Excelsior, MN (27)	—	—	—	28 & 30
Scugog	O. P. *M. pumila* var. niedzwetzkyana	—	1928	Ottawa, Ont., Can. (66)	—	early Sept.	Cr. (5 P)	10
Semla	O. P. Wolf River	—	1940	Brookings, SD (11)	—	—	Ob.	25
Sharon	McIntosh x Longfield	1920	1922	Ames, IA Gr. Excelsior, MN (27)	(H)	—	(4)	25 & 41
Shoko	Elk River x Alexander	—	1922	Brookings, SD (11)	—	—	Cr. (2 S)	16
Silver Leaf	Unknown	1930's	1938	Brookings, SD (11)	—	—	Cr. Orn. (2 P)	16
Simcoe	*M. baccata* x *M. pumila* var. niedzwetzkyana	—	1928	Ottawa, Ont., Can. (66)	—	—	Cr. Orn.	11
South Dakota Ben (Ben)	Jonathan x Tony	—	1938	Brookings, SD (11)	—	—	Cr. (S)	25
South Dakota Bona (Bona)	Jonathan x Sylvia	—	1938	Brookings, SD (11)	—	late fall	Cr. (S)	25
South Dakota Eda (Eda)	Jonathan x Tony	—	1940	Brookings, SD (11)	—	—	Cr. (3 D, S)	25
South Dakota Golden (Golden)	Grimes Golden x Duchess	—	1944	Brookings, SD (11)	—	late fall	(4)	7
South Dakota Macata	McIntosh x *M. baccata*	—	1938	Brookings, SD (11)	(H)	—	Cr. (C)	16

HARDINESS ZONE 4a (−30 to −20°F) *(Continued)*

Cultivar	Parentage	Date Selected/Introduced		Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
South Dakota Waldo	Fluke 10 x Duchess	—	1938	Brookings, SD (11)	—	—	Cr. (4 S)	16
South Dakota Wendel	Charlamovsky x a wild crab from Andrew Co. MO.	—	1938	Brookings, SD (11)	(H)	—	Cr. Ob.(S)	25
South Dakota Winter (Winter)	Redvein x Elk River	—	1942	Brookings, SD (11)	(EH)	—	Cr. (3 S)	25
Spartan	McIntosh x Newtown	1936	—	Summerland, B.C., Can. (81) Gr. Excelsior, MN (27)	(H)	early Oct.	(5)	3 & 41
Starks Red Gold	——	—	—	Gr. Excelsior, MN (27)	(H)	—	—	41
Stone	——	—	—	VT	—	—	—	32
Stontosh	Stone x McIntosh	—	1922	Ottawa, Ont., Can. (66)	—	—	(3)	19
Sugar Loaf	——	—	—	Gr. Excelsior, MN (27)	(H)	—	—	41
Sundance	Unknown	—	1932	Lander, WY (42)	—	mid Sept.	—	25
Tipi	Elk River x Duchess	—	1922	Brookings, SD (11)	—	—	Cr.	16
Tolmo	Tolman Sweet x Duchess	—	1932	Brookings, SD (11)	(H)	—	(3)	16
Tomiko	Meach x *Malus pumila* var. eleyi	—	1948	Ottawa, Ont., Can. (66)	(VH)	—	Cr. Orn.	11
Toshfor	McIntosh x Forest	—	1926	Ottawa, Ont., Can. (66)	—	—	—	16
Toshkee	McIntosh x Milwaukee	—	1923	Ottawa, Ont., Can. (66)	—	—	Sdf. (4)	19
Toshlaw	McIntosh x Lawver	—	1925	Ottawa, Ont., Can. (66)	—	—	(3)	19
Toshprince	Prince x McIntosh	—	1923	Ottawa, Ont., Can. (66)	—	Sept.	Cr.	16
Victory (MN 396)	Probably O. P. McIntosh	1943	—	Excelsior, MN (27)	(VH)	mid Oct.	(3)	2
Volga	Virginia x Anisim	—	1933	Brookings, SD (11)	—	late fall	(2)	11
Wahoya	Nevis Crab x Wolf River	—	1938	Brookings, SD (11)	(H)	—	(3 B, S, C)	16
Wakaga	Nevis Crab x Wolf River	—	1938	Brookings, SD (11)	(H)	—	(S)	16
Wakapala	Mercer x Tolman Sweet	—	1928	Brookings, SD (11)	—	—	—	7
Wakonda	Nevis Crab x Northern Spy	—	1931	Brookings, SD (11)	(H)	—	Cr. (2 P)	16

HARDINESS ZONE 4a (—30 to —20°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Wamdesa	Elk River x Jonathan	—	1938	Brookings, SD (11)	—	—	Cr. Ob.	25
Wanblee	(Elk River x Bismarck) x Wolf River	—	1932	Brookings, SD (11)	—	—	Cr. Ob.	17
Watopa	Elk River x Jonathan	—	1939	Brookings, SD (11)	—	—	Ob. (D)	25
Waubay	Grimes Golden x Mercer	—	1933	Brookings, SD (11)	(H)	—	Cr. Orn. (2 P)	16
Wayne (NY 44420-1)	Northwestern Greening x Red Spy	1951	1962	Geneva, NY (29) Gr. Excelsior, MN (27)	(H)	late Sept.	(4D, 5B, S, C)	25 & 41
Waziya	Nevis Crab x Northwestern Greening	—	1938	Brookings, SD (11)	—	—	(1 C)	16
Wealthy (Red Wealthy BM.)	Unknown	—	—	Gr. Excelsior, MN (27)	(H)	mid Sept.	—	28, 30, 41
Wecota	Nevis Crab x Northwestern Greening	—	1929	Brookings, SD (11)	—	—	Cr.	15
Wedge (MN 207)	Probably O. P. Ben Davis	1912	1922	Excelsior, MN (27)	—	Sept.	(3)	3
Wellington	Cortland x Crimson Beauty	1937	1955	Geneva, NY (29) Gr. Excelsior, MN (27)	(H)	mid Aug.	(3 D, 5 S)	25
Wetonka	Nevis Crab x Wolf River	—	1929	Brookings, SD (11)	—	—	Cr. (25)	16
Whitney Crab	——	—	—	Gr. Excelsior, MN (27)	(VH)	Aug.	Cr. (3)	30 & 41
Williams Early Red	——	—	—	Gr. Excelsior, MN (27)	(H)	—	—	41
Winter Rose	——	—	—	Dundas Co., Ont., Can. (21)	—	—	—	32
Wiyuta	Nevis x Wolf River	—	1939	Brookings, SD (11)	—	—	Cr. Ob.	25
Wolf River	——	—	—	WI Gr. Excelsior, MN (27)	(H)	late Sept.	(2-3)	30 & 40
Yakhontowoye	Unknown	—	1934	Russia Gr. Brookings, SD (11)	(H)	fall	—	17

HARDINESS ZONE 4a (−30 to −20°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Yellow Siberian *(M. baccata)*	Unknown	—	1938	Brookings, SD (11)	(H)	—	Cr. Rs. (5 C)	16 & 30
Yellow Sweet (Green Sweet, No. 321)	Unknown	—	1924	Russia Gr. Brookings, SD (11)	(VH)	early Aug.	(3 C)	16 & 20
Yellow Transparent	——	—	—	Russia Gr. Excelsior, MN (27)	(H)	early Aug.	(2)	34 & 20
Zapta	*M. ioensis* x *M. sylvestris* 'Bismarck'	—	1922	Brookings, SD (11)	—	—	Cr. (3 S)	17
Zaza	(O. P. Duchess x *M. pumila* var. niedzwetzkyana) x *M. baccata*	—	1933	Brookings, SD (11)	—	—	Cr. Ob.	25
Zeleba (Krimskaja Zeleba)	Unknown	—	1922	Crimea, Russia Gr. Brookings, SD (11)	—	Dec.	Ob. (4 S)	17
Zita	*M. pumila* var. niedzwetzkyana x Yellow Siberian	—	1923	Brookings, SD (11)	—	—	Cr. Ob. (3)	19

HARDINESS ZONE 3b (−40 to −30°F)

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Adam	Probably O. P. Siberian Crab	1930	1935	Valley River, Man., Can. (84)	(H)	early Sept.	Cr.	9
Almey (Almey Rosybloom) (Morden Rosybloom 452)	F_2 of *M. baccata* x *M. pumila* var. niedzwetzkyana	1945	1946	Morden, Man., Can. (55)	(H)	late Sept.	Orn. Cr.	25
Carroll (Morden 366)	(Moscow Pear apple sdlg.) x Melba	1947	1961	Morden, Man., Can. (55)	(H)	late Aug.-early Sept.	Sdf. (5 D, 2-3 C)	15
Cranberry	Redflesh x Dolgo	—	1953	Wyndmere, ND (89)	(H)	early Sept.	Cr. Orn. (5 P)	16
Crimson Beauty	——	—	—	Woodstock, N.B., Can. (88)	—	—	—	36
Custer	Red Siberian Crab x Wealthy	1939	1952	Mandan, ND (46)	(VH)	late Aug.-early Sept.	Cr.	7

HARDINESS ZONE 3b (—40 to —30°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Dakota (Mandan 42-13)	Wealthy x Whitney Crab	—	1965	Mandan, ND (46)	(H)	mid Sept.	(5 D, B, S, C)	25
Drewery	——	—	—	Gr. Swift Current, Sask., Can. (82)	(H)	—	—	39
Garrison (Mandan 49-5)	Duchess x Starking Delicious	1949	1957	Mandan, ND (46)	(H)	early Sept.	(5 D, 3 C)	12
Glenorchie	——	—	—	Gr. Swift Current, Sask., Can. (82)	—	—	—	37
Golden Anniversary	Unknown	—	1933	Bismarck, ND (8)	(VH)	mid season	Cr. (5 S, P, 3 D)	14
Goodland (Morden 354)	O. P. Patten Greening	1925	1955	Morden, Man., Can. (55)	(VH)	mid Sept.	(5 D, S)	8
Goolsbey	O. P. Dolgo	—	1958	Wyndmere, ND (89)	(H)	early Sept.	Cr. (3 D)	16
Heart River	Dolgo x Duchess	1948	1952	Mandan, ND (46)	(VH)	—	Cr.	7
Heyer 8	——	—	—	Gr. Muenster, Sask., Can. (57)	—	—	—	39
Joey	O. P. McIntosh	—	1955	Wyndmere, ND (89)	(H)	late Sept.	(5 C)	16
Killand	McIntosh x Dolgo	1951	1957	Mandan, ND (46)	(H)	mid Sept.	(4 C)	12
Manan	O. P. Antonovka	—	1930	Morden, Man., Can. (55)	(H)	Oct.	(2)	5
Manbee	Unknown	1936	1938	Morden, Man., Can. (55)	(H)	late Aug.	(2)	7
Mandan (Mandan 49-4)	Duchess x Starking Delicious	—	1965	Mandan, ND (46)	(H)	early-mid Sept.	(5 D, 3 S, C)	20
Manitoba	O. P. Duchess	1925	1931	Morden, Man., Can. (55)	(MH)	Nov.	(4 C)	4
Mantet	O. P. Tetofsky	1928	1929	Morden, Man., Can. (55)	(H)	Aug.	(5)	4
Manton	O. P. Antonovka	—	1929	Morden, Man., Can. (55)	—	—	—	5
Melba Red Melba B.M. (Kemp, Lee, Pate Melred, Platts)	O. P. McIntosh	1909	1924	Ottawa, Ont., Can. (66)	(H)	early Aug.	(5)	5 & 25
Minnesota No. 447	O. P. Malinda	1918	—	Excelsior, MN (27) Gr. Swift Current, Sask., Can. (82)	(H)	early Oct.	(5 cider)	39
Morden 347	Martha x Dolgo	1939	1941	Morden, Man., Can. (55)	(H)	late Aug.	(3 D, P)	4
Morden 352	Dolgo x Haralson	1944	1945	Morden, Man., Can. (55)	(VH)	late Sept.	(2-3, D, P)	4
Morden Russet	O. P. Anisim	—	1935	Morden, Man., Can. (55)	—	Oct.	(2-3)	5
Morris	O. P. Anis	—,	1930	Morden, Man., Can. (55)	(H)	—	(1-2 D, 1-2 S)	5

HARDINESS ZONE 3b (−40 to −30°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Mortof	O. P. Tetofsky	—	1929	Morden, Man., Can. (55)	(H)	Sept.	—	5
Mount	O. P. Antonovka	—	1937	Morden, Man., Can. (55)	(VH)	—	(2, 3 C)	5
Nevis	O. P. *M. ioensis*	—	1930	Nevis, MN (60)	—	—	Cr. Orn., Df. (2P)	16
Northern Spy	——	1800	1852	East Bloomfield, NY Gr. Swift Current, Sask., Can. (82)	(H)	late fall	(4 D)	39
Northland (MN 1423)	McIntosh x Dolgo	1938	1957	Excelsior, MN (27)	(H)	mid Aug.	Cr. (3 D, 3 S, P)	12
Ostem	O. P. Ostrakoff	—	1936	Morden, Man., Can. (55)	—	—	(3)	5
Peace Garden (Mandan 48-50)	Malinda x Duchess	1948	1957	Mandan, ND (46)	(H)	late Sept.	(3 D, 3 C)	12
Prairie Gold	Robin Crab x Duchess	1935	1952	Mandan, ND (46)	(VH)	—	Cr. Sdf.	7
Redant	O. P. Antonovka	—	1936	Morden, Man., Can. (55)	—	Oct.	(3)	5
Red Astrachan	——	—	—	Gr. Morden, Man., Can. (55)	—	—	—	34
Red Duchess	——	—	—	Gr. Swift Current, Sask., Can. (82)	—	—	--	39
Red River	Dolgo x Delicious	1934	1937	Fargo, ND (28)	—	Sept.	Cr. (4)	6
Reta	O. P. McIntosh	—	1953	Wyndmere, ND (89)	(H)	mid Sept.	Cr. (3 D)	16
Richland	O. P. Adno	—	1953	Wyndmere, ND (89)	(H)	mid Aug.	(2)	16
Rodney	O. P. Okabena	—	1954	Wyndmere, ND (89)	(H)	mid Sept.	(4 D)	16
Spangelo	O. P. Crusoe	—	1930	Morden, Man., Can. (55)	(H)	—	—	5
Stephens	O. P. Wealthy	1927	1952	Mandan, ND (46)	(H)	—	—	7
Stevenson	O. P. Patten	—	1931	Morden, Man., Can. (55)	(H)	—	(3 C)	5
Sundog (Morden, M.R. 453)	O. P. *M. pumila* var. niedzwetzkyana	1939	1947	Morden, Man., Can. (55)	(H)	—	Cr. Orn.	10
Tetofsky	——	—	—	Russia Gr. Morden, Man., Can. (55)	—	—	—	25
Thorberg (Mandan 51-38)	Duchess x Starking Delicious	1951	1957	Mandan, ND (46)	(H)	mid Sept.	(4 C)	12
Toba	Rosilda x Angus	—	1936	Morden, Man., Can. (55)	(H)	early Sept.	(3 P, C)	5
Watts	O. P. Patton	—	1931	Morden, Man., Can. (55)	—	—	—	5
Waukon	Unknown	—	1920's	Moorhead, MN (52)	(H)	—	Ob. (2-3D, 3-4S)	25
Yeager Sweet	O. P. Patten Greening	— about 1939		Fargo, ND (28)	(H)	—	—	8

HARDINESS ZONE 3a (—40 to —30°F)

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Acheson	O. P. Delicious	—	1941	Edmonton, Alta., Can. (24)	(H)	mid Aug.	(4)	4
Alred (B4)	O. P. *M. pumila* var. niedzwetzkyana x *M. baccata*	—	1937	Brooks, Alta., Can. (12)	(VH)	—	Cr. Orn. (2 P)	17
Aroma	O. P. Florence	1940	1945	East Bay, Man., Can. (23)	—	late Aug.	Cr.	22
Blush	O. P. Anoka	1945	1950	Valley River, Man., Can. (84)	—	—	Cr.	10
Boon	O. P. *Malus baccata*	—	1922	Park Rapids, MN (67)	(VH)	—	Cr. Ob.	12
Braebest	——	—	—	Gr. Moose Jaw, Sask., Can. (53)	(H)	—	—	39
Breakey	O. P. Blushed Caville	1929	1935	Morden, Man., Can. (55) Gr. Swift Current, Sask,. Can. (82)	(H)	Sept.	(3 D, S)	4 & 39
Brooks No. 14	——	—	—	Gr. Saskatoon, Sask., Can. (77)	—	—	—	37
Brooks No. 20	——	—	—	Gr. Swift Current, Sask., Can. (82)	(H)	—	—	39
Brooks 27	Unknown	—	1937	Brooks, Alta., Can. (12) Gr. Lemberg, Sask., Can. (44)	(H)	—	(4, 3B, S, C)	39 & 10
Chestnut (MN No. 240)	O. P. Malinda	1921	1946	Excelsoir, MN (27) Gr. Swift Current, Sask., Can. (82)	—	Sept.	Cr.	3 & 39
Columbia	*M. baccata* x Broad Green	late 1890's	—	Ottawa, Ont., Can. (66) Gr. Swift Current, Sask., Can. (82)	(H)	late Sept.	Cr. (2-3)	36, 33, 39
Dauphin (Red Dauphan)	O. P. *Malus pumila* var. niedzwetzkyana	—	1930's	Ottawa, Ont., Can. (66) Gr. Moose Jaw, Can. (53)	—	—	Cr. Orn.	10 & 39
Delite	Unknown	1934	1940	Valley River, Man., Can. (84)	(H)	—	Cr. (3 S, P)	14
Garland (Morden 364)	Melba x Haralson	1949	1961	Morden, Man., Can. (55) Gr. Melfort, Sask., Can. (48)	(H)	late Sept.	(3D, 4S, P, B)	39 & 15
George	O. P. McIntosh	—	1948	Edmonton, Alta., Can. (24)	(H)	—	(3D, B, S, C)	17
Gertie	O. P. Gertrude	1940	1945	East Bay, Man., Can. (23)	(H)	mid Sept.	—	22
Glendale	O. P. McIntosh	1948	1956	Miami, Man., Can. (49)	—	—	—	15
Glenelm	O. P. McIntosh	1945	1952	Miami, Man., Can. (49)	—	—	(3D, B, S, C)	15
Glenette	O. P. Trail	1955	1958	Miami, Man., Can. (49)	(H)	—	—	12
Glenmary	O. P. McIntosh	1940	1948	Miami, Man., Can. (49)	(VH)	—	—	15

HARDINESS ZONE 3a (—40 to —30°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Glenora	Unknown	1958	1960	Miami, Man., Can. (49)	—	—	—	15
Glenwal	O. P. McIntosh	1940	1958	Miami, Man., Can. (49)	(H)	—	—	15
Goalie	O. P. Olga Crab	1940	1945	East Bay, Man., Can. (23)	(H)	early Sept.	Cr.	22
Haralson (MN No. 90)	O. P. Malinda	1913	1923	Excelsior, MN (27) Gr. Swift Current, Sask., Can. (82)	(H)	Oct.	(3 C)	3 & 39
Heyer 6	Unknown	—	1936	Neville, Sask., Can. (59)	—	early Sept.	Cr.	10
Heyer 7 (Mabel)	Unknown	—	1936	Neville, Sask., Can. (59)	—	late Sept.	Cr.	10
Hyslop Crab	——	—	—	Gr. Excelsior, MN (27)	—	Oct.	Cr.	35 & 30
Island Park	Unknown	—	1936	Portage La Prairie, Man., Can. (70)	—	late Sept.	Cr. (3 C)	14
Lethbridge No. 5	——	—	—	Gr. Swift Current, Sask., Can. (82)	—	—	—	39
Manred	O. P. Anisim	—	1930	Morden, Man., Can. (55) Gr. Melfort, Sask., Can. (48)	(H)	Oct.	2-3	10 & 24
McCloy	O. P. Russian Apple	1945	1948	Kinistino, Sask., Can. (40) Gr. Caron, Sask., Can. (16)	(EH)	—	(3 D)	15 & 39
Melvin	——	—	—	Gr. Swift Current, Sask., Can. (82)	—	—	—	39
Miami	Bm. Scarff	1930	1935	New Carlisle, OH (61) Gr. Swift Current, Sask., Can. (82)	(H)	—	(4 D, B, S, C)	25 & 39
Minnesota No. 455	——	—	—	Excelsior, MN (27) Gr. Swift Current, Sask., Can. (82)	—	—	—	39
Morden No. 313, 314, 333, 359, 360, 365, 366, 368, 370	——	—	—	Morden, Man., Can. (55) Gr. Swift Current, Sask., Can. (82)	(H)	—	—	39
Moscow Pear	——	—	—	Gr. Swift Current, Sask., Can. (82)	—	—	—	39
Negrych	Florence x Hyslop	—	1934	Venlaw, Man., Can. (85)	—	—	Cr. (2)	25
Ottawa No. 265, 266, 3809, 4188, 4189	——	—	—	Ottawa, Ont., Can. (66) Gr. Swift Current, Sask., Can. (82)	—	—	—	39

HARDINESS ZONE 3a (—40 to —30°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Printosh	——	—	—	Gr. Swift Current, Sask., Can. (82)	—	—	Cr.	39
Quality	Unknown	1935	1930's	Valley River, Man., Can (84)	(H)	—	Cr.	8
Renown	O. P. Repka Kislaga	1936	1945	Indian Head, Sask., Can. (38)	(MH)	—	Cr.	11
Reward	O. P. Moscow Pear	1929	1945	Indian Head, Sask., Can. (38)	(MH)	—	(3)	11
Roseman	Unknown	—	1940	Roseisle, Man., Can. (74)	(H)	late fall	Ob. (4-5 S, 2-3 D)	21
Rosilda	Prince x McIntosh	1916	1921	Ottawa, Ont., Can. (66) Gr. Swift Current, Sask., Can. (82)	—	early Sept.	Cr.	4 & 39
Severn	Unknown	1930	1930	Valley River, Man., Can. (84)	—	—	Cr.	10
Shirley Ann	O. P. Olga	1940	1945	East Bay, Man., Can. (23)	(H)	mid Aug.	Cr.	22
Snowy	O. P. Florence	1940	1945	East Bay, Man., Can. (23)	(H)	mid Sept.	Cr.	22
Sturdy	O. P. Florence	1940	1945	East Bay, Man., Can. (23)	—	early Sept.	Cr. (2)	22
Tartan	O. P. Dolgo	1940	1945	East Bay, Man., Can. (23)	—	mid Sept.	Cr. (5 P)	22
Trail	Northern Queen x Rideau	1913	—	Ottawa, Ont., Can. (66) Gr. Neudorf, Sask., Can. (58)	(H)	—	Cr. (3 D)	4 & 39
Transcendent	——	—	—	Russia/Gr. S. Man., Can.	(H)	Sept.	Cr.	35 & 30
Virginia Crab	——	—	—	Morden, Man., Can. (55)	(H)	Sept.	Cr. In.	31 & 30
Wallace	Unknown	1934	1936	Portage la Prairie, Man., Can. (70)	—	early Sept.	Cr.	17
Wapella	——	—	—	Gr. Swift Current, Sask., Can. (82)	—	—	—	37

HARDINESS ZONE 2b (—50 to —40°F)

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Abbott	Elsa x Melba	1945	1960	Saskatoon, Sask., Can. (77)	—	—	(3)	16
Adanac (Jack's No. 1)	O. P. Battleford	1960	1960	Unity, Sask., Can. (83)	(H)	early	(3 C)	17
Advance	Columbia x Wealthy	1944	1959	Saskatoon, Sask., Can. (77)	(H)	mid season	(3)	16
Altagold	O. P. Rosilda	1948	1962	Red Deer, Alta., Can. (72) Gr. Parkside, Sask., Can. (68)	(VH)	late Sept.	Cr. (5 D)	18
Anaros	O. P. Antonovka	—	1936	Rosthern, Sask., Can. (75)	(VH)	mid Sept.	Cr.	10
Andersen	Columbia x Melba	1945	1960	Saskatoon, Sask., Can. (77)	(EH)	mid Sept.	(3)	16
Antonovka	——	—	—	Gr. Melfort, Sask., Can. (48)	—	—	—	39

HARDINESS ZONE 2b (—50 to —40°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Barrie (A60-202)	Columbia x Wealthy	1950	1960	Saskatoon, Sask., Can. (77)	(H)	mid season	(3)	16
Battleford	Unknown	1934	1945	North Battleford, Sask., Can. (63)	(H)	late Aug.-early Sept.	(3)	39 & 25
Beauty Blush	Elsa x Wealthy	1947	1960	Saskatoon, Sask., Can. (77)	—	mid season	(3)	16
Blushed Caville	——	—	—	Gr. Laird, Sask., Can. (41)	—	—	—	34 & 39
Bottle Greening	——	—	—	Gr. Saskatoon, Sask., Can. (77)	(H)	—	—	39
Bowyer	——	—	—	Gr. Melfort, Sask., Can. (48)	—	—	—	39
Brightly Rosybloom	——	—	—	Gr. Saskatoon, Sask., Can. (77)	—	—	Cr. Orn.	37
Brightness (A58-320)	Columbia x Wealthy	1942	1959	Saskatoon, Sask., Can. (77)	(EH)	early Sept.	—	16
Buchanan	——	—	—	Gr. Buchanan, Sask., Can. (13)	(VH)	—	Cr.	39
Calros	O. P. Blushed Calville	—	1934	Rosthern, Sask., Can. (75)	(H)	Sept.-Oct.	Cr. Ob. (2)	25
Carma	Unknown	—	1963	Carlos, Alta., Can. (15)	(VH)	—	Cr.	24
Carmine Queen Rosybloom	——	—	—	Gr. Preeceville, Sask., Can. (71)	—	—	Cr. Orn.	20
Charles	——	—	—	Gr. Saskatoon, Sask., Can. (77)	—	—	Cr.	34
Chipman (A58-328)	Columbia x Melba	1944	1960	Saskatoon, Sask., Can. (77)	(EH)	mid-late Sept.	—	16
Christmas Red	Unknown	1950	1960	Unity, Sask., Can. (83)	(H)	late Sept.	—	23
Collet	Unknown	1948	—	Notre Dame de Lourdes, Man., Can. (64) Gr. Saskatoon, Sask., Can. (77)	(VH)	—	(2-3 D, 5 S, B)	25 & 39
Dawn (A55-101)	Columbia x Melba	1944	1959	Saskatoon, Sask., Can. (77) Gr. Cumberland House, Sask., Can. (18)	(EH)	mid Aug.	(3 D, C)	17
Dolgo	——	—	—	Gr. Saskatoon, Sask., Can. (77)	—	late Aug.-Sept.	Cr.	17 & 39
Dr. Bill	O. P. Patten Duchess	—	1941	Lethbridge, Alta., Can. (43)	(H)	—	(4 C, 2 D)	17
Earl	——	—	—	Gr. Baljennie, Sask., Can. (6)	—	—	Cr.	39
Edith Smith	Unknown	1940	1964	Luckey Lake, Sask., Can. (45) Gr. Saskatoon, Sask., Can. (77)	(VH)	—	—	18

HARDINESS ZONE 2b (—50 to —40°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Exeter (A58-305)	Columbia x Melba	1945	1945	Saskatoon, Sask., Can. (77)	(H)	early Sept.	(3)	16
Florence	——	—	—	Gr. Laird, Sask., Can. (41)	—	—	—	36 & 39
Garnet	O. P. Yellow Siberian	—	1930	Valley River, Man., Can. (84) Gr. Saskatoon, Sask., Can. (77)	(H)	—	Cr.	10 & 37
Godfrey	O. P. Patten Greening	1927	1931	Morden, Man., Can. (55) Gr. Melfort, Sask., Can. (48)	—	Oct.	(3)	4 & 39
Greensweet	——	—	—	Gr. Melfort, Sask., Can. (48)	—	—	—	39
Harcourt	——	—	—	Gr. Melfort, Sask., Can. (48)	(H)	—	—	39
Hardy	——	—	—	Gr. Saskatoon, Sask., Can. (77)	—	—	—	39
Harvester (A59-379)	Silvia x Melba	1946	1960	Saskatoon, Sask., Can. (77)	(EH)	mid season	(3)	17
Harvest Special (A60-203)	Columbia x Melba	1946	1960	Saskatoon, Sask., Can. (77)	(H)	early-mid season	(3)	16
Heaver (Heaver 5)	Unknown	1945	1964	Baljennie, Sask., Can. (6)	(H)	Oct.	—	18
Heyer 12	Seedling of a Russian Apple	—	1940	Neville, Sask., Can. (59) Gr. Muenster, Sask., Can. (57)	(EH)	mid Aug.-Oct.	(2 C)	4 & 39
Heyer 14	——	—	—	Gr. Saskatoon, Sask., Can. (77)	—	—	—	39
Heyer 20	Unknown	—	1936	Neville, Sask., Can. (59) Gr. Muenster, Sask., Can. (57)	—	—	—	10 & 39
Hibernal No. 378; Lieby; Recumbent; Juicy Burr; Romenskee; Silken Leaf; Romna, 599; Ostrakoff)	——	—	—	Russia Gr. Saskatoon, Sask., Can (77)	(H)	late fall	In. (C)	39 & 30
Jacques (Rosthern 20)	O. P. Blushed Caville	—	1936	Rosthern, Sask., Can. (75)	—	mid Sept.	Cr. (2 P, D)	10
Jesim	——	—	—	Gr. Melfort, Sask., Can. (48)	—	—	Cr.	39
Kerr	Dolgo x Haralson	1944	1952	Morden, Man., Can. (55) Gr. Muenster, Sask., Can. (57)	(VH)	mid Sept.	Gr. (3 D, 4 P)	12 & 39
Kingscourt (A59-24)	Columbia x Melba	1959	1960	Saskatoon, Sask., Can. (77)	(H)	mid season	—	16
Lambton (A60-201)	Columbia x Melba	1946	1960	Saskatoon, Sask., Can. (77)	(H)	mid season	(3)	16
Leafland	Unknown	1959	1964	Carlos, Alta., Can. (15)	(VH)	—	(4 C)	24
Lethonia	——	—	—	Gr. Melfort, Sask., Can. (48)	—	—	—	39

HARDINESS ZONE 2b (−50 to −40°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Lubsk Queen	——	—	—	Russia Gr. Melfort, Sask., Can. (48)	—	Aug.	—	39 & 30
Luke	Unknown	1940	1961	Rosthern, Sask., Can. (75)	(EH)	Sept.	(3 S, B, 2 D)	16
Magnus	——	—	—	Gr. Saskatoon, Sask., Can. (77)	—	—	Cr.	34
Manalta	Unknown	—	1963	Carlos, Alta., Can. (15)	(VH)	—	(3 C, 2 D)	24
Manitoba Spy	O. P. Patten Greening	1927	1931	Morden, Man., Can. (55) Gr. Muenster, Sask., Can. (57)	(H)	—	Cr. (3 C)	4 & 39
Marvel	——	—	—	Gr. Melfort, Sask., Can. (48)	(H)	—	—	39
McLean (A58-321)	Columbia x Melba	1945	1960	Saskatoon, Sask., Can. (77)	(H)	Aug.	(3)	16
Morden No. 361	——	—	—	Morden, Man., Can. (55) Gr. Saskatoon, Sask., Can. (77)	(H)	—	—	39
Mystery	Unknown	—	1964	Unknown Gr. Saskatoon, Sask., Can. (77)	(VH)	late Sept.	(2 D, 5 C)	19
Osimoe (Beautiful Arcade, Good Peasant, Herren, and Repka Kislaga)	——	—	—	Ottawa, Ont., Can. (66)	(EH)	Aug.	—	35
Osman	Siberian Crab x Osimoe	1890's	—	Ottawa, Ont., Can. (66) Gr. Muenster, Sask., Can. (57)	—	late Aug.	Cr.	39 & 35
Park (A58-302)	Osman x Wealthy	1945	1960	Saskatoon, Sask., Can. (77) Gr. Cumberland House, Sask., Can. (18)	(H)	—	(3)	16
Pattie	Unknown	1940	1940's	Valley River, Man., Can. (84) Gr. Saskatoon, Sask., Can. (77)	(H)	—	Cr.	37 & 25
Patterson (A59-382)	Columbia x Melba	1946	1960	Saskatoon, Sask., Can. (77)	(EH)	Sept.	(5)	17
Piotet	Pioneer x Tetofsky	—	1930's	Ottawa, Ont., Can. (66) Gr. Saskatoon, Sask., Can. (77)	(H)	late Aug.	Cr. (2 D)	6 & 39
Piotosh	——	—	—	Gr. Baljennie, Sask., Can. (6)	—	—	Cr.	34 & 37
Prince	*M. baccata* x Tetofsky	—	—	Gr. Saskatoon, Sask., Can. (77)	—	—	Cr.	35 & 34
Prolific (A58-307)	Columbia x Wealthy	1944	1960	Saskatoon, Sask., Can. (77)	(H)	—	(3)	16
Redheart	O. P. Dolgo	1950	1960	Parkside, Sask., Can. (68)	(H)	—	Cr. Sdf. (3 C, P)	18

HARDINESS ZONE 2b (—50 to —40°F) *(Continued)*

Cultivar	Parentage	Date Selected	Date Introduced	Origin of Cross and/or Area Grown (Map No.)	Relative Hardiness	Ripe Date	Tree Type, Use (fruit quality and use)	Reference
Red Heaver	Unknown	1948	1964	Baljennie, Sask., Can. (6)	—	late Aug.	Cr. Orn.	18
Redwine	Unknown	1950	1955	Valley River, Man., Can. (84)	(H)	—	Cr.	10
Rescue (Scott 1)	O. P. Blushed Calville	—	1933	Scott, Sask., Can (78) Gr. Goodsoil, Sask., Can. (30)	(VH)	late Aug.	(3)	39 & 5
Rosthern 15	Unknown	—	1935	Rosthern, Sask., Can. (75)	(MH)	early Sept.	(3, D, S)	10
Rosthern 18	Unknown	—	1936	Rosthern, Sask., Can. (75)	(H)	mid Sept.	Cr. (3 D)	10
Rosthern 19	Unknown	—	1935	Rosthern, Sask., Can. (75)	(H)	mid Sept.	Cr. (2-3 D, C)	10
Rutherford (A59-375)	Elsa x Melba	1945	1959	Saskatoon, Sask., Can (77)	(H)	mid Sept.	(3)	16
Saska	Unknown	—	1934	Rosthern, Sask., Can. (75)	(H)	early Sept.	Ob.	21
Scottie	Unknown	1957	1960	Baldur, Man., Can. (5)	(H)	early Sept.	(3 B, S)	22
Shelley	Heyer 12 x unnamed sdlg.	1964	1965	Moose Range, Sask., Can. (54)	(H)	early Sept.	Cr. (P)	23
Siberian Crab *(M. baccata)*	——	—	—	Gr. Saskatoon, Sask., Can. (77)	—	—	—	34
Silvia	——	—	—	Gr. Buchanan, Sask., Can. (13)	—	—	Cr.	39
Tony	——	—	—	Gr. Saskatoon, Sask., Can. (77)	—	—	Cr.	34
Unity	Unknown	—	1967	Unity, Sask., Can. (83)	(H)	late Sept.	(3)	23
Winter Queen	Osman x Wealthy	1946	1960	Saskatoon, Sask., Can. (77)	(H)	late Sept.	(3)	16
Yellow Beauty (A58-5)	Columbia x Wealthy	1943	1960	Saskatoon, Sask., Can. (77)	(H)	mid Sept.	(3)	16

HARDINESS ZONE 2a (—50 to —40°F)

Erickson	Unknown	1910	1923	Aitkin, MN (1) Gr. Goodsoil, Sask., Can. (30)	(VH)	—	(3)	5 & 38
Francis	O. P. McIntosh	1945	1965	Esterhazy, Sask., Can. (26) Gr. Meadow Lake (47) and Goodsoil, Sask., Can. (30)	—	Aug.	—	39 & 20
Hermansky	O. P. McIntosh	1945	1965	Esterhazy, Sask., Can. (26) Gr. Meadow Lake (47) and Goodsoil, Sask., Can. (30)	—	—	—	39 & 20