ALASKA PIONEER FRUIT GROWERS' NEWSLETTER

Winter 1994-1995 Volume 9, Number 4

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DUES REMINDER

If you have not yet renewed your membership for 1995, please send your check for $16 to Pam Neiswanger Warner at the address listed above.

FEBRUARY MEETING

Our regular monthly meeting will be held at Dimond Greenhouses at 7 PM, Thursday, Feb. 16, but the program has still not been arranged. For last-minute information, call Dwight Bradley at 688-1268 (evenings 5-9).

SUMMARY OF NOVEMBER, DECEMER, AND JANUARY MEETINGS

The past three monthly meetings have featured presentations on the small fruits. In November, Kim Kuk gave a thorough presentation on raspberries. In December, Julie Riley of the Alaska Cooperative Extension Service spoke on growing currants and gooseberries, and Lynn Hanson, a home economist, brought some delicious gooseberry recipes. In January, George Patrawke of the Master Gardiner's program spoke about strawberry growing. Each of these speakers came armed with lots of handouts, copies of which are available.

SPRING GRAFTING WORKSHOP

Subject to concensus, and assuming Dimond Greenhouses can spare the room, I would like to schedule the Spring 1995 grafting workshop for Saturday, April 8. This is a few weeks earlier than in previous years. Hopefully, the rootstocks and scionwood will still be dormant; last year, much of the available scionwood had already started to bud out and the resulting grafting success rate was pretty poor.

Bob Boyer has already ordered rootstock for the workshop. The price this year will be just enough to cover costs. In light of the wide variety of locally available scionwood, we've decided not to order any high-cost wood from Outside this year. Therefore, please plan on bringing scionwood of your favorite varieties to share at the workshop. We will try to ensure a good supply of wood from the various "mystery" apples around town, such as the 8th & M apple and the 15th St. apple.

INCREASING APPLE CULTIVAR HARDINESS TO -40°F

—*by Bernie Nikolai*
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(Reprinted from Pomona, v. 25, no. 4, Fall 1994, with permission)

For about the last five years I've been experimenting with attempting to significantly increase the hardiness of tender apple cultivars to enable them to survive and produce after prairie Canada's long, very harsh winters. This past winter was the coldest in the past decade, with a minimum temperature reached on February 7, 1994, of -40°F (also -40°C). This temperature was in the city of Edmonton. Outlying areas were several degrees colder.

The winter was so cold that the only Nanking blossoms I had were on the branches that were protected by the snow. The bushes looked a bit odd with heavy flowering to the 18 inch from the ground level, and then nothing. This only happens in our most severe

winters. Despite the Siberian-like weather, an astonishing number of relatively tender apple varieties not only survived, but also flowered heavily and are developing fruit as I write this, in late June of 1994.

The following varieties, none of which are supposed to thrive and live in our harsh Zone 3, borderline Zone 2 climate, survived, and were fully hardy to the tips of the branches: Akane, Arlet, Ashmede's Kernal, Discovery, Fameuse, Ginger Gold, Grushovka of Moscow, Honeycrisp, Honeygold, Idared, Jerseymac, Liberty, Lobo, McIntosh (MacSpur), Novamac, Oberle, Paulared, Sandow, Splendour, Summerred, Vista Bella, and Wealthy. The only varieties that froze back at all were Red Melba and Jonagold. However, even the remaining surviving Jonagold had blossoms and is developing fruit.

You might think this is a fluke, but let me assure you I have been fruiting many of these varieties for the last four consecutive years. However there is a "secret" method that will enable these varieties to prosper, and you absolutely must use it or they surely will not survive in harsh winter climates such as central Alberta.

The "secret" method is **topworking the tender variety to a prairie hardy tree**. Studies have repeatedly demonstrated the least hardy parts of a tree are the roots, the lower trunk, and the crotch angle of branches where they come out of the main trunk. If you bypass these tender portions by grafting the tender varieties onto the hardy frame tree branches about six to twelve inches or so from where they come out of the main trunk (on a Dolgo Crab, for example), you may be astonished as to what will survive and produce for you if you live in a cold climate.

My rootstock is *Malus baccata*, the Siberian Crab, and the hardy frame trees are Rescue, Dolgo, Norland, Battleford, and Selkirk Flowering Crab. So far I have no recommendations as to which hardy frame tree is best. They all seem to work equally well to date. I have noticed that horizontal grafts are hardier than vertical grafts especially when tender apple varieties (i.e. Jonagold) are used. My belief is this is caused by the slightly lesser amount of fall growth and earlier dormancy of horizontal branches vs. vertical branches.

You may have heard that Siberian Crab is a poor rootstock to use, due to a lack of compatibility with many varieties. This is true with the more "developed" apples, but not with our prairie hardy Canadian apples, most of which have a good deal of "crab" in their recent ancestry. My trees are basically hardy frame trees on Siberian Crab rootstock, with the tender varieties topworked onto the branches of the frame tree.

I also use Ranetka Crab, which seems equally hardy in our climate, and has better compatibility according to reports (although I personally have not had any compatibility problems using Siberian Crab with a prairie hardy frame tree). I have a hunch that Ranetka imparts more hardiness to grafted-on varieties than Siberian Crab. As an example Goodland, a marginally hardy apple here if grown on its own trunk, frequently dies back is grown on baccata or Columbia Crab roots, but seems fully hardy to the tips of the branches if grown on Ranetka.

The late Percy Wright, a horticulturalist of some note in Prairie Canada, once related a very interesting story of hardiness with regards to peach trees in British Columbia's Okanagan valley. His uncle from Saskatchewan had moved west to the Okanagan and for sentimental reasons had grafted some ultra hardy Saskatchewan plums onto a few of the peach trees in his orchard. A harsh test winter arrived after a few years which decimated not only the peach crop, but also the trees themselves. Most were killed outright or at the least severely injured. **However the peach trees with ultra hardy Saskatchewan plums grafted in the branches had no winter damage whatsoever!** Percy Wright theorized that the hardy plum grafts had caused the peach trees to go dormant earlier, and thus not be harmed by the severe cold, which occurred early in the winter that particular year. If you have hardiness problems with peach trees in your area, try it. Perhaps this is what is required to give your trees that extra bit of hardiness.

If you have a favorite apple tree that dies back after cold winters (that isn't topworked), try grafting a branch or two of hardy crab onto it. Some of the tender varieties on my trees are "sandwiched." By this I mean not only are they topworked onto a hardy stembuilder or frame tree, but also the tips of the grafted branches are themselves grafted. As an example I have a McIntosh grafted onto a frame tree of Battleford, and the tips of the McIntosh grafted again with a hardy crab, Dolgo. I haven't found this necessary, as the topworking alone seems to give the required hardiness. However, in an even more severe climate, "sandwiching" just might be an improvement in terms of promoting hardiness over topworking alone.

Common sense cultivation practices are also required. Specifically never fertilize your topworked trees past the first of June as you risk late fall growth which will often winterkill. If you apply manure to your trees, do so only in late October or November. Manure is a slow acting fertilizer, and if you apply manure in the spring, you will probably get late fall growth, and possibly have tender grafts severely damaged by the winter as they won't be fully dormant when they should be. Also don't water past about early to mid August. If you do, late fall growth may also occur, which is highly susceptible to winterkill. The only exception is to really soak the roots well after the trees are fully dormant, but just before the ground freezes solid, about the first week of November here. This seems to keep the trees from drying out during the winter, as well as creating a ball of ice which delays the trees in leafing out too early in the spring. Also wrap the trunks to prevent sunscald and rodent injury.

Dwarf apple rootstocks are being tested with surprisingly good success in our harsh climate. Ottawa 3 has survived for 15 years at Vega, Albert. The trees are grafted with Rescue Crab, and were not staked, irrigated, or protected in any way. They were even planted in a grass field with grass growing right up to the trunks — a definite no-no. After 15 years they died out, but I'm not sure they would still be alive if normal cultural practices, i.e. irrigation and noncompeting ground cover were employed. I'm also aware of a number of Goodland trees that have done very nicely on Ottawa 3 rootstock for the past eight years, growing in central Saskatchewan, zone 2.

My test trees on Mark, P 22, and Ottawa 3 (mainly State Fair and Sweet 16) all survived -48°F conditions this past winter in my test orchard east of Edmonton. There was about 18 inches of snowcover this year (winter 1993-4). This temperature killed the Sweet 16 and State Fair above the snow line, but the rootstock was fine and the trees are aggressively sending out new leaders. This is the first year I've had hardiness problems with Sweet 16 or State Fair. Both survived -42°F last year and were fully hardy to the tips of the branches. It seems the killing temperature for these two hardy varieties lies between -42°F and -48°F.

If you live in a severely cold climate, try Ottawa 3, P2, or P22 if you're looking for a dwarf apple rootstock. All should do well for you, especially if you irrigate the trees, eliminate competing ground cover, and stake them.

The next group of dwarf rootstocks hardy enough for the prairies, would be Mark and Bud 9. However, I would be more comfortable with Ottawa 3, P2, or P22 if you are just starting out in your experimenting. In tests this last winter just north of Edmonton (-45°F), both Mark and Bud 9 died down to the snow line (these were totally ungrafted rootstocks), but Ottawa 3 ungrafted rootstocks survived above the snow line, with about 6 inches of tip dieback.

A new Russian semi-dwarf rootstock that has potential for our cold region in Budagovski 490. This rootstock is self-supporting, precocious, induces flowering in the grafted-on variety in the third year, and both the roots and branches of Bud 490 are fully hardy at -40°F, according to reports out of Wisconsin this last year. According to reports I've heard, about 50% of the dormant scions will root if they are simply put out vertically into the earth with a few buds sticking out of the ground and the soil kept moist. Instant rootstock for next year's grafting! I experimented this year with trying to root dormant cuttings of Bud 490. I dipped the budwood in rooting hormone, stuck the

sticks below the soil, kept them moist, and had 100% successful leafing out! However, after a few weeks, the leaves withered and died. If you have had any success in rooting cuttings of Bud 490, please drop me a line and let me know your methodology. Time will tell if this promising rootstock is suitable for our conditions. I personally believe a commercial orchard of commercial quality apples (assuming they are early to mid maturing) is possible in prairie Canada, providing the trees are topworked to hardy stembuilders. A friend with a small commercial orchard topworked some of the varieties I've mentioned in this article to some of his trees near Carmen, Manitoba two years ago, and they all survived fully and are fruiting for the first time this summer (1994), despite -40°F (with wind) this last winter.

However, in tests last year these same varieties that did so well when topworked, died back severely when grafted directly at ground level to hardy Siberian crabs. It seems the lower trunk and branch crotches angles coming out of the main trunk absolutely must be of the hardy variety for these tender apple cultivars to survive temperatures of -40°F or colder.

Granted, you would have to want a cold climate commercial orchard pretty badly to spend the time and energy in topworking a thousand hardy apple trees! Perhaps the best application is for the keen fruit grower who wants a few backyard trees for his own use and enjoyment, and who wants to grow varieties normally impossible in their severe climate. Try topworking if you live in a severely cold climate. I can attest to the fact that it really works!

1994 MICRO-ORCHARD REPORT FROM SOUTHEAST ALASKA

-by Joe Orsi

Since I began planting my micro orchard in Auke Bay near Juneau in 1991, this was the first year many of my trees flowered and set fruit. I had fruit on ten varieties of apples (*Centennial, Discovery, Duchess of Oldenburg, Geneva Early, New Summer Scarlet, Red Astrachan, Rescue, Summer Rambo, Wynoochee Early,* and *Yellow Transparent*), four varieties of sour cherries (*English Morello, Meteor, North Star,* and *Suda Hardy*), and one variety of sweet cherry (*Gold*). My total production--I hope you're sitting down--was about 24 descent-sized (6-8 cm) apples, two hand fulls of sour cherries, and a half dozen sweet cherries. Not exactly roadside market production, but a good start. Of the trees waiting in the wing, I have 22 additional varieties of apples, four varieties of plums, two additional varieties of sweet cherries, and one additional variety of sour cherry. I have duplicates of many varieties, and this year I have "frameworked" additional varieties onto most of my three-year old apple trees.

What worked best? Well, I can only speak for apples since I sampled so few sour and sweet cherries. Although my eight-year old son, who sampled some of the sweet cherries, remarked "Hey dad, just like store bought!" I guess he hasn't yet acquired that discriminating taste for home-grown fruits. The earliest apples were *Geneva Early* and *Yellow Transparent*, which began falling off the trees in late August and early September. *Geneva Early* is the better "desert" (fresh eating) apple of the two, but the *Yellow Transparent* makes excellent applesauce. The best desert apple by far was *Discovery*, which tasted like a tart *Gala* and ripened during mid-September. The best "culinary" (baking apple) was *Duchess of Oldenburg*, which ripened during October and made for an outstanding pie. As for cider, I'm afraid it will have to wait a few more years, although *Centennial*, an oblong crabapple, would be an excellent primary cider apple because it is spicy and sweet with an aromatic aftertaste. All four of the above mentioned apple varieties are scab (fungus) resistant, which are good choices for the cool, wet maritime growing conditions characteristic of Southeast Alaska.

Southeast is a relatively mild region by Alaskan standards but our heavy wet snow, driving gales, and yo-yo freeze-thaw cycles can bring a fruit tree to its knees. In Auke Bay, during 1994, our minimum winter temperature was -6 ^{o}F and our maximum summer temperature was 80 ^{o}F. Our last spring freeze was mid-April and our first fall killing frost was the end of October. We received 71 inches of rain and 120 inches of snow. Our spring was a little on the cool

side, with sweet cherries, sour cherries, and apples blooming from mid-May to mid-June. Due to our heavy wet snow last year, my trees lost about 20 feet of wood--only counting graftable material. I have since learned to train my trees to a central leader form and cut off all branches 2-3 feet below the first scaffold to prevent shifting snow from ripping lower branches off the trunk. I also remove branch spreaders, nursery tape, and leaves by the end of October so snow cannot accumulate and break branches, bust tops, or topple over trees. To minimize the likelihood of sunscald and rodent damage in the spring, I use white vinyl tree guards on smaller trees or paint the trunks white and use hardware mesh on older trees. To help moderate the freeze-thaw cycle in the spring, I use a layer of seaweed mulch 4 inches away from the trunk in about a 3 foot diameter circle. There are obstacles to growing productive fruit trees in Southeast Alaska, but the challenge and the perseverance makes the fruit all the more sweeter.

GRAFTING IN FEBRUARY ON POTTED ROOTSTOCKS

— by Dwight Bradley

Old Method.—Like most growers in Alaska, I've usually done my apple grafting on bare rootstock in April. With whatever thawed soil I can rob from the greenhouse, I pot the new bare-rooted grafts as soon as I can, and stick them in a warm place to callous over and start growing. The pots give the trees a great headstart. If, alternatively, the bare-rooted trees are planted out in the ground as soon as they grafts have calloused over and the ground has thawed (mid-May or so), more than half of the grafts will fail, and those that do take will put on very slow growth.

Usually I'll transplant the more vigorous grafts out in the orchard in June, once the graft has put on perhaps two feet of new growth. The slower-growing grafts get to spend their first winter in a heated garage, to give them an extra boost. I bring these trees inside just before the first frost and grow them at about 50°F under lights for another few months, until they finally notice that it's time to shed their leaves. Then I turn the heat down to 35°-40° and try to keep them from reawakening until sometime around the first of May when it's safe to put them in the unheated greenhouse. The ultimate aim of all this, of course, is to get a better rate of survival in grafting, and to get trees into production sooner.

One interesting result of spending the winter indoors is that many one-year whips will bloom at the tip of the central leader. Whips that are going to tip-bloom usually show a pronounced thickening of the last inch or two of the stem. These blossoms should removed, of course, since the object of the first few years is to grow a tree, not a couple of apples. That is, if you can get other family members to admit that it really is better for the tree in the long run.

New Method.—In February, 1994, I was forced into an experiment that turned out to have even better results. I had turned up the temperature in the garage to around 60°F for a few days to paint our old truck. A few days later I was surprised to see about 20 potted Ranetka rootstocks starting to bud out. Most of these were either leftovers from the previous year's grafting workshop, or survivors of earlier grafting attempts. Fearing that my 20 rootstocks were about to turn useless, I went around town for scionwood. Needless to say, what I got was still very dormant. Using a grafting machine, I made 20 whip-and-tongue grafts of about average quality. I stuck the pots in a ~60°F room. Within a week, the first buds were poking through and within three weeks, all 20 grafts had sprouted new growth. (This is a much better batting average than I usually have. For comparison, at the April grafting workshop, only about half of my bare-root grafts took.)

I turned on the grow lights in the garage, turned up the heat, and watched as the new grafts took off. When the weather finally warmed up around the beginning of May, I moved the trees to the greenhouse, and started giving them a few hours of direct sun whenever I could. Around May 25, I put them outdoors for good, first in partial shade under some brich trees and finally in full sun. With this coddling they hardened off pretty well, although the older leaves (the bottom six or eight) eventually got sunburned and looked as though they stopped photosynthesizing. In mid-June (a bit late, but this was the first chance I got), I planted the most vigorous trees in the orchard. One of these, a Geneva

Early, was 7' tall by summer's end, and it had two or three lateral branches that were two feet long! Ginger Gold and Parkland did almost as well. For lack of space inside the existing orchard fence, I couldn't plant out all of the trees, so about 5 of the weakest remained in pots all summer. A couple of these stragglers had reached 6' by the time they came into the garage for the winter.

With the success of 1994 in mind, I had been planning on doing more grafting on potted rootstocks in March 1995. A few weeks ago (early January), however, I discovered most of my dozen or so Ranetka rootstocks were already starting to bud out. This meant that I had to do my grafting even earlier than last year. Interestingly, my Borowinka and Prunifolia rootstocks are still fully dormant at this writing, Feb. 10. Ranetka seems to break dormancy at a lower temperature than the other two.

I would draw the following conclusions from what I've learned so far. (1) Grafts on potted rootstock have a better chance of taking than grafts on dormant, bare rootstock. (2) Rootstock that is just breaking dormancy seems to work very well. (3) Grafting onto potted rootstock gives stronger first-year growth, presumably because the root system is already well established. (4) Given my set-up (garage with grow lights, greenhouse, etc.), mid-March is probably about the optimum time for grafting. Much later and the trees won't be well enough established to take full advantage of the long May days. Much earlier and the new trees will spend an awful lot of time under grow lights, and then may suffer sunburn when they are finally moved outside. I certainly wouldn't recommend grafting in January! (5) The only disadvantage of which I'm aware are that it some additional care is needed (watering, turning on lights, moving trees in and out of the greenhouse, etc.), (6) One final advantage is that it gives a stir-crazy apple grower something to do during the long months indoors.

REVISED RESULTS OF ALASKAN APPLE-TREE CENSUS, Feb. 5, 1995

— by Dwight Bradley

I've now received ten responses from Alaskan growers to the apple census in the Fall Newsletter. A total of 439 varieties and 1288 individual trees are being grown by these people. This is probably almost all of the varieties being grown in Alaska, but the total number of trees in the state probably exceeds 2500.

- The most popular varieties, based on the number of growers who have at least one, are: Norland and Parkland (9 growers), Yellow Transparent, Rescue, Westland, and Beacon (6 growers), and Geneva Early and Summerred (5 growers).

- The most popular varieties, based on the number of trees in the ground, are Norland (85 trees), Rescue (60), Parkland (42), Chinese Golden Early (33), and Yellow Transparent (29). Next come Quality Crab (14), Summerred (14), Westland (12), Norda (11), Oriole (11), and Geneva Early (10)

FEBRUARY 1995 ALASKAN APPLE TREE CENSUS

8901	2	1	8907 Norrusset	2	1	8914	2	1
8902	2	1	8908	2	1	8915	2	1
8903	2	1	8909	2	1	8916	2	1
8904	2	1	8910	2	1	8917 Norbil	2	1
8905	2	1	8911	2	1	8918 Norbil 2	2	1
8906 Norlove	4	1	8912 Norjus	2	1	8919	2	1
			8913	2	1	8920	2	1

8921	2	1
8922	2	1
8923 Norkent	2	1
922 End	2	1
Abrikosims	1	1
Adam		1
Acorn	4	1
Adanac	1	1
Advance	1	1
Akane	1	1
Alexis	2	1
Alice	2	1
Alma Sweet	3	1
Almata	2	2
Altaiski Sweet	2	1
Amed	2	1
Amur Red	2	1
Amwell	2	1
Anderson	2	1
Anis Aliy	2	1
Anoka	1	1
Anoros	2	1
Antonovka	2	1
A. kamenichka	2	1
A. mitchurin	2	1
A. polutorafuntovaya	2	1
Ar 1736	2	1
Arbor Dale	1	1
Arctic Red	2	1
Astrachan Crab	1	1
Avenarius	1	1
BA 21	2	1
BA 22	2	1
Barry	2	1
Bashkirian Beauty	2	1
Battleford	2	1
Baum	1	1
Beacon	7	6
Beautiful Arcade	2	1
Beauty	2	1
Bedford	2	1
Belle de Boskoop	1	1
Bellefleur Kitaika	2	1
Bessemianka	2	1
Micurina Bethel	1	1
Beverly	2	1
BF 9	2	1
BF 135	2	1
Black Oxford	1	1
Borowitsky	2	1
Boughen Delight	2	1
Breaky	8	2
Breaky x Crimson	3	1
Beauty Britegold	2	1
Briteness	1	1
Brookings #1	3	1
Brookings #2	3	1
Brookland (PF 1)	4	2
Brooks 27	2	1
Burgundy	4	2
Cadet	1	1
Calvil Crymskiy	2	1
Canada Red	3	1
Carlos Queen	1	1
Carroll	7	4
Centennial	9	3
Cestra Belfer Kitaika	2	1
Charlamoff	2	1
Charlotte	2	1
Chestnut Crab	5	2
Chipman	2	1
Chinese Golden	33	4
Early Christmas Red	1	1
Clarke	1	1
Claudius Herbstapfel	2	1
Collenback	2	1
Collet	2	1
Columbia	1	1
Connell Red	1	1
Cox Orange	1	1
Cranzhevoje	2	1
Creamy Kitaika	2	1
Crimson Beauty	2	2
Croncels transparent	1	1
D2	7	1
Dakota Gold	2	1
Dauphin	2	1
Dawn	2	1
Delikates	1	1
Diebel	4	1
Diehl #1	2	1
Discovery	2	2
Dolgo	2	1
Donald	1	1
Doctor Bill	1	1
Drews 0	2	1
Drews 1 W	2	1
Drews 2 R	2	1
Drews 2 W	2	1
Drews 8 G	2	1
Drews 9 BL	2	1
Drews 10 G	2	1
Drews 12 BL	2	1
Drews 15 BL	2	1
Drews 17 W	2	1
Drews Dutch	2	1
Duchess	6	3
Dudley	2	2
Dyer	1	1
Early Blaze seedlings	2	1
Early Cortland	1	1
Early Gold	2	1
Early Harvest	5	3
Early Joe	1	1
Early Mac	2	2
Early Thompson	2	1
Eastman Sweet	1	1
Edith Smith	1	1
Egremont Russet	2	1
Alstar	2	1
Enigma	2	1
Erickson	2	1
Eurika	2	1
Exter	2	1
Fall Red (PF 50)	6	2
Fameuse	3	1
Fantazja	1	1
Fifteenth St	1	1
Florence	2	1
Frumos de Voinesti	1	1
Gallen	2	1
Garland	4	1
Garnet	2	1
Garry	2	1
GDWFI (PI 255599)	1	1
Geneva Early	10	5
George	2	1
Gibbs Golden Gage	2	1
Gideor	2	1
Ginger Gold	7	2
Glenorchie	3	1
Glover Goldie	1	1
Gold Egg	1	1
Goldgelb	2	1
Golden Aniversity	1	1
Golden Sweet	1	1
Golden Transparent	1	1
Golden Uralian	1	1
Goldsmith	2	1
Goodland	6	3
Goodmac	1	1
Gruzhovka of Moscow	1	1
Haralred	2	1

Harcourt	3	1
Hardy Cumberland	2	1
Harlaminsky	2	1
Harvester	2	1
Harmen Isfield	2	1
Hazen	2	1
Heaver	2	1
Hermansky	2	1
Heyer 2	2	1
Heyer 6	2	1
Heyer 12 (PF 42)	4	2
Heyer 20	8	3
Hiburnal	1	1
Himekami	2	1
Hokuto	2	1
Honey Gold	2	1
Imp. Battleford	2	1
Iowa Beauty	2	2
Irish Peach	3	3
Jacks #1	2	1
Jacques	3	2
Johnson #1	2	1
John Wallace #6301	1	1
John Wallace	5	1
Jordan Russet	2	1
Joyce	2	1
Jubilee	1	1
July Red	3	2
Kandil Kitaika	2	1
Keepsake	2	1
Kelsey Crab	2	1
Kerr	8	2
Keswick's Codlin	1	1
Kingscourt	1	1
Kinsei	2	1
Kitaika Zolotaia Ranniaia	2	1
Kitaika Zolotaio	2	1
Klar	4	1
Klatt Select	4	1
Kopgetsu	2	1
Korichnoye Polosayoye	3	2
Kulton Kitaika	2	1
Kurosh Sib. x Belfleur	2	1
Lakeland	2	1
Lasiuk #1	2	1
Lasiuk #2	2	1
Leafland	4	1
Lee 2A	2	1
Lee #11	2	1
Les Christofferson	2	1
Lethalice	2	1
Liveland Raspberry	2	2
Lobo	2	1
Lodi	9	4
Lord Wolsley	1	1
Lowell	2	1
Lowland Raspberry	3	3
Luke	3	1
MacDonald Crab	2	1
Malowski	2	1
Manalta	4	1
Manitoba	1	1
Mantet	5	4
Martha	2	1
Marta x Dolgo	1	1
McLean	2	1
McPrince	2	1
Melba	1	1
Melrose	2	1
Merton Beauty	2	1
Michurin's Bessiemia Milwaukee	2	1
Minnesota 447	2	1
Minnesota 1403	2	1
Minnesota 1691	2	1
Minnesota 1734	3	2
Minnesota 1757	2	1
Minnesota 1767	2	1
Minjon	1	1
Morden 358	2	1
Morden 359 (PF 49)	4	2
Morden 360	2	1
Morden 370 (PF 47)	2	1
Morden 529	2	1
Morden 538	2	1
Morden Ruby	5	2
Morris	2	1
Moscow Pear	1	1
Mystery #1	2	1
Nerchinsk	8	1
New Summer Scarlet	1	1
New York 394	2	1
Niagara	1	1
Noran	4	1
Norbil	2	1
Norbil 2	2	1
Norcue	4	1
Norda	11	2
Norda Super	2	1
Noret	6	1
Norhey	2	1
Norjus	3	1
Norkent (PF 51)	2	1
Norland (PF 6)	85	9
Norlove	4	1
Norrusset	2	1
Norson	4	1
Norson Stalet	1	1
Northern Lights	3	2
Northwest Sweet	1	1
Northland	2	1
Nova Easy Grow	1	1
Novosibirski Sweet	2	2
Oberle	3	1
Okebema	2	1
Oriole	11	4
Osman	2	1
Ottawa 292	1	1
PF 10	2	1
PF 12	2	1
PF 21	2	1
PF 39	2	1
Papierowka Polska	2	1
Park	2	1
Parkland (PF 26)	42	9
Patten	3	1
Patterson	4	1
Patterson x Sweet Russian	1	1
Peace Garden Apple	1	1
Peace Garden Crab	1	1
Pepin Chernenko	2	1
Pepinka Litovska	2	1
Pink Oriole	2	1
Pioneer 10	2	1
Pioneer 20	2	1
Pipkin Katrinka	5	2
Pop's Dalgo	7	1
Prairie Spy	1	1
Priam	1	1
Primate	1	1
Prolitic	2	1
Progress	2	1
Puritan	2	1
Puritan Mac x Red Astrachan	1	1
Quality Crab	14	3
Quinte	4	3
Rae Ime	2	1
Ranetka Crab	3	1
Raritan	1	1
Rebo	2	1
Red Astrachan	3	2
Red Baron	2	1
Red Duchess	2	2

Red Ester	3	1
Red Flesh	2	1
Red Free	3	2
Red Heart	2	1
Red June	1	1
Red Melba	3	2
Red Siberian	2	1
Red Sparkle (PF 47)	2	1
Red Splendor	2	1
Red Star	2	1
Red Sumbo	6	1
Red Wealthy	2	1
Redwell	2	1
Reinette Simirenko	2	1
Renoun	2	1
Renoun Apple	1	1
Repka Kislaga	2	1
Rescue	60	6
Richilieu	2	1
Robin	2	1
Roda Mantet	1	1
Romfo Unknown	1	1
Rosilda	2	1
Rossoshanskoje Polos	2	1
Rosthem 15	3	2
Rosthem 18	4	2
Rosybrook	2	1
Roxbury Russet	2	1
Rozmaray	2	1
Rutherford	3	1
Sandow	2	1
Scotia	2	1
Scott 144	2	1
Scugog	2	1
September Ruby	4	1
Severay Sinap	1	1
Shafer	2	1
Sharon	2	1
Sheep Nose	2	1
Shirley Ann	2	1
Silvia	2	1
Simgold	2	1
Simpson	2	1
Slim Red	2	1
Smokehouse	1	1
Snowcap	2	1
Sofstaholm	2	1
Southeast Sweet	1	1
Spartan+	2	1
Stalet	2	1
Starks Lodi	2	1
Starks Summer Treat	5	1
State Fair	3	3
Sterappel	2	1
Summer Orange	2	1
Summer Rambo	1	1
Summer Scarlet	1	1
Summerred	14	5
Sunnybrook	5	1
Swaar	2	1
S.W.B. Red	2	1
Sweet	2	1
Sweet Mark	2	1
Sweet Russet	2	1
Sylvia	2	1
Tallinna Pimoun	2	1
Tanyard	2	1
Tasty	2	1
Tbonza	2	1
Tetofsky	3	3
Thompson	2	1
Torberg	2	1
Thunderchild Crab	2	1
Toba	2	1
Trail	2	1
Trailman	6	2
Tumanga	2	1
Tydeman Early	2	1
Worcester Tyrrustrup	1	1
Unity	2	1
Uralskoje Nalivnoje	2	1
Valentine	2	1
Viking	1	1
Vista Bella	4	4
Watson	2	1
Watson's Striped	2	1
Waxem	2	1
Wealthy	1	1
Wedge	2	1
Weeping Crab	2	1
Westland (PF 8)	12	6
Whitney	8	2
W.H. Perron	2	1
Wickson	2	1
Wien	8	1
Wijcik	1	1
Williams	2	1
Williams Pride	1	1
Wilson Juicy	2	1
Winter Banana	2	1
Winter Majetin	2	1
Winter Queen	4	2
Wodarz	2	1
Wynoochie Early	1	1
Yeager Sweet	3	2
Yellow Jay	5	3
Yellow Transparent	29	6
Z 61	2	1
Zaychuck	1	1
Zaychuck #1	1	1
Zaychuck Special	1	1
Zuccalmaglio	2	1