Tree Mortality
Table 18

The accompanying data sheet lists particular specimens that did not survive during the period between May 1998 and October 2014. Various factors led to the death of these trees, often with multiple issues. This is not intended as a full investigation of the causes, but rather as an early stage of data collection in which trends can be established. For instance, many varieties had accompanying representatives that continue to thrive, negating most evidence of cold intolerance (with some disregard for orchard placement considerations). Others had strong evidence of variety correlation, suggesting some environmental sensitivity, particularly susceptibility to temperature swings and minimum temperatures.

Kill at low temp : Varieties checkmarked showed significant signs of cold damage. Symptoms included dieback of a majority of new shoots, spur mortality, and tissue damage in older wood. Damaged tissue showed characteristic browning, or included "bruised" appearance to the trunk. Many of these symptoms had been observed in these specimens in preceding seasons. Complete tree collapse overwinter was assumed to be due to winterkill unless other evidence was observed. Additional factors leading to the decision of winterkill were observations on other specimen trees of the same cultivar in the orchard. For instance, a tree like "Golden Ball" had signs of winter damage, but additionally other Golden Ball trees in the orchard had at least moderate cold damage. Extenuating circumstances sometimes accompanied these deaths. "Esopus Spitzenburg", for example, had cold damage on all specimens, but since it had widespread disease infections, it must be assumed that pathogens contributed to the cold susceptibility. Varieties which have representatives of the same type growing with no or low cold damage were not listed in this column and are instead included in the following.

Mortality due in part to other factors The varieties which had evidence of death due to winter intolerance are checkmarked in that column. Data gathering methods are outlined in the "Sare Summary, Objectives and Conclusions" document.

Variety	Kill at low temp (-32 or milder)	Mortality due in part to other factors	Comments
albion		x	Other specimens fine
anis		x	Other specimens fine
antonovka 1.5		x	unknown cause
aroma		x	Other specimens fine
ashmead's kernal		x	Several at nursery stage, most specimens fine but slow growing
baldwin	x		as young tree
baldwin	x		as young tree
baldwin	x		as young tree
benoni	x		2/3 of trees died
benoni	x		"
black gilliflower	x		All specimens died young
black gilliflower	x		"
blenheim orange		x	late season growth. Other specimens had little cold damage
britemac		x	Other specimens had little cold damage
bud 146		x	Specimens weak for years before dying overwinter.
bud 57-233		x	Other specimens fine
centennial		x	Other specimens fine
collet		x	Other specimens fine
cox's orange pippin			at nursery stage, other specimens fine
devonshire quarrendon	x		all specimens had cold damage at early age

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douce charlevioux		x	other specimens fine
early harvest		x	canker induced, disease free specimens are fine
early mac		x	Other specimens fine
egremont russet	x		Surviving trees weak, most trees lost over the last 10 yrs.
egremont russet	x		"
egremont russet	x		"
elstar	x		Other specimens are weak
enterprise	x		Other specimens slow to leaf out, losing vigor
esopus spitzenburg	x		Cold and disease damage, other specimens weak
esopus spitzenburg	x		
fall harvest	x		All specimens died
fantazja		x	Other specimens fine
gingergold		x	Other specimens fine
golden ball	x		Other specimens moderate cold damage
golden royal	x		Winter killed when young
golden russet		x	Other specimens thriving
harcourt		x	Other specimens fine
herring's pippin		x	Other specimens fine
ingrid marie	x		Other specimen moderate cold damage, late season growth
jonamac		x	Other specimens fine
lakeland		x	Other specimens fine
lodi		x	Borer induced, others fine
longfield		x	Other specimens fine
malinda		x	Some others had moderate cold damage, but most fine
minnehaha		x	Other specimens fine
new brunswick	x		All specimens died
no blow		x	Other specimens fine
northern spy		x	Other specimens fine
northern sweet		x	Other specimens fine
novamac		x	Other specimens fine
oliver		x	Other specimens fine
orleans reinette	x		Other specimens moderate cold damage
ozark gold	x		Other specimens weak
paula red	x		Other specimens moderate cold damage
paw paw	x		Half remaining trees weak and cold damaged
pink pearl	x		Others weak and cold damaged
plum cider		x	Other specimens fine
pomme gris		x	Other specimens fine
red wealthy		x	Other specimens fine
reine de reinette	x		Many specimens died as young trees overwinter
reine de reinette	x		"
reine de reinette	x		"

reine de reinette	x		"
reta		x	2 of 3 died young from unknown cause. Third has no damage.
rolfe		x	All died of unknown cause when young
roxbury russet	x		Many specimens died as young trees overwinter, remaining trees weak and cold damaged
roxbury russet	x		"
roxbury russet	x		"
sandow		x	Others fine, but fireblight susceptible
sansa		x	Other specimens fine
sharon		x	Other specimens fine
stark	x		All specimens died overwinter
Twenty Ounce	x		several struggled for years, then died, other specimens weak
utter	x		Other specimens weak and cold damaged
Viking	x	x	Others weak with moderate cold damage, and cankers
Winthrop Greening	x		All specimens died promptly
Hosni Pear	x		All specimens died over several winters
Tait Dropmore Pear	x		Surviving specimens are weak and show cold damage

Many of these cultivars have representatives that have survived to date in the orchard. Various factors can detract from the hardiness of a variety, such as physical location, pest pressure, late or early season growth, etc.
The data only displays the possibility of mortality from cold damage or other factors pertaining to the genotype.

Those tagged under "kill at low temp" showed physical signs of cold damage. Trees that died at least in part to other factors are checked as "Mortality due in part to other factors"