

**Table S2.** Greenhouse culling of seedlings of PWCabp 2019 families to result in vigorous, disease symptom-free seedlings for field planting. OP = Open pollinated: no flower emasculation or intentional application of particular parental pollen. Note: None of the families with “Red 2” as a parent gave red seedlings as expected so there was no culling for non-reds in these families; however, because an independent check in 2020 indicated that “Red 2” OP seeds indeed segregate 1:1 for the red phenotype (results not shown), we suspect that the “Red 2” pollinations in 2019 were unsuccessful.

Parents of family		Estimated proportion wild background in seedlings of family ( <i>sieversii</i> , <u>other species</u> , domestica)	Total	No. seedlings culled and reason				Kept, field-planted	Proportion culled
Mother	Father			Powdery mildew	Apple cedar rust	Poor vigor	Dead		
Breakwell’s Seedling	N3-4b-25 (“Big Blush”)	25%, 75%	170	74	83	1	3	9	95%
Liberty	N3-4b-25 (“Big Blush”)	25%, 75%	126	49	51	17	3	6	95%
Cox’s Orange Pippin	N3-4b-25 (“Big Blush”)		78	35	35	0	0	8	90%
Red Summer Rambo	N3-4b-25 (“Big Blush”)	25%, 75%	18	5	3	6	0	4	78%
Hewe’s Crab	N3-4b-25 (“Big Blush”)		12	4	3	3	1	1	92%
Delicious	“Big Blush” and “Red 2”		157	80	68	3	1	5	97%
Delicious	N3-4b-25 (“Big Blush”)	25%, 75%	22	9	8	0	0	5	77%
Delicious	S4-3a-9 (“Red 2”)	28%, <u>7%</u> , 65%	9	4	5	0	0	0	100%
N3-4b-25 (“Big Blush”)	S4-3a-9 (“Red 2”)	53%, <u>7%</u> , 40%	91	6	39	35	1	10	89%
S4-4a-22 (“Red Io”)	OP		2	0	0	0	1	1	50%
S4-3a-26 (Red Jade OP)	Bramtot		28	0	23	0	2	3	89%
S4-3a-26 (Red Jade OP)	Calville Rouge		9	0	4	2	1	2	78%
S4-3a-26 (Red Jade OP)	Frequin		8	3	0	1	1	3	63%
S3-4b-25 (E14-32 OP)	S4-3a-9 (“Red 2”)	28%, <u>7%</u> , 65%	21	4	5	0	3	9	57%

S3-4b-25 (E14-32 OP)	N3-4b-25 ("Big Blush")	25%, 75%	16	4	11	0	1	0	100%
S3-4b-25 (E14-32 OP)	S4-3a-25 ("Red 1")	12%, <u>25%</u> , 63%	1	1	0	0	0	0	100% *
S3-4b-10 ("Bitter Shot")	Bramtot	<u>23%</u> , 77%	82	26	25	8	7	16	81%
S3-4b-10 ("Bitter Shot")	Amere de Berthecourt	<u>23%</u> , 77%	77	21	44	1	5	6	92%
S3-4b-10 ("Bitter Shot")	Frequin	<u>23%</u> , 77%	65	4	23	5	24	9	86%
S3-4b-10 ("Bitter Shot")	Calville Rouge	<u>23%</u> , 77%	22	7	7	0	3	5	77%
S4-3a-25 ("Red 1")	Wickson Crab		132	79	4	31	5	13	90% *
S4-3a-25 ("Red 1")	Gros Launet	13%, <u>25%</u> , 62%	100	37	23	11	3	26	74% *
Delicious	"Red 1"	13%, <u>25%</u> , 62%	25	16	5	1	0	3	88% *
PRI 1773-6	S1-1b-19 (red-fleshed site 6 <i>sieversii</i> )	50%, 50%	10	4	3	0	0	3	70% *
PRI 1773-6	Pendragon		8	4	0	1	0	3	62% *
S4-3a-26 (Red Jade OP)	Pendragon		6	0	0	0	3	3	50% *
S4-3a-6 ("Red 6")	OP		2	2	0	0	0	0	100% *
Total			1297	478	472	126	68	153	Ave. tot. % cull
Proportion				36%	36%	10%	5%	12%	88%

\*Only red seedlings selected for this family. Selected as newly germinated seeds with a red radicle (Figure 2g). Expected ratio of red to non-red phenotypes in a family generated with one parent heterozygous for the red flesh allele is 1:1.