

Evaluation of Apple Cultivars for Hard Cider Production in the Northeast

Study conducted at Walden Heights Nursery Orchard Walden, VT 2021



All study results by cultivar name

Cultivar	pH at pressing	brix at pressing	tannin/phenols mg/l	malic acid g/L
74818	3.30	13.25	439	7.57
75413	3.53	17.5	1282	6.36
75414	3.20	13.25	2110	6.04
75414	3.42	13	2110	6.04
75414	3.18	13		
36-305	3.26	11.75	787	5.19
alexander	3.27	12.25	1322	6.96
almata	3.15	12	1165	6.21
almey crab	3.38	16		
american beauty	3.90	16.25	1659	3.97
amsib	2.94	11.75	3242	7.04
anaros	3.25	11.5	757	6.11
anisim	3.26	14.5	1483	7.27
anoka	2.94	14	2781	13.37
antonovka 1.5	3.24	9	1767	7.26
antonovka 109	3.31	13.75		
antonovka 114	3.19	14		
antonovka 126	3.59	13		
antonovka 37	2.98	11.75		
antonovka 40	2.89	12.25		
antonovka 40				
antonovka 48	3.12	12.5	500	6.2
antonovka 54	3.31	13.75		
antonovka 81	3.34	14		
antonovka 88	3.37	12	2269	6.09
antonovka 925	2.89	13		
antonovka autumn	2.94	13.75		
antonovka michurin	3.25	12		
arlie's redflesh	3.14	12	863	7.31
arlie's redflesh	3.46	11	863	7.31
ashmead (3 sisters topgra	3.48	17		
ashmead's kernal	3.07	15	1171	7.83
ashmead's kernal	3.38	20.5		
atlas	2.88	12	2147	10.23
audrey transparent	3.26	12	690	7.07
autumn arctic	3.30	11	783	6.78
baccata				
beautiful arcade	3.77	11	1775	2.43
beautiful arcade	3.31	16		
bedford	3.03	14	971	7.69
bedford	3.00	15	1742	12.85
benoni	3.21	12		
bethel	3.57	14	1116	4.62
big red duchess	3.59	12	548	7.46

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black oxford	3.26	13	1478	5.33
bleeding antonovka	3.27	12.5		
blue pearmain	3.37	12.75	1399	6.16
blue pearmain	3.48	13	1721	4.7
boiken	2.89	13.25	987	11.49
breaky	3.26	16	1819	5.66
britemac	3.54	11	2001	4.27
bud 118	3.24	11	2691	7.34
bud 490	3.03	10.5	1012	6.99
burgundy	3.42	12	1104	5.07
carroll	3.15	14	2118	4.86
centennial	3.56	19	1872	6.51
chenango strawberry	3.11	11.25	951	6.61
chenango strawberry	3.33	11	978	5.33
chestnut crab	3.56	14	863	6.35
cinnamin	2.90	13.5	1290	13.29
citrus 932	3.14	14		
citrus 932	3.03	14	2121	8.83
collet	3.08	12.5		
collet				
columbia crab	3.11	13	1305	8.09
columbia crab	3.26	13	1714	9.16
connell red	3.44	11		
cortland	3.40	14	438	3.44
cox's orange pippin	3.38	15.5	1643	7.7
crab - 542	3.00	14	1171	12.35
crab - 821	2.98	13.25	2172	14.04
crab - 835	3.25	17	2988	9.95
crab - 911 yellow	2.87	17.5		
crab - 9442	3.31	15.5		
crab - backyard redflesh	3.17	15		
crab - bc101	2.83	19	4232	26.97
crab - gbr-21	3.36	16	4323	10.97
crab - so-1		19		
crab - so-2	3.33	16.5		
crab - so-3	3.39	16		
crab 128	2.92	12.25		2.59
crab 199B	2.89	13.75		
crab -341	3.59	17	1897	7.86
crab 341b	3.44	16.5		
crab -507	3.11	12.5		
crab- 950	3.01	13		
crab soc-12	3.24	17.75	3529	18.33
crabapple	3.16	12.5		

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cranberry	3.12	13		
cranberry	3.23	16		
creekside	3.01	11.5		
croncels	3.88	12.5	2236	2.59
dakota	3.51	14	1222	6.72
dakota	3.36	12.75		
davey	3.37	12	891	5.07
dayton	3.31	12	10005	4.04
dolgo 299	3.35	11	966	6
dudley winter	3.66	12	827	4.27
early harvest	3.21	11		7.19
ellison's	3.20	12.5	1452	6.36
elstar	3.75	15	779	5.88
empire	3.22	12.5	544	10.92
equinox	3.31	12.5	922	6.17
erwin bauer	3.28	13	1686	6.03
false freedom	3.30	9.5	597	7.62
false yarlington	3.07	13	600	6.49
fameuse	3.30	14	828	7.87
fantazja	3.14	12.5	801	8.01
fireside	3.18	13		
freedom	3.71	14	315	4.3
frostbite	3.38	12.5	1636	8.16
gala	3.83	13.5		
garland	3.29	10.25	1064	3.57
gingergold	3.50	13	248	3.37
golden lights	3.95	15	2654	2.68
golden russet	3.25	15	1092	6.84
goldrush	3.47	12.5	1152	7.75
gopher	2.86	11	1816	9.51
green peak	3.52	10	248	5.19
greening	3.12	11.25	1446	5.56
greensleeves	3.60	16	742	5.49
gruzhova of moscow	3.51	13.5	402	5.33
haralred	3.15	12.25	744	7.02
haralson	3.27	13.25	1472	7.11
harcourt	3.37	10	670	4.18
hardy cumberland	3.54	14		
hawaii	3.56	13	953	3.75
hazen	3.43	11.5	581	3.88
hewes crab	3.39	14.25	2845	7.32
hewesmata crab	3.25	20	1013	9.68
hiburnal	2.86	11.5	2865	12.24
hiburnal	2.94	12.5	4232	9.03

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honeycrisp	3.11	11.25	880	5.06
honeygold	3.30	15	570	5.3
howgate wonder	3.24	13	1235	5.96
hubbardston nonesuch	3.27	13	1222	4.69
hyslop	3.43	12.5		
irish peach	3.36	13.5	2758	6.61
island gold	3.26	17		
island winter	3.36	13	1115	7.65
jubilee	3.30	11.75		
jubilee	3.21	14		
karmijn de sonneville	3.27	15.25		
kazakh 739	3.21	12.75		
kazakh 746		15		
kazakh 761	3.17	14	4281	12.1
keepsake	3.46	14	1575	6.63
kerr seedling	3.21	19		
kitchell yellow	3.36	12	1261	6.57
leo	3.30	13	435	7.97
liberty	3.20	13	976	6.94
lobo	0.00	12	504	6.9
lodi	3.01	11		
lord lambourne	3.48	14	1095	5.8
lowland raspberry	3.50	12.5	1251	4.89
mac imperial	3.06	12		
mac summerland red	3.33	11.5	722	4.39
macfree	3.32	12.5	1101	4.52
macoun	3.32	14	1115	6.33
magog redstreak	3.75	12.5	995	6.05
magog redstreak	3.51	14		
malinda	3.38	12.5	1205	4.9
mantet	3.52	13	1336	6.17
marlin stephens	3.39	12.75	1014	5.58
martha	3.89	13		
mcintosh	3.35	12	846	5.78
melba	3.98	11.5		
milwaukee	2.98	13	1096	9.47
minnehaha	3.27	12		
morden	3.29	11		
morden	3.12	11	893	7.06
morden 359	3.25	12	1632	5.52
morden 363	3.64	11.75	1256	6.59
muscadet de dieppe	3.50	13		
newt grindle	3.25	10	1025	7.87
niagara	3.48	12.5	1886	4.71

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Niedzwetzkyana	3.91	12.5	2358	2.45
no peace	2.93	13.5	719	8.72
noran	3.27	11.5	1077	5.09
norda	3.62	12.5	1285	3.39
norland	3.23	12	1014	4.98
norson	3.36	11	969	4.08
northwest greening	3.18	13	1532	6.98
nova easygro	3.77	13	1618	3.79
novamac	3.36	12	1107	6.05
opalescent	3.40	13	989	5.29
oriole	3.47	12	999	4.08
ottawa	3.39	9		
oxbo	3.41	11	899	4.44
ozark gold	3.52	13	1191	6.37
parkland	3.33	14	3317	7.45
parkland	2.96	15		
peterson	3.52	10	322	4.44
pixie crunch	3.38	13		
pomme gris	3.15	14.5	2357	6.83
pomme gris	3.40	14	2357	6.83
pound sweet	3.38	10.25	553	6.39
prairie spy	3.06	12	1106	7.79
priscilla	3.48	11.5	834	3.35
purple mac	3.28	12.5	1424	5.4
quinte	3.48	10		
radiant crab	2.95	11.75		
ranetka 9777	3.53	15.5		
ranetka crab	3.26	14		
red astrachan	3.78	9		
red baron	3.18	11.5	1051	4.95
red burke	3.31	13	789	6.59
red prunifolia	3.31	15.75		
red wealthy	3.29	11	867	6.45
redfield	3.19	11	2104	8.3
redflesh dolgo		19		
redflesh selkirk	2.71	13.5		
redfree	3.32	11	529	4.12
redfree	3.27	12	1150	4.54
redhook	3.18	11.5	805	11
redhook	3.08	12.75		
redrock	3.04	13.5	2079	10.23
regent	3.53	13.25	769	4.81
reine de pomme	3.67	18	4136	4.73
renet bergamotnyj	3.38	13.5		

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ribston pippin	3.11	16.25	806	11.28
rogers red	3.31	14.5	1492	8.08
rouville	3.39	12	2418	5.81
russet - 952	3.42	12.25		
russet 262	3.32	14		
safstaholm	3.41	14		
sakhi	2.85	12	2155	13.37
scott winter	3.05	12.5	1441	12.43
scott winter	3.36	13.25		
severny sinap	3.20	13	1260	7.06
severny sinap	3.10	11.5		
shay	3.39	12.25	950	6.32
shiwawsee	3.16	12.75	770	6.24
slovianka	3.65	10	810	5.56
smokehouse	3.14	14	1455	5.97
snowsweet	3.45	14	421	4.51
somerset of maine	3.28	11		
spartan	3.45	13.5	876	5.48
spencer	3.18	14.25	1254	8.26
stone	3.45	13	102	3.88
stowe crab	2.75	13	1937	10.31
summerred	3.50	13	262	6.11
sunrise	3.43	13	966	5.11
swayzie	3.25	13.5	1163	7.32
sweet 16	3.34	12	1223	4.55
sweetcrab	3.38	13.5	1096	5.37
treehouse duchess	3.51	10.5		
twenty ounce	3.54	9		
two trunk bittercrab	4.25	20	4323	5.13
ugly antonovka	3.05	11	1033	8.99
vista bella	3.44	10.75	1114	3.93
wagener	3.25	11	794	6.17
walden calville	2.98	12.25	1223	
walden golden	3.47	13	639	4.4
walden greening	2.90	11.75		
wealthy	3.30	11.5	1188	6
wedge	3.21	12	2070	7.53
westfield snf	3.32	13	1327	4.95
white angel	3.31	17.5	4323	16.14
white pippin	3.13	13	1093	7.49
white pippin	3.23	12	1770	6.64
white selkirk	2.71	17		
whitney	3.83	16	472	4.14
wild	3.20	13		

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wild - 172	3.03	14		
wild - 19	2.90	11.5		
wild - 20011	2.97	12		
wild - 20015	3.10	11.5		
wild - 308 -1	3.26	13.25		
wild - 308 -10	3.10	12.75		
wild - 308 -2	3.02	14		
wild - 308 -3	3.19	10.5		
wild - 308 -4	2.86	12.25		
wild - 308 -5	2.94	14.5		
wild - 308 -6	2.92	12.5	2079	10.23
wild - 308 -7	2.99	13		
wild - 308 -8	2.73	14		
wild - 308 -9	3.12	12		
wild - 376	3.22	10.5		
wild - 440	3.00	12		
wild - 472	3.16	13.5		
wild - 473	2.96	13		
wild - 497	2.86	12.75		
wild - 766	3.28	15		
wild - 77	3.13	12.25		
wild - 79	3.75	14.5	4281	4.55
wild - apple house	3.17	13		
wild - bg	3.03	12		
wild - rr 1	2.90	11		
wild - rr 2	2.94	12.5	947	5.93
wild - rr 8	2.87	12.5	1277	9.58
wild - rr yellow	3.08	13.5		
wild - rr10	3.06	14.25	2633	9.36
wild - rr4	2.79	13	1445	9.17
wild - rumpus	3.15	10		
wild -128	2.80	14.25		
wild -438	4.02	13		
wild -583	3.23	13	719	7.04
wild apple	3.23	13.5		
wild by anoka	3.08	11		
wild yellow	3.12	10.75		
williams pride	3.35	9		
williams pride	3.43	10	268	4.16
winter banana	3.41	13	2308	5.58
wodarz	4.00	13.25	774	1.88
wodarz	3.39	11		
wolf river	3.07	14	1784	8.49
wolf river	3.25	13		

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yarlington mill	3.43	13	2650	6.13
yellow prunifolia	3.30	15		

Todd Parlo conducted this study and has worked in plant science for the past thirty years. His family established Walden Heights Nursery and Orchard (WHNO) twenty-five years ago, in Walden VT (US zone 3). WHNO includes a fruit tree arboretum of more than 600 distinct apple varieties, and includes thousands of established fruit trees, bushes and vines managed under certified organic practices, sustainable agriculture, and permaculture principles. The farm has a processing component and storage facility for cider production. WHNO is also a propagation-style nursery, producing stock for farm use and sales -local retail and online. Additionally, WHNO offers consulting, educational workshops, and other services. www.WaldenHeightsNursery.com

The Project Leader would like to express gratitude to study Technical Advisor, Terence Bradshaw (Research As.Professor, Dept of Plant & Soil Science, UVM) and the students at the University of Vermont Food Lab.



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Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.