

Annual Report 2003

Evaluation of Apple Cultivars for Hard Cider Production

G.A. Moulton, G.H. Spitler, J. King, L.J. Price, and D. Zimmerman

Summary

A small variety trial of cider apples conducted at Mount Vernon from 1979–1995 provided preliminary information on potential cider apples for farm production. In recent years, with the encouragement of local hard cider makers, WSU – Mount Vernon has expanded research on the growing and production of apples specifically bred for the characteristics needed in producing market quality hard cider. These varieties are distinct from “dessert” apples in having levels of acid and tannin that make them unusable for other purposes, but enhance cider quality when fermented. Furthermore, growing these “bittersweet” and “bittersharp” varieties requires a close interaction between growers and cider producers in determining the desired variety mix in the final product.

In 2002 the first cider was pressed for cider making at Mount Vernon, under the direction of cider cooperator Drew Zimmerman, and 8 varietal and 4 blended ciders were produced. The blended ciders contained juice from both cider and standard dessert apple cultivars. In the fall of 2003 these ciders were evaluated and ranked by a diverse panel of tasters, and particular characteristics of each were noted (see Table 3 below.) In November 2003 the Northwest Cider Society sponsored an international cider competition that drew entrants from the U.S. and Canada, and was judged by a panel of experts, including Peter Mitchell, a cider consultant from Worcestershire, England. One of the Mount Vernon entries, “*2002 WSU Mount Vernon Brown Snout Varietal*,” earned a certificate of commendation.

From November 10 to November 14, 2003 a professional Cider School, taught by Peter Mitchell, was conducted at WSU-Mount Vernon. Emphasis was on hands-on experience of cider production, laboratory techniques, and post production quality analysis. Fifteen participants attended the course, from eastern and western Washington, Oregon, Idaho, Colorado and B.C., Canada. This course and a more advanced professional course are scheduled to be held again in Spring 2004.

In 2003 the fruit harvest and pressing of cider was again supervised by Drew Zimmerman, drawing on the experience of the 2002 season to improve techniques of production and handling. New cultivars planted in 2001-02 produced some fruit this year and harvest from these trees will increase in 2004.

Methods

The cider apple trial plot consists of five single-tree replications of each cultivar to provide for sufficient fruit to make single-varietal cider as well as for blending. All trees are free-standing, with row spacing 18' between rows, 12' between trees. Trees planted in 1994 were grafted on MM 106 rootstock, with additions in 1999. Acquisitions in 2001–02 are grafted on MM 106 and M26 rootstock.

Data collected includes bloom and harvest dates, productivity (yield), harvest fruit analysis (Brix and titratable acid), and observations relative to ease of culture such as disease susceptibility, vigor and growth habit. Specific varieties being evaluated are listed below. New acquisitions are being added which include varieties that have been selected for cider production in France and England not yet tested here that may be well adapted to our climate conditions.

Table 1. Cider apple cultivar trial:

Bittersweet:	Yarlington Mill	Bittersharp:	Sharp:
Brown Snout	Bulmer's Norman	Brown's Apple	Bramley's Seedling
Chisel Jersey	Medaille D'Or	Foxwhelp	Tom Putt
Dabinette	Redstreak	Kingston Black	Sweet:
Harry Masters' Jersey	Reine des Hatives	Breakwell's Seedling	Taylor's
Muscadet de Dieppe	Reine des Pommes	Bitter:	Other:
Michelin	Tremlett's Bitter	Frequin Rouge	Golden Russet
Vilberie			

Newly planted 2003 (non-replicated): Amere de Berthcourt, American Forestier, Blanc Mollet, Bouteville, Brown Thorn, Campfield, Cap o'Liberty, Cimitiere, Coat Jersey, Court Pendu Plat, Court Pendu Rose, Crow Egg, Ellis Bitter, Frequin Audievre, Frequin Tardif, Granniwinkle, Grindstone, Harrison, Harrison SS, Harrison #2, Jouveaux, Kermerrien, Lambrook Pippin, Major, Metais, Muscat de Bernay, Nehoe, Peau de Vache, Porter's Perfection, Red Jersey, Royal Jersey, Roxbury Russet, Smith's Cider, Sweet Alford, Sweet Coppin, Taliafero, Tramlett's Bitter, Whidbey, Zabergau Reinette

Results

In 2003 the mature trees produced a full crop of fruit. Sufficient fruit for single varietal cider was not available from all cultivars of the younger trees but juice pressed from the fruit was included in the production of some blended ciders. Some juice from dessert apple cultivars, including specifically Jonagold, with characteristics adapted to hard cider was also used in blending.

Fruit from the cider test plot was harvested, placed in storage, and then pressed for juice. Detailed notes were kept on the characteristics of the juice, the blends produced, and the fermentation methods used.

Table 2. Cider cultivars pressed at Mount Vernon in 2003 (* indicates dessert apple cultivar)

Cultivar(s)	Press date	brix	specific gravity	pH	TA% malic	tannin %
Muscadet de Dieppe	10/14	17.2	1.074	4.11	.34	.26
Foxwhelp	10/14	12.4	1.052	3.19	.83	.20
Harry Masters' Jersey	10/27	13.0	1.055	4.28	.18	.25
Tsugaru Homei*	10/29	12.6	1.053	4.53	.21	.06
McIntosh*	10/29	11.6	1.049	3.50	.55	.09
Dabinett	10/30	13.3	1.055	4.31	.19	.28
Michelin	10/30	11.6	1.048	4.10	.25	.16
Chisel Jersey	10/30	13.3	1.056	3.46	.74	.17
Vilberie	10/30	13.1	1.055	3.93	.37	.56
Kingston Black	10/30	14.3	1.062	3.58	.71	.14
NY 486*	10/30	12.5	1.054	3.49	.50	.08
WSU AxP crab	11/08	13.5	1.057	3.28	.96	.13
Raven	11/08	13.1	1.056	3.24	1.03	.11
Brown Snout	11/20	15.5	1.066	4.08	.36	.24
RubINETTE*	11/20	13.8	1.058	3.52	.60	.02
Brown's Apple	11/21	12.0	1.050	3.39	.74	.26
Melrose*	11/21	12.0	1.050	3.51	.53	.07
Jonagold*	11/21	12.1	1.049	3.58	.40	.06
Ashmead's Kernel*	11/25	16.2	1.068	3.50	.82	.09
Yarlington Mill	11/25	15.2	1.063	4.36	.16	.30
Orchard blend (CaCO3 added)	11/25	13.1	1.054	3.52	.50	.32

NOTE: Orchard blend: Ellison's Orange*, Vilberie, Foxwhelp, McIntosh*, Michelin, Chisel Jersey, RubINETTE*, NY 486*

**Table 3. Evaluation of 2002
Ciders, ranked and rated by panel of 8 tasters, September 20, 2003**

Rank	Cider	Comments
1	Brown Snout	Golden medium bodied cider with a fruity apple aroma and a pleasant apple flavor. Very slightly astringent.
2	Yarlington Mill	Amber, medium to full bodied cider with a complex fruity aroma and a rich apple flavor. Slightly bitter and astringent.
3	Vilberie	Golden amber full bodied cider with a sweet complex aroma and a dry earthy flavor. Both bitter and very astringent.
4	Jonagold/Vilberie blend	Light amber medium bodied cider with a flowery complex fruit aroma and a dry pleasant flavor. Slightly bitter and astringent.
5	Foxwhelp	Pale golden light to medium bodied cider with a subtle ripe fruit aroma and a distinctively crisp flavor. Slightly astringent.
6	Muscadet de Dieppe	Amber full bodied cider with a fruity aroma and a rich, dry complex flavor. Very slightly astringent.
7	Jonagold	Pale straw light bodied cider with a very faint but pleasant fruit aroma and a clean sharp flavor.
8	Taylor's	Pale golden medium bodied cider with a cider aroma and a thin, slightly sweet flavor. Slightly astringent.
9	Chisel Jersey	Light golden light bodied cider with a slight fruit aroma and a sharp citrus flavor. Slightly astringent.

Discussion

Preliminary results at this point would suggest use of the cultivars Brown Snout (which won an award at the 2003 North American Cider Competition), Yarlington Mill, Vilberie, Muscadet de Dieppe, Foxwhelp and Dabinett, all of which have shown themselves to be promising in terms of productivity and/or cider making quality. These can produce good single varietal ciders, each

adding specific characteristics that when blended add to complex high quality cider. Most often high quality ciders are made from selected varietal blends, but occasionally a single varietal cider can be outstanding. These specialty hard cider apples will also enhance the quality of ciders produced with blends of existing dessert cultivars such as Jonagold, McIntosh and others. Marketing studies will be explored in cooperation with Skagitonians to Preserve Farmland in the spring of 2004.

Acknowledgements

Support for this project in 2003 was provided by the Washington State Wine Advisory Board, the Northwest Cider Society and the Western Washington Fruit Research Foundation. The help and participation of our cooperators and volunteers in harvesting and cider pressing is gratefully acknowledged.