'Chardonel' Grape

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'Chardonel' is a late-ripening white wine grape (Fig. 1) that can produce a high quality wine with varietal character. 'Chardonel' is distinguished by its superior wine quality combined with high productivity and cold hardiness superior to its acclaimed parent 'Chardonnay'. It is the fourth wine grape cultivar to be named by the New York State Agricultural Experiment Station and follows the release of 'Cayuga White' (Einset and Robinson, 1972), 'Horizon' (Reisch et al., 1983) and 'Melody' (Reisch et al., 1986).

Origin

'Chardonel' resulted from the cross 'Seyval' x 'Chardonnay' made in 1953. Fruit were first observed in 1958 and the original vine was propagated in 1960 under the number NY 45010. In later testing it was renamed GW 9 (Geneva White 9) for ease of identification in cooperatively run yield trials. The vine was initially described as a vigorous and productive green grape with large clusters.

Description

Own-rooted vines grown in phylloxera (*Daktulosphaira vitifoliae* Fitch)-infested soils are productive and moderately vigorous. Annual cane pruning weights averaged 0.79 kg/vine over 5 years in a replicated trial at Dresden, N.Y. (Table 1), which compared favorably to 'Cayuga White' and other cultivars in that trial. Vines were more vigorous in Arkansas and Michigan. Five-year yield averaged 11.6 t·ha⁻¹ at Dresden, about the

erably harder than 'Chardonnay' and nearly as winter hardy as its 'Seyval' parent. In Michigan, it is rated as harder than 'Seyval' and 'Vidal blanc'. Following extensive winter cold damage at Geneva in 1981, vines of 'Chardonel' had 74% shootless nodes, comparable to 'Cayuga White' (74%) and 'Vidal blanc' (77%), but worse than 'Aurore' (30%), 'Catawba' (39%), 'Horizon' (49%), and 'Concord' (28%). Trunks of 'Chardonel' are susceptible to damage from low temperatures, which may cause trunk splitting or provoke crown gall disease. After 8 years at Dresden, under commercial practices suitable for growing interspecific hybrid grapes, one of 15 (winter tender) 'White Riesling' vines had trunk damage and 11 were dead, while 1 of 15 'Chardonel' vines had trunk damage and one was dead. Vines of 'Cayuga White', 'Horizon', 'Aurore', and 'Concord' had no trunk damage, while one of 15 vines of 'Vidal blanc' had trunk damage.

Flowers of 'Chardonel' are perfect and self-fertile with medium-late bloom following late budbreak. Clusters are shouldered and medium-large (200 g), averaging 1.6 clusters per shoot. Very little crop is borne on lateral shoots and cluster thinning is required only

same as 'Cayuga White' (Table 1). In Michigan and Arkansas, 'Chardonel' is more productive than 'Cayuga White'. At Geneva, vines of 'Chardonel' averaged 10.7 t·ha⁻¹ (1987-1989).

'Chardonel' vines are moderately winter hardy at Geneva, but trunk injury is occasionally a problem. However, it is consid-

Table 1. Viticultural production data for 'Cayuga White' and 'Chardonel' grown at three locations.

Cultivar	Cane pruning wt (kg/vine)			Clusters per vine			Yield (t·ha ⁻¹)		
	NY ^z	MI ^y	AR ^x	NY	MI	AR	NY	MI	AR
Cayuga White	0.71 ^{NS}	0.50	0.60	44.0 ^{NS}	---	89.7	11.9 ^{NS}	6.7	22.7
Chardonel	0.79 ^{NS}	1.4-1.8	3.00	40.2 ^{NS}	---	69.8	11.6 ^{NS}	15.9	18.8

^zNew York data-pruning weights, cluster numbers, and yield based on 5 years in a replicated trial of 22 white wine cultivars.

^yMichigan data-collected at the Sodus Horticultural Experiment Station, Mich. 'Cayuga White' data were collected 1983-1985 (inclusive). 'Chardonel' data were collected 1983-1988 (inclusive).

^xArkansas data-based on 2 years, 1986 and 1987, at Fayetteville, Ark.

^{NS}Not significantly different (*t* test) at *P* < 0.05. Statistics are presented only where they could be calculated from the available data.

Fig. 1. Fruit clusters of 'Chardonel'.

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Table 2. Juice soluble solids concentration (SSC) and wine pH and acidity for 'Cayuga White' and 'Chardonel' grown at three locations.

Cultivar	Soluble solids concentration (%)			pH			Titratable acidity (g/liter)		
	NY ^z	MI ^y	AR ^x	NY	MI	AR	NY	MI	AR
Cayuga White	18.9	17.3	16.6	3.26	3.04	3.39	7.9	7.9	6.1
Chardonel	19.6	20.8	21.4	2.97	3.12	3.43	11.7	10.6	5.3

^zNew York data for 'Chardonel'-SSC data based on 11 years (1976-1988 except 1977, 1984); pH data based on 5 years (1982, 1983, 1985, 1987, 1988); total acidity based on 9 years (1976, 1978-82, 1986-88). Wine data for 'Cayuga White'-SSC based on 10 years (1975-1983 and 1986); pH data based on 2 years (1982, 1983); total acidity based on 7 years (1976, 1977, 1979-1982, and 1986).

^yMichigan data-collected at the Sodus Horticultural Experiment Station, Mich. 'Cayuga White' data were collected 1983-1985 (inclusive). 'Chardonel' data were collected 1983-1988 (inclusive).

^xArkansas data-based on 2 years (1986 and 1987) for 'Cayuga White' and 4 years (1986-89) for 'Chardonel'.

infrequently. The amber berries are medium sized and spherical.

'Chardonel' ripens between 1 and 15 Oct. in New York and Michigan. Juice soluble solids concentration and titratable acidity are usually higher than for 'Cayuga White' (Table 2). Wines, which were first made in 1966, have been described as pleasant and delicate with light fruitiness. In some years, the wine is slightly grassy. The wine has good body and very little of the flavor characteristics of interspecific hybrid grapes. 'Chardonel', when harvested at the appropriate stage, may have potential for sparkling wine production because it retains a good acid balance during

ripening. At Geneva, wines have been rated good to excellent in taste panels. In Arkansas, the better wines have been likened to 'Chardonnay', and lesser quality samples are as good as 'Seyval'.

Foliage and fruit are moderately susceptible to powdery mildew [*Uncinula necator* (Schw.) Burr.], downy mildew [*Plasmopara viticola* (Berk. and Curt.) Berl. & de Toni] and botrytis bunch rot (*Botrytis cinerea* Pers.). Since the foliage is not susceptible to sulfur injury, powdery mildew can be controlled with sulfur applications.

Five growers from Maryland, New Jersey, Pennsylvania, and Missouri were surveyed

and have indicated satisfaction with the viticultural and winemaking characteristics of 'Chardonel'. Productivity was rated as medium to high, disease was well-controlled by a regular spray program, and wine quality was rated excellent (clean and crisp, with 'Chardonnay' character). In New York, 'Chardonel' is presently recommended only for sites with longer-than-average growing seasons and moderate cold stress. Only on these better sites will 'Chardonel' develop its best fruit quality.

Availability

Cornell Univ. has applied for a plant patent on 'Chardonel'. Virus-tested stocks are available from the New York State Fruit Testing Cooperative Assn., Hedrick Hall, Geneva, NY 14456, as well as from commercial nurseries.

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