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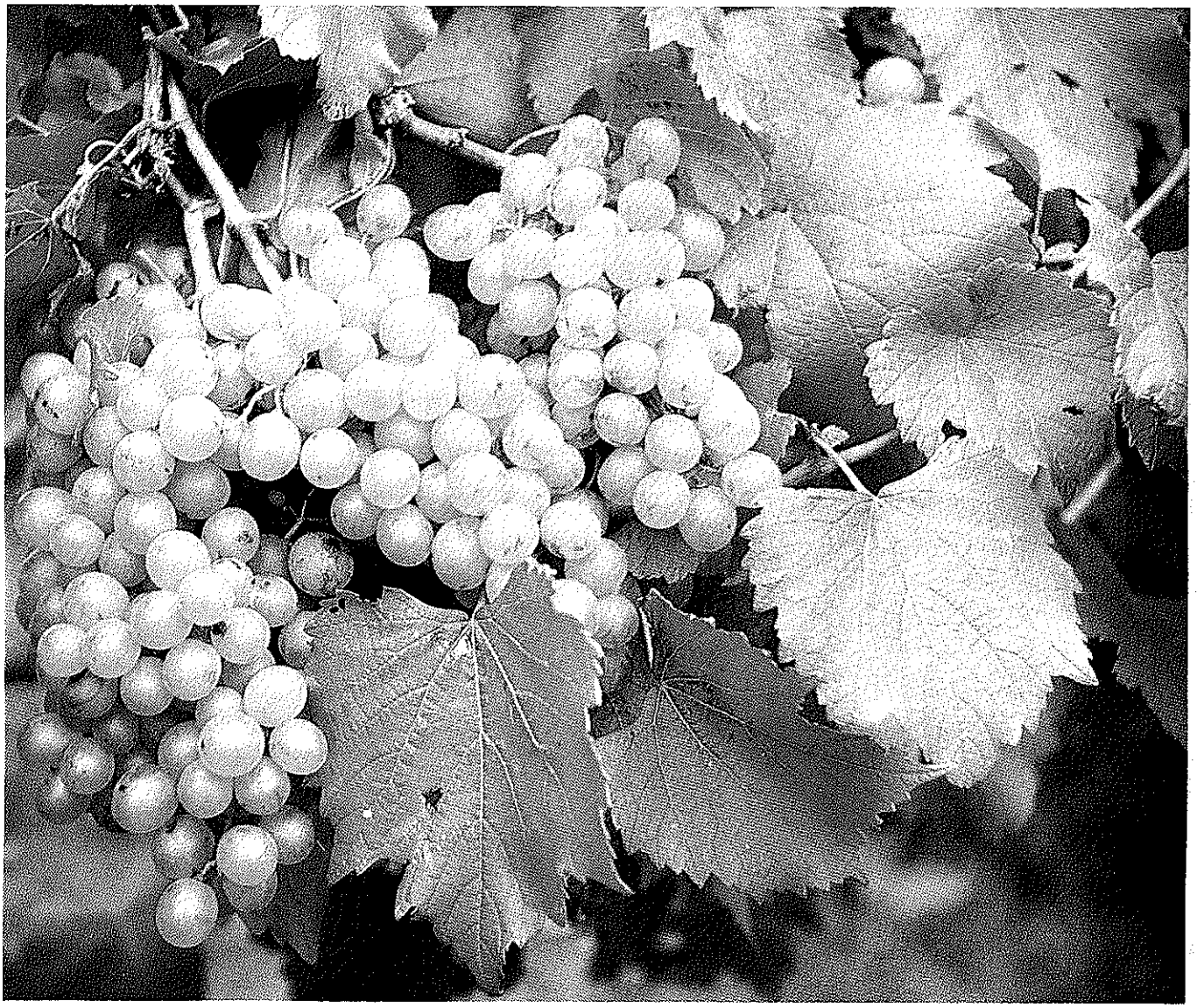
'Miss Blanc' A New Bunch Grape Cultivar



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Release Notice

The Plant Materials Release Committee of the Mississippi Agricultural and Forestry Experiment Station (MAFES) approved the release and naming of M26-4D as 'MissBlanc' in 1982. MissBlanc originated as a seedling from 'Extra', which had intraspecific parentage: *Vitis lincecumii* x *V. labrusca* x *V. vinifera* crossed with 'Marguerite' which had *V. lincecumii* x *V. bourquiniana* parentage.

'Miss Blanc'---A New Bunch Grape Cultivar for Mississippi

N. H. Loomis was a grape breeder at the USDA Horticultural Field Station at Meridian, Mississippi from 1934 to 1965. In addition to his breeding program, he tested many cultivars and root stocks for production and longevity and reported yields that ranged from 0 to 28 pounds per vine. Short vine life was an acute problem, with vines of many cultivars surviving only one to 12 years. Loomis primarily tested bunch grapes from the northeastern United States. Among these were 'Brocton', 'Concord', 'Delaware', 'Moore Early', 'Niagara', 'Portland' and at least 19 French-American hybrids. None of the latter lasted more than five years in the vineyard.

Pierce's disease is a bacterial complex of grapevines and has been estimated to have killed more than 80,000 acres of producing grapevines in southern California between 1880 and 1940 (1,2,3). Loomis and Overcash (4) cooperated with a California plant pathologist who confirmed that many of the bunch grapes grown at Meridan and Mississippi State University in the 1950s did have Pierce's disease (5). This disease probably was the limiting factor in grape production and poor longevity in Mississippi (10). Pierce's disease also has been acute in Florida (6,9).

Loomis was transferred to Fresno, California in 1965, and his bunch grape breeding materials were dispersed. The USDA released all rights to their Mississippi grape selections to MAFES.

The director of MAFES approved maintenance of the "residual" selections at Mississippi State University by authorizing planting of a one-acre vineyard in 1965. Many selections soon were discarded because of poor vine vigor and/or poor fruit qualities. Some of the better selections were propagated by cuttings and were reestablished in 1974 as replicated or observation plots in the new MAFES vineyards at Beaumont and Crystal Springs (Figure 1).

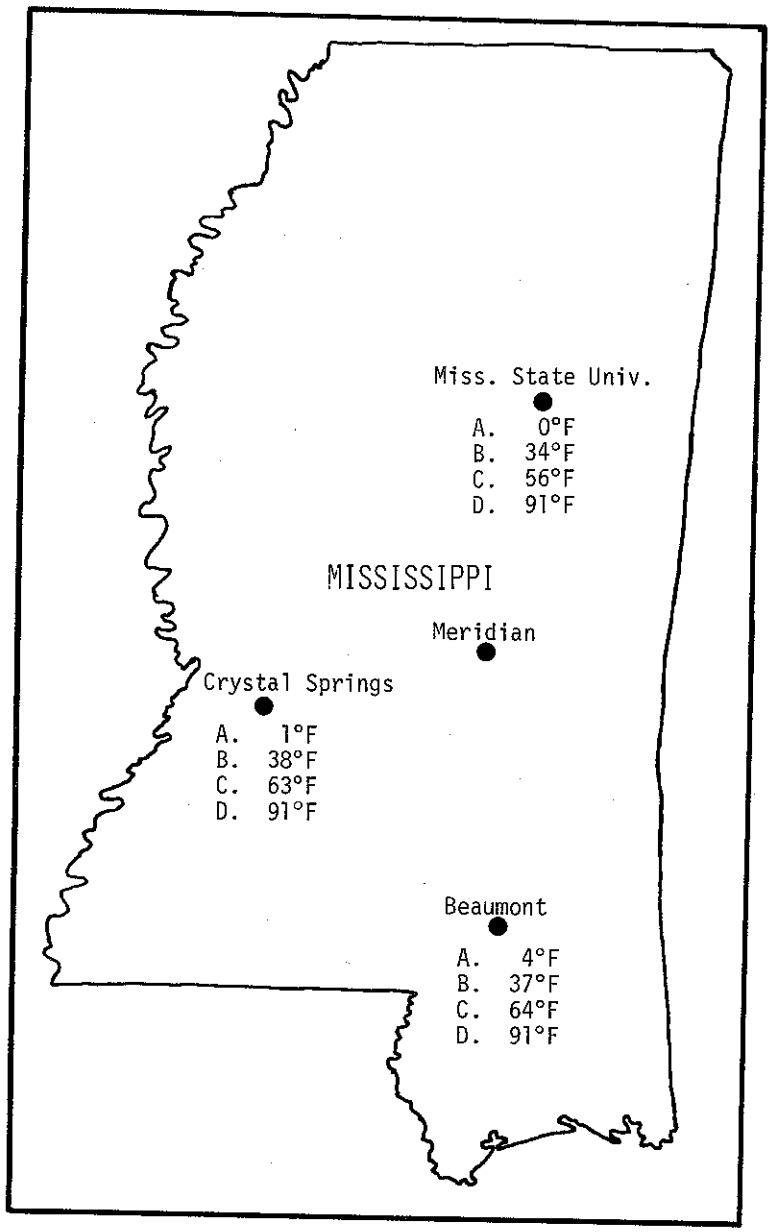

Figure 1. Locations where 'MissBlanc' bunch grapes have been tested.
A. Minimum winter temperature (Nov.-Feb.) 1974-1982.
B. Average daily minimum winter temperature.
C. Average daily maximum winter temperature.
D. Average daily maximum summer temperature (June-August).

Selections have been under MAFES testing for more than 15 years and have not died from Pierce's disease or other causes. A few of the surviving vines had good vigor, yields and reasonable resistance to fungal diseases under a good spray program. Two blue fruited cultivars were released in 1981 as 'MidSouth' and 'MissBlue' (7). Many American bunch grape cultivars still cannot be grown in Mississippi because of susceptibility to Pierce's disease or lack of environmental adaptation.

Origination of MissBlanc (Tested as M26-4D)

Parents of MissBlanc were 'Galibert 261-12' and a seedling of (Extra x Marguerite). Extra was originated by T. V. Munson (7) in 1886 at Denison, Texas by crossing *Vitis lincecumii* cv 'Beg Berry' x 'Triumph' (a cultivar with golden berries and *V. labrusca* x *V. vinifera* parentage). Extra is a purple-fruited grape with big berries and moderately compact bunches and is self-fertile. It was the leading bunch grape (known as 'Florida Beacon') in Florida from 1926 to 1935, when Pierce's disease and black rot susceptibility ultimately led to its rapid decline.

Marguerite was originated by T. V. Munson in 1896 from a cross of *V. lincecumii* cv 'Secundo' with 'Herbemont' (*V. bourquiniana*). Marguerite has medium-sized, compact and cylindical clusters with dark purple fruits and is resistant to Pierce's disease.

Galibert 261-12 was a French-American hybrid probably of the parentage 'Villard Blanc' x 'Semillon' (*V. vinifera*).

MissBlanc has perfect flowers and should be fully self-fertile, but has not been grown under isolated conditions by MAFES personnel. The berries are white to green in color. Clusters are shown on the front and in Figure 3.

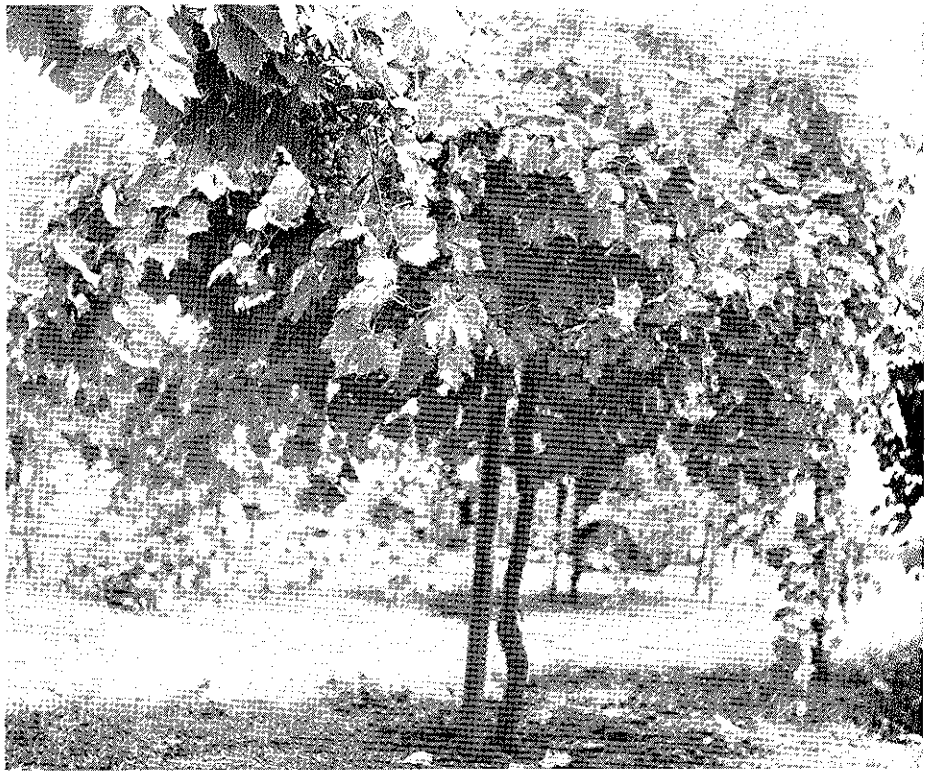

Figure 2. A vigorous, eight-year-old vine of 'MissBlanc' bunch grapes at the Truck Crops Branch Station at Crystal Springs in August 1981. This vine produced 60 pounds of grapes in 1981.

Figure 3. Heavy fruiting of a six-year-old 'MissBlanc' grapevine in the research vineyard of the Truck Crops Branch Station at Crystal Springs, Mississippi on August 7, 1979.

Vineyard Testing of MissBlanc

Characteristics of fruit of MissBlanc from the Crystal Springs vineyard were compared with those of fruit of 'Lake Emerald' and three blue bunch grape cultivars (Table 1). The Florida cultivars, 'Blue Lake' and Lake Emerald, apparently are resistant to Pierce's disease, because they continue to live and bear heavily even though many varieties such as Concord, 'Moored', 'Aurora', 'Chancellor' and others have died (Table 2). MissBlanc produces medium-sized berries that are larger than berries of Lake Emerald. Cluster size of MissBlanc is smaller than that of Lake Emerald but larger than that of the blue cultivars. The sugar content of MissBlanc is less than that of Lake Emerald but higher than that of the blue cultivars.

The primary superior characteristics of MissBlanc are general climatic adaptation and excellence plant vigor and yield (Figures 2, 3). The vine shown in Figure 2 thrived for nine years under good vineyard management, which included a thorough fungicide spray program.

Vine vigor of MissBlanc in general was as good as that of MissBlue, MidSouth and Lake Emerald and was better than that of Blue Lake at Beaumont as recorded by annual prunings (Table 3) and trunk diameter measurements (Table 4) after five years in the vineyard.

Table 1. Fruit characteristics of grape cultivars at the MAFES Truck Crops Branch, Crystal Springs, Mississippi, 1976-1981 average.

Cultivar	Berries per pound*	Ounces per bunch	% sugars**
'Blue Lake'	226	3.7	17.5
'Lake Emerald'	378	5.4	21.5
'MidSouth'	189	3.7	18.6
'MissBlanc'	189	5.0	19.4
'MissBlue'	142	3.6	17.1

*Average of 30 berries from two or more samples for each of 6 years.
**Recorded with hand refractometer and corrected to actual readings for glucose and fructose at ambient laboratory temperatures.

Table 2. Bunch grape selections or cultivars with dead vines or vines of very poor vigor after four or five years[1] in the MAFES vineyards at Beaumont and Crystal Springs, Mississippi.

'Alwood'	'Chancellor'
Ark. 1023	'Concord'
Ark. 1026	'DeChaunac'
Ark. 1052	Ga. 19-23
Ark. 1140	'Moored'
Ark. 1221	'Rosette'
'Aurora'	'Seyval'
'Baco Noir'	'Vidal Blanc'

[1]Planted in 1973 or 1974 and evaluated in 1978.

Table 3. Weight of annual prunings from bunch grape vines in the MAFES vineyard at Beaumont, Mississippi, by cultivar, 1975-78.[1]

Cultivar	1975	1976	1977	1978	Mean total
	lbs/vine				
'Blue Lake'	1.2 a*	4.7 a	4.0 a	5.0 b	15.0 b
'MidSouth'	1.5 a	3.7 a	5.7 ab	8.7 a	19.7 ab
'MissBlanc'	1.5 a	5.0 a	5.2 ab	9.2 a	21.0 ab
'MissBlue'	1.0 a	3.5 a	9.0 a	11.2 a	24.7 a

[1]Four replicates of one-vine plots planted in 1974 (435 vines/acre).
*Numbers not followed by the same letter within columns are statistically different at 0.5 level.

Table 4. Trunk diameter of bunch grape vines at 36 inches above the soil, by cultivar.[1]

Cultivar	Trunk Diameter
	inches
'Blue Lake'	1.7 b*
'MidSouth'	2.3 a
'MissBlanc'	2.4 a
'MissBlue'	2.1 a

[1]Measured in fall 1977 after four years in the MAFES vineyard at Beaumont, Mississippi.
*Numbers not followed by the same letter are statistically different at .05 level.

Table 5. Dates of harvest of bunch grapes at the MAFES vineyards at Beaumont and Crystal Springs, Mississippi, by cultivar. [1]

Cultivar	Beaumont	Crystal Springs
'Blue Lake	8/8	8/13
'Lake Emerald'		7/31
'Midsouth'	7/31	7/31
'MissBlanc'	8/3	8/10
'MissBlue'	7/25	7/26
Average	8/1	8/3

[1]Dates are averages of three years.

MissBlanc ripens in late July to mid-August in south and central Mississippi (Table 5). The yield potential of these selections is shown in Figure 3 and Tables 6 and 7. The vine yields were recorded from plots with vine spacings of 10 x 10 feet.

Table 6. Yields of bunch grapes in the MAFES vineyard at Beaumont, Mississippi, by cultivar, 1976-78.[1]

Cultivar	1976	1977	1978	Mean Total 3 years
	lbs/vine			
'Blue Lake'	20.0 ab*	47.5 ab	9.5 cd	77.0 a
'MidSouth'	26.5 a	55.0 a	13.2 c	94.7 a
'MissBlanc'	4.0 bc	45.5 ab	26.7 b	76.2 a
'MissBlue'	18.7 abc	32.5 b	33.2 a	84.5 a

[1]435 vines/acre and 4.6 lbs/vine = 2000 lbs/acre.
*One vine plots with four replicates. Numbers not followed by the same letters within columns are statistically different at 0.5 level.

Summary

MissBlanc grapevines have survived nine years in two vineyards where many other cultivars have died from Pierce's disease or lack of general climatic adaptation. Yields as high as 61 pounds per vine have been recorded at Crystal Springs. Based on 10 x 10 feet spacing (435 vines per acre), this is about 13 tons per acre. Commercial Concord vineyards in Arkansas average about 5 tons per acre.

Grapes of MissBlanc are sweet, mild and pleasantly flavored. Soluble solids are intermediate between Lake Emerald (high) and MidSouth or MissBlue (low), Table 1. MissBlue and MidSouth had more than 15.0° Brix, which is the minimum standard acceptable by National Grape Cooperative (Welch brand red grape juice). Wines from MissBlanc have been judged intermediate in quality for white wines made in Mississippi. It might be useful for blending to moderate the acidity and/or tannin content of southern-made wines because the flavor is mild. Wine analyses are shown in Table 8.

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Table 7. Yields of bunch grapes in the MAFES vineyard at Crystal Springs, Mississippi, by cultivar, 1977-79.[1]

Cultivar	1977	1978	1979	Total
	lbs/vine			
'Blue Lake'	4.3 d*	37.0 b	46.3 b	87.7 a
'MissBlanc'	16.0 b	52.0 a	61.0 a	129.0 a
'MissBlue'	10.2 c	33.3 b	67.5 a	111.0 a
'MidSouth'	13.0 bc	45.7 ab	55.3 ab	114.0 a
'Lake Emerald'	30.0 a	33.8 b	46.5 b	110.3 a

[1]One vine plots with four replicates planted in 1974. 435 vines/acre and 4.6 lbs/vine = 2000 lbs/acre.
*Numbers not followed by the same letter within columns are statistically different at .05 level.

Table 8. Composition of wines from bunch grapes from the MAFES vineyards, by cultivar.

Analysis	'MissBlue'	'MidSouth'	'Lake Emerald'	'MissBlanc'
ph	3.30	3.40	4.08	3.31
Total titrat. acid, %	0.895	0.832	.551	.550
Ions (ppm):				
Copper	-	-	0.5	0.2
Iron	-	-	6.3	8.5
Zinc	-	-	0.5	0.5
Ethanol, %/b.v.	10.4	12.2	12.4	12.4
Volatile acid, mb/100 ml	0.04	0.04	0.06	0.06

Acknowledgment

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