

## 'SUNBELT'—A NEW JUICE GRAPE ADAPTED TO ARKANSAS

James N. Moore, Justin R. Morris and John R. Clark

*'Sunbelt', a new juice grape cultivar similar to 'Concord', was released by the Arkansas Agricultural Experiment Station. Sunbelt can be grown successfully in southern and eastern Arkansas and other areas with typically high summer temperatures where Concord is not adapted.*

Since its inception in 1964, the grape breeding program of the Arkansas Agricultural Experiment Station has developed and released four seedless table grape cultivars. While the major thrust of the Arkansas breeding program is to develop table grapes for fresh marketing, some effort has been given to improving juice and wine grapes for processing. 'Sunbelt' is the first juice grape released from this program.

Sunbelt fulfills the need for a high quality juice and jelly grape that can be grown in areas of the south-central United States where the Concord cultivar cannot be grown successfully. In Arkansas, Concord is not adapted to the central, southern and eastern regions of the state. In those areas, Concord fruit ripens very unevenly, and many berries in the clusters never ripen, thus lowering the quality of processed products. Sunbelt fruit ripens evenly in all regions of Arkansas.

Sunbelt originated from open-pollinated seeds collected from Concord grape at Fayetteville in 1968. It was selected from a fruiting seedling field in 1971 and has since been tested as Ark. 1335. Tests have been conducted at four Arkansas locations (Fayetteville, Clarksville, Bald Knob, Hope), and plants have been distributed to several other U.S. states and southern Brazil for testing.

**Ripens Evenly.** Sunbelt is similar to Concord in most plant and fruit characters, differing primarily in its ability to ripen its fruit evenly under high temperature conditions. Plants are moderately productive, yielding similarly to Concord; clusters are small; and berries are blue, large and seeded. Soluble solids and harvest date (Table 1) correspond closely with Concord in areas where Concord is grown.

Comparison of yields at the four Arkansas locations shows that Sunbelt has been more productive during the reported test years at Fayetteville and Clarksville than at Bald Knob and Hope (Table 1). The yield reduction at Bald Knob is due to inadequate control of black rot disease in some years, while the lower average yield at Hope is due to the younger age of the vineyard, which has not yet reached maximum productivity.

Vines are vigorous and moderately resistant to black rot and anthracnose and show high resistance to powdery mildew and downy mildew, the major diseases in Arkansas. A spray program that is adequate for disease control in Concord is sufficient for this new cultivar. Sunbelt matures its wood early in the fall and has demonstrated good cold hardiness in tests in Arkansas and Kansas, showing no injury at minus 10F. In addition, late bud break (April 2 in Central Arkansas) and late bloom (May 5) help avoid spring freeze damage. In Kansas tests, Sunbelt exhibited sensitivity to 2,4-D, showing injury similar to that for Concord.

**Juice Quality.** Juice quality of Sunbelt was equal to or better than that of Concord in all characteristics (Table 2, 3). In these comparisons, Concord juice commercially produced by a major national manufacturer was used. Sunbelt juice was obtained from grapes grown at the University of Arkansas Fruit Substation and prepared using a procedure similar to that used by commercial processors. Objective analyses were conducted as reported by Morris et al. (1).

**Table 1. Production and fruit characteristics of Sunbelt grape at four Arkansas locations.**

Location	Yield (lb/A)	Cluster weight (g)	Berry weight (g)	Soluble solids (%)	Harvest date
Fayetteville <sup>1</sup>	8147	180	4.4	16.1	Aug. 23
Clarksville <sup>2</sup>	9758	137	4.3	16.9	Aug. 17
Bald Knob <sup>3</sup>	5282	146	4.2	17.3	Aug. 10
Hope <sup>4</sup>	5461	128	4.6	17.2	Aug. 1

<sup>1</sup>Planted 1985; Means of 5 years, 1988-1992. <sup>2</sup>Planted 1985; Means of 5 years, 1987-89, 1991-1992. <sup>3</sup>Planted 1985; Means of 5 years, 1987-90, 1992. <sup>4</sup>Planted 1988; Means of 3 years, 1990-1992.

At equal soluble solids, Sunbelt juice was lower in pH and higher in acidity (tartaric) than Concord (Table 2). The color of Sunbelt was darker (lower Color Difference Meter 'L' value) and more red (higher CDM 'a' value). The Sunbelt

---

Drs. Moore, Morris and Clark are, respectively, distinguished professor, Department of Horticulture and Forestry; university professor, Department of Food Science; and resident director, UA Fruit Substation, Clarksville. The authors thank Bruce Bordelon, Maurus Brown, Don Dombek, Gina Fernandez, Kelly Irvin, Elbert Baker, Charles Parsons, Jack Young and Ed Hellman for collecting data during the evaluation of Sunbelt. Additional information on Sunbelt has been published in HortScience 28:859-860. 1993.

juice also contained more monomeric anthocyanin pigments, as indicated by the higher value for acidified optical density at 520 nm.

Subjective quality was determined using 10 trained panelists. Each quality attribute was rated on a scale of 1 to 10, with 10 being best. Sensory ratings for the two juices are presented in Table 3. The color and aroma intensity of the Sunbelt juice rated higher than that of the Concord juice. Flavor was equally acceptable compared to Concord, and the two cultivars were comparable in overall acceptability of juice quality.

**Conclusions.** Sunbelt is recommended as a high-quality juice and jelly grape in areas of southern and eastern Arkansas where Concord is not adapted. It has potential as both a home garden grape and for commercial use. A plant patent application has been submitted for Sunbelt. A list of nurseries licensed to propagate and sell Sunbelt can be obtained by writing to Dr. J.N. Moore, 316 Plant Science Building, University of Arkansas, Fayetteville, AR 72701

**Table 2. Quality of hot pressed Sunbelt juice as compared to the major national brand of Concord juice.**

Cultivar	Soluble solids (%)	pH	Acidity tartaric (%)	---Color CDM'---			Optical density @ 520nm
				L	a	b	
Concord	16.3 a <sup>2</sup>	3.42 a	0.67 b	13.8 a	21.0 b	4.5 a	0.174 b
Sunbelt	16.4 a	2.97 b	0.86 a	6.4 b	24.0 a	3.4 a	0.469 a

<sup>1</sup>Gardner Color Difference Meter values

<sup>2</sup>Means within columns separated by Duncan's Multiple Range test at the 5% level. Means in columns followed by the same letter(s) are not significantly different.

**Table 3. Sensory ratings<sup>1</sup> for Sunbelt juice as compared to the major national brand of Concord juice.**

Cultivar	Color Intensity	Aroma intensity	Flavor intensity	Overall acceptability
Concord	6.4b <sup>2</sup>	6.2b	6.1a	6.2a
Sunbelt	8.0a	7.4a	6.4a	6.7a

<sup>1</sup>Rated on a scale of 1 to 10 with 10 being best.

<sup>2</sup>Means within columns separated by Duncan's Multiple Range at the 5% level. Means in columns followed by the same letter(s) are not significantly different.

### Literature Cited

1. Morris, J.R., W.A. Sistrunk, J. Junek and C.A. Sims. 1986. Effects of fruit maturity, juice storage and juice extraction temperature on quality of Concord grape juice. J. Amer. Soc. Hort. Sci. 111:742-746.