Potassium Nutrition of Grapes

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Grapes (Vitis sp.) are the most widely planted fruit crop in the world. Because of the large number of species and their broad adaptation, grapes are grown on every continent and in nearly every country of the world. Much has been written about their culture dating from biblical times. Some of the earliest documented nutritional research on fruit crops was conducted on grapes (Holladay, 1893; Perold, 1927). Thus, it is both interesting and intriguing to review the progress that has been made over this extended period of time. Grapes are nutritionally a very responsive crop. Cultural practices are frequently interrelated to nutrition. Thus, this chapter deals with the use and response of K in regard to grapes as well as how it interacts and relates to other nutrient elements and cultural practices.

I. GRAPE PRODUCTION AREAS

A. United States

Within the continental boundaries of the USA, many states have a history of grape production. However, as shown in Table 48–1, as of 1983 only about 16 states can claim a commercial industry. They are California and Arizona (Far West); New York, Pennsylvania, Ohio, and Michigan (Great Lakes states); Virginia and Maryland (East); North Carolina, Georgia, Florida, and Texas (South and Southeast); Washington and Oregon (Northwest); and Arkansas and Missouri (Mid-South). New and rapid expansion is now taking place in Virginia, Oregon, New Mexico, and Texas. Because of the wide diversity of soil types, the complexity of the K nutrition relationships that exist are great.

The Far West region is by far the largest production region within the USA. Approximately 92 to 95% of the grapes are grown within its boundaries, which totals approximately 0.262 million ha. Cultivars grown in California and Arizona are the classic wine grape (V. vinifera L.) or European type.

The Great Lakes region, because of climate, has been traditionally planted to the Vitis labrusca L. or V. labruscana Bailey cultivars. The adjoining area, the Niagara Peninsula in Ontario, Canada, also has similar production characteristics. Soil types are primarily acidic. Predominant cultivars have been ‘Concord,’ ‘Catawba,’ and ‘Niagara’ since the 1880s. This is now changing, and most of the new plantings...