

Brandy production in California began with the Spanish missionaries, who made brandy almost as soon as their first grape plantings started to bear fruit. Development of the industry in the San Joaquin Valley, however, did not occur until the late 1800s, and University of California contributions to brandy research really began after Prohibition ended.

Professor James F. Guymon (a chemical engineer by background), who arrived on the Davis campus in 1939, was the first to make a concentrated scholarly effort on brandy production. He was to become perhaps the English-speaking world's foremost brandy expert. Some of his first research was on the chemical analysis of the so-called Prorate Brandies of 1938 (when some 45 percent of the grape crop was diverted to brandy production) and the Golden Gate Exposition Brandies. Samples of these brandies are still intact in our somewhat crowded storage room at Davis. These first analyses showed a wide variation in such important characteristics as pH and acidity, which indicated poor production techniques and consequently poor brandy.

A large part of the University's early contribution to the brandy industry revolves around chemical analysis techniques. By publishing a manual of known analyses and developing new simpler, and more accurate ones, the University helped provide valuable tools for quality control. In addition, periodical analyses of a wide variety of commercially available brandy products furnished information on the norms expected in commercial products and on trends, such as those toward less heavy-bodied brandies.

Over the years, research in many other areas influenced brandy quality: the effect of fermentation conditions on trace flavor components, the behavior of these trace flavor components during distillation, the removal and reutilization of by-product components, and the chemical and physical changes in

barrel aging. This wide-ranging applied research would have been impossible without the pilot-scale experimental distillery established in the late thirties.

This body of research has resulted in many recommended changes in the industry. One example is in still construction, where much wider tray spacings have become predominant, giving better still performance. Another is the use of low-temperature fermentations without sulfur dioxide by producers who wish to strive for the highest quality production. This has resulted in the handling of brandy distilling material in a much different manner than high-proof distilling material used for fortification.

In the early days, producers fermented and distilled fast and furiously during the crush season until they had made vast quantities of fortified dessert wines. Then they would make whatever was left, regardless of quality, into beverage brandy. The installation of more stills, the decline in fortified wine production, and the acceptance, in some degree, of the University recommendations have resulted in much more careful treatment and loving care in modern brandy production.

Although brandy production might be considered only a small part of California's grape industry, it is estimated that between 10 and 20 percent of the grape crush is distilled into brandy or high-proof alcohol.

Areas of research interest that may be explored in the future include energy monitoring and energy conservation techniques; more advanced automatic distillation control; applications of membrane permeation processes for analysis and processing; improved, modern analytical techniques; and characterization and utilization of distillery wastes and by-products.

In addition to a wide-ranging research program, Professor Guymon established an excellent course in brandy technology, which has been more recently extended to encompass distilled beverage technology in the broad sense. This popular course is probably unique in the nation and is an example of the productive interplay between research and teaching.



Less than half as much of the state's grape crush now goes for brandy as in the late 1930s when these Golden Gate Exposition bottles were distilled. The small pot still resembles pre-Prohibition models.

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