

**Application Title: Interdisciplinary research consortium for characterization of high-quality beverages and their improvement**

**Lead contact:** Leonardo Lombardini – Professor, Department of Horticultural Sciences; Director, Center for Coffee research & Education, Norman Borlaug Institute for International Agriculture

**Email address:** [l-lombardini@tamu.edu](mailto:l-lombardini@tamu.edu); Phone number: 979-845-8242

**Key Participating Units: College of Agriculture and Life Sciences:** Departments of Horticultural Sciences, Animal Science, Agricultural Economics, Nutrition and Food Science, Soil and Crop Sciences; **College of Engineering:** Departments of Chemical Engineering and Nuclear Engineering; **Norman Borlaug Institute for International Agriculture.**

**Amount requested:** \$1,655,752

**Executive summary:**

Consumers appear willing to spend increasing amounts on high-quality beverages that have recreational, health or productivity benefits and manufacturers are keen to address those desires. However, university research, teaching, services and associated facilities to discover, support, and independently test these growing industries are lacking. While fermented, distilled and other high-quality beverages might have different inputs and markets, the facilities and skills needed to support the land-grant mission regarding these beverages have substantial overlaps (beverage preparation, chemical analysis, sensory perception, marketing, and economics) to justify this joint proposal.

Texas has a visible and rapidly growing value-added industry in fermented, high-quality beverages including beer, wine, and spirits that provides high-value products from relatively inexpensive commodities. Coffee, although not grown in Texas, has a significant economic importance for the state, as millions of pounds of green beans are imported each year through the port of Houston, to be then roasted and processed throughout the state and beyond. Increasingly, the focus of these industries is to provide the highest quality ingredients that are sourced from Texas farms, or in the case of coffee, roasted locally. For beer, this means both barley and hops, neither of which is currently available in sufficient quantity to supply this industry, but which preliminary research in the Departments of Soil and Crop Sciences (SCSC) and Horticulture (HORT) have shown is feasible.

The Texas wine industry has opportunities for growing more grapes for classic European wine production as well as more exotic native grapes. Finding the best adapted *Vitis vinifera* L. (European) cultivars and characterizing chemically and sensorially the Texas *terroir* (flavor profile unique to the complete natural environment in which a particular wine is produced, including factors such as the soil, topography, and climate) as it is expressed in wines made from these cultivars as well as from the native Texas grapes is a priority for the Texas wine industry. This industry alone boosts the Texas economy by \$13.1 billion annually<sup>1</sup>, creating more than 100,000 jobs and attracting more than 1.5 million tourists every year. The equipment included in this application not only will allow Texas A&M to become a major knowledge contributor to the international academic community and the Texas wine industry, but it will be relevant also for the U.S. wine industry as well as the global one, through the analytical and fingerprinting capabilities it would generate.

The spirits industry relies largely on corn (maize, *Zea mays* L.) for fermentation of clear spirits such as vodka and brown aged spirits, such as whiskey. Tito's vodka<sup>2</sup>, which is made in Austin, is now the top selling spirit in the United States and it is made from Midwestern U.S. corn. Firestone & Robertson

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<sup>1</sup> 2017 Economic Impact Report on American Wine Industry, [www.wineamerica.org](http://www.wineamerica.org)

<sup>2</sup> <https://www.titosvodka.com/>