

# Viticulture and Enology Research Center

California Agricultural Technology Institute

Jordan College of Agricultural Sciences and Technology

Annual Report 2019 - 2020

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By

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**FRESNO**  **STATE**

Viticulture and Enology Research Center

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## Progress towards 2019-20 Goals and Objectives

The last set of five goals was established based on input from several sources including faculty, staff, JCAST leadership, and the Viticulture and Enology Industry Advisory Board. Some of these goals were considered long-term objectives that were not meant to be achieved in one year. Progress towards all goals is reported annually, however, some objectives will carry forward into the next fiscal year until they can be closed.

### I. Hire a permanent laboratory and research technician to support faculty research programs and research winemaking in VERC.

This goal was partially achieved.

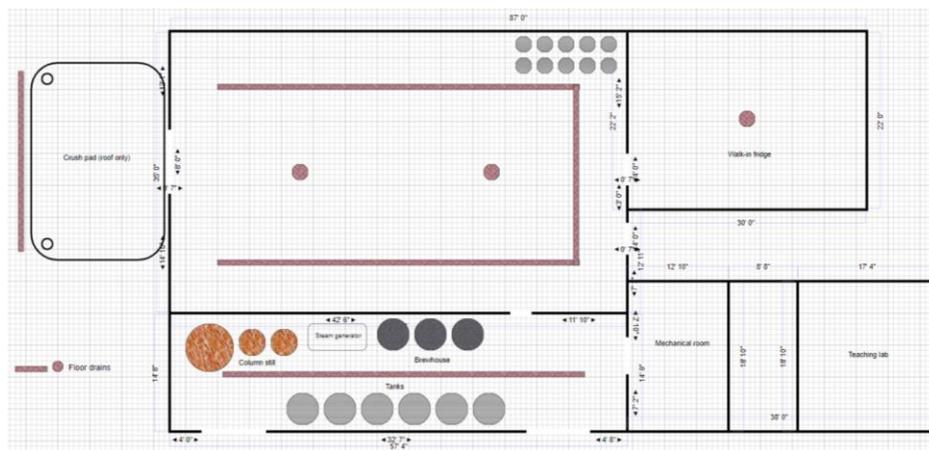
Other comparable support technician positions within the College are stateside positions, however, in order to speed up the hiring process, the position was initially filled with a Foundation employee. Mr. Walsh Conmy started in Summer 2019 after he had finished his MBA and had worked in VERC as a student assistant for an extended period of time. He initially graduated from the viticulture and enology program and has substantial laboratory and winemaking experience. Mr. Conmy worked through the 2019 harvest and bottling season and left for an opportunity in New Zealand in February with the goal to reapply once the position would be moved from Foundation to Stateside. The stateside position was posted on March 20, 2020 (Job Opening #13898) as a full-time Instructional Support Technician III.

Even though the position is currently vacant, the screening of applications and the interview process is underway. There have been substantial delays due to COVID-19 and the current budget situation within the CSU system, however, the hire is pre-approved and the goal will carry forward into the new fiscal year.

### II. Renovate and expand research space with priority set on a greenhouse and the research winery.

There was significant progress made towards this goal.

The following draft was used as a baseline for planning purposes and reflects the overall goal for the research and teaching winery space.



The building itself is in good enough condition to preserve the general structure but, given the age of the materials, a survey for hazardous materials was conducted in 2019. The survey shows asbestos and lead paint in several areas of the building that need to be addressed and will also require the removal of ceiling panels, wall coverings, and pipe insulation. While waiting for fire marshal's approval of the project and the removal of hazardous material, drawings and plans are being created. The overall goal is to create a workflow from the covered crush-pad outside, through the main research and teaching winery into the cold room storage for the finished product. The adjacent room will house a 10 bbl brewhouse and a still for research and teaching purposes. The existing bathroom will be remodeled and extended into a locker room with bathroom and shower. That will ensure that all the code requirements are satisfied.

The greenhouse space (see also under Space and Equipment Utilization) has been reduced from the original 1200 sf. to a 900 sf. building due to traffic considerations and accessibility requirements in the area. Several manufacturers were considered for this project initially, however, all but one company were not willing or able to work with a university. Nexus Greenhouse Systems is now charged with the design and hiring of the building contractor. The company has experience with academic institutions and has built, among others, the greenhouse complex at Chico State. Their experience and expertise will allow VERC to have access to a multi-purpose state-of-the-art greenhouse for research and teaching.

**III. Establish updated policies and procedures for VERC, especially in the areas of chemical safety and chemical hygiene.**

This goal was achieved.

The old policies and procedures overview was available in a Microsoft Powerpoint format and was severely outdated especially in the areas of chemical safety. In the process of updating facilities and infrastructure around VERC, the policies were updated accordingly. The first draft of a policies and procedures handbook is currently circulated and finalized before it can be distributed to faculty and staff in Fall 2020. The areas of chemical safety, safety training, and lab policies have been revised and updated in detail.

**IV. Develop seminars and workshops to increase industry involvement and community outreach.**

This goal was not achieved.

The original plan was to develop seminars and workshops that would be held on campus in Spring and early Summer 2020. However, due to COVID-19, all planned activities had to be cancelled and further plans were abandoned following the recommendation of public health officials and the CSU Chancellor's Office. As of now, all travel and larger events are cancelled until the end of June 2021. For that reason, this goal will not carry forward into the next fiscal year. VERC will continue to keep industry engaged and involved but until the restrictions are lifted, no larger gatherings and in-person events can be planned.

**V. Elaborate on funding opportunities and scholarships for graduate student research.**

This is an ongoing effort in the Center but there was significant progress made during the last year.

In addition to the existing assistantship opportunities that have been created over the years, further industry funding was secured that will be available as an assistantship this year and as a scholarship in the upcoming five years. The company that committed to this generous support is Laffort USA, a supplier of enology additives and technology. The support is part of an ongoing involvement of Laffort in research and teaching at Fresno State. The new annual commitment of \$2,500 per year will be provided for a student with a focus in enology.

The following table includes all assistantships that are currently provided for viticulture and enology students. Scholarships are handled separately through the Dean’s Office and the academic department and are therefore not included.

Assistantship Name	Description and Restrictions
Richard and Saralee Kunde Research Assistantship	Undergraduates and graduate students, all Viticulture & Enology
DiBduo Family Assistantship	Undergraduates and graduate students, wine and/or table grapes
Halemeier Endowed Family Assistantship	Undergraduates and graduate students, all Viticulture & Enology, minimum GPA
Horace O. Lanza Enology Assistantship	Undergraduates and graduate students, Enology only
Horace O. Lanza Viticulture Assistantship	Undergraduates and graduate students, Viticulture only
H. P. and Edna Metzler Viticulture Assistantship	Undergraduates and graduate students, Viticulture only
San Joaquin Valley Winemakers Research Assistantship	Undergraduates and graduate students, Enology only
Bayer Agriculture Division Graduate Student Assistantship	Graduate students only, Viticulture only
Garabedian Family Viticulture Student Assistantship	<b>Currently unavailable</b> (Undergraduates and graduate students, Raisin research only)

Some of the requirements are very specific and might limit accessibility for students. In order to overcome these limitations, this goal will be expanded, aiming to broaden the scope of some of these assistantships. The best example is the Garabedian Family Viticulture Student Assistantship that is currently unavailable because the restriction defined by the donor make it impossible to award the money. VERC will work with the donor family to revise the requirements and re-open that funding opportunity.

## Description of 2019-20 Activities

Due to the COVID-19 precautions and restrictions, professional activities were limited after mid-March 2020. The following lists are therefore shorter than what would be expected, however, most of the workshops, seminars, and meetings were cancelled or postponed until 2021. Faculty and staff are marked in bold, students are indicated with an asterisk (\*).

### Professional events attended and/or organized

- 07/05/2019 Fresno State Winery - Friday Night Flights
- 07/09/2019 Allied Grape Growers Annual Meeting, Fresno
- 07/22-25/2019 American Society for Horticultural Sciences Annual Conference, Las Vegas, NV
- 07/27/2019 SIPS of the Sierra at Grant Grove, Fresno State Winery
- 08/12-14/2019 Biopac T4 Human Physiology Conference, UC Santa Barbara
- 08/14/2019 UC Grape Day, Kearney Ag
- 08/23-25/2019 Greek Fest Fresno, Viticulture Club and Enology Society
- 08/25-29/2019 American Chemical Society National Conference, San Diego
- 09/08/2019 Fresno State Jordan College of Ag - Ag One Boosters BBQ Fundraising event for Ag One
- 10/25/2019 Agricultural Research Institute (ARI) Annual PI Meeting, Sacramento
- 11/19/2019 Grape, Nut and Tree Fruit Expo, Fresno Fair Grounds, Fresno
- 11/20/2019 Fresno State Viticulture and Enology Resume Workshop
- 11/23/2019 Fresno State Wine Fest, Margie Wright Softball Stadium with SJVWGA Tailgate
- 01/28/2020 California Wine Grape Inspection Advisory Board Meeting, JARC, Fresno
- 01/30/2020 Harvesting Leaders of Tomorrow Career Fair
- 02/01/2020 FFA Vine Pruning Contest CA State finals
- 02/04-06/2020 Unified Wine & Grape Symposium, Cal Expo Sacramento
- 02/11/2020 World Ag Expo, Tulare - Seminar Center
- 03/02/2020 Managing Water & Fruit Quality in Vineyards & Orchards Under Climate Change, JARC

**Effectiveness:** The majority of the events addressed faculty and staff outreach to the grape and wine industries in support of their research projects. These activities are very effective in establishing and maintaining contact with growers and winemakers across CA. The meetings promote interactions with industry, establish opportunities for collaboration, and confirm the importance and relevance of the Viticulture and Enology department and research center to stakeholders.

## Presentations (Oral, Poster, Conference Proceedings)

**Brillante, L.** (2019). Esperienze di ricerca e gestione degli stress climatici nei vigneti californiani. In: Cambiamenti climatici e viticoltura : stato dell'arte in regione Campania e prospettive di adattamento – National Research Council, CNR-ISAFOM, Naples, IT, July 2, 2019.

Martinez-Luscher, J., **Brillante, L.**, Kurtural, S. K. (2019). Flavonol profile of red grape (*Vitis vinifera* L.) berry is a reliable indicator to assess their exposure to solar radiation and study changes in their composition. ASHS 2019 Annual Conference, July 21-25, 2019.

Yu, R., **Brillante, L.**, Martinez-Luscher, J., Kurtural, K. (2019). Assessing spatial variability in wine flavonoid composition based on vineyard plant water status mapping. ASHS 2019 Annual Conference, July 21-25, 2019.

Martínez-Luscher, J., **Brillante, L.**, Kurtural, S.K (2019). Flavonol profile of red grape (*Vitis vinifera* L.) berries is a reliable indicator to assess their exposure to solar radiation and study changes in their composition. American Society for Horticultural Sciences Annual Conferences 2019, Las Vegas, NV, HortScience, vol. 54 (9), S55-56.

Yu, R., **Brillante, L.**, Martinez-Luscher, J., Sanchez, L., Kurtural, K.(2019). Assessing spatial variability in wine flavonoid composition based on vineyard plant water status mapping. American Society for Horticultural Sciences Annual Conferences 2019, Las Vegas, NV, HortScience, vol. 54 (9), S312-313.

**Brillante, L.** (2019). Precision viticulture and implementation of variable rate and site-specific management approaches, 20<sup>th</sup> Annual Sustainable Winegrowing Field Day, July 26, 2019.

**Brillante, L.** (2019). Protecting grapes from hot weather with kaolin clay. Tree and Vine Expo, Turlock, CA, November 12, 2019.

**Brillante, L.** (2020). Exploring Methods of AI in Agriculture, A Panel Discussion. Napa Valley Vintage Report, January 29, 2020.

**Brillante, L.** (2020). Weed Control in Vineyards: Sustainability and Consumer Perception. Unified Wine and Grape Symposium, Sacramento, CA, February 3-6, 2020.

**Brillante, L.** (2020). Grapevine Red Blotch Associated Virus. World Agriculture Expo, Tulare, CA, February 11-13, 2020.

**Brillante, L.** (2020). Digital Viticulture. World Agriculture Expo, Tulare, CA, February 11-13, 2020.

**Brillante, L.** (2020). Physiological responses of grapevine to salt stress and remediation by CaSO<sub>4</sub> amendments in Central Valley of California. Current Wine and Wine Grape Research, UC Davis, February 11, 2020.

**Brillante, L.** (2020). Exploring Methods of AI and Machine Learning in Agriculture. Paso Robles Vintage Report, February 25, 2020.

**Brillante, L.** (2020). Informed selective harvest decisions from management zones obtained by mapping plant water status. California State University, Fresno, CA, March 2, 2020.

**Brillante, L.** (2020). Vineyard soils, soil water content, pedology and zoning using plant based measurements in a precision viticulture context. Advanced Grapevine Irrigation Scheduling and Management, UC Davis, March 4, 2020.

**Brillante L.** (2020). Remote sensing in viticulture. San Joaquin Valley Winegrowers Association Research Roadshow, June 4, 2020.

**Gu, S.** (2019). Biometeorology, Vineyards, and Sabbatical Leave. Food, Family and Farm Month, JCAST Lunch and Learn, November 5, 2019.

**Pedroza, M.A.,** Munk, K.\*, Herrell, R.\*, Bourguignon, L., Cecotti, H., Shapiro, M., Licon, C. (2020). Perceptual Differences of Wine Impact Odorants Between Consumers and Industry Experts. 71<sup>st</sup> ASEV National Conference, planned for Portland, OR; online only. (Video presentation by K. Munk).

**Sommer, S.** (2020). Potassium Tartrate Stability: Strategies for Stabilizing Potassium Tartrate Salts in White, Red and Rose Wines. Unified Wine and Grape Symposium, Sacramento, CA, February 3-6, 2020.

**Sommer, S.** (2020). Serving the Grape & Wine Industry through Research. World Agriculture Expo, Tulare, CA, February 11-13, 2020.

**Sommer, S.,** Harbertson, J.F., Weber, F., Cohen, S.D. (2020). Polysaccharides in Wine Production: CMC & Mannoproteins. Laffort RENDEZ-VOUS, online April 21, 2020.

**Sun Q.** (2019). Impact of Deficit Irrigation and Mechanical Leafing on Yield and Berry/Wine Composition of Cabernet Sauvignon in the SJV. Agricultural Research Institute Annual PI meeting, Sacramento, CA, October 25, 2019.

Vazquez-Rosas, D.\*, Wilson J.\*, **Sun Q.** (2019). The Effects of Gypsum and Compost Applications on Soil Properties, Crop Yield and Grape Quality in Vineyard Soils on the West Side of the San Joaquin Valley. Agricultural Research Institute Annual PI meeting, Sacramento, CA, October 25, 2019.

**Sun Q.** (2019). Impact of Deficit Irrigation and Mechanical Leafing on Yield and Berry/Wine Composition of Cabernet Sauvignon in the SJV. 20<sup>th</sup> Annual Sustainable Winegrowing Field Day, July 26, 2019.

**Sun Q.** (2019). State and Trend of US Wine Industry, Sons In Retirement (SIRS)) #175 meeting, Fresno.

**Sun Q.** (2019). Impact of Deficit Irrigation and Mechanical Leafing on Yield and Berry/Wine Composition of Cabernet Sauvignon in the SJV. Grape, Nut and Tree Fruit Expo Fresno, November 19, 2019.

**Sun Q.** (2020). Impact of Deficit Irrigation and Mechanical Leafing on Yield and Berry/Wine Composition of Cabernet Sauvignon in the SJV. World Agriculture Expo, Tulare, CA., February 11-13, 2020.

Marinos A.\*, **Sun Q.** (2020). Investigating the Differences in Chemosensory Characteristics of Cabernet Sauvignon Grapes and Wines Between San Joaquin Valley and Other California Wine Regions. Oral presentation, World Agriculture Expo, Tulare, CA., February 11-13, 2020.

Singh K.\*, **Sun Q., Brillante L.** (2020). Physiological responses of grapevine to salt stress and remediation by CaSO<sub>4</sub> amendments in Central Valley of California. California Plant & Soil Conference.

**Conmy, W.A.,** Loyd, J.Q.\*, Davis, J.\*, **Van Zyl, S., Sommer, S.** (2019). Rot Estimation Dynamics in Gondolas. American Society for Horticultural Sciences Annual Conference, Las Vegas, NV. July 22 – 25, 2019, Supplement to HortScience Vol. 59(9).

Loyd, J.Q.\*, Davis, J.\*, **Conmy, W.A., Van Zyl, S., Sommer, S.** (2019). Influence of Bunch Rot on Fermentation Kinetics in Chardonnay and Petite Sirah. American Society for Horticultural Sciences Annual Conference, Las Vegas, NV. July 22 – 25, 2019, Supplement to HortScience Vol. 59(9).

Groves, L.\*, **Van Zyl, S.** (2020). Fresno State's unique table grape and raisin program. World Agriculture Expo, Tulare, CA, February 11-13, 2020.

Morales, G.\*, Loyd, J.Q.\*, **Conmy, W.A., Van Zyl, S., Sommer, S.** (2019). Calibration of microbial spoilage indicators via mycobiota levels in wine grapes. Agricultural Research Institute Annual PI meeting, Sacramento, CA, October 25, 2019.

**Van Zyl, S.** (2020). The potential of biostimulant usage in grape production. CAFES research seminar series California Polytechnic State University, San Luis Obispo, CA, February 28, 2020.

Morales, G.\*, Loyd, J.Q.\*, **Conmy, W.A., Van Zyl, S., Sommer, S.** (2020). Calibration of microbial spoilage indicators via mycobiota levels in wine grapes. 71<sup>st</sup> ASEV National Conference, planned for Portland, OR; online only. (Video presentation by G. Morales).

Loyd, J.Q.\*, Morales, G.\*, **Sommer, S., Van Zyl, S.** (2020). Influence of mycobiota on fermentation kinetics and sensory in white and red wine. 71<sup>st</sup> ASEV National Conference, planned for Portland, OR; online only. (Video presentation by J. Loyd).

### Publications (peer-reviewed and trade journals)

Yu, R., **Brillante, L.**, Martinez-Lusher, J., Kurtural, S.K. (2020). Spatial Variability of Soil and Plant Water Status and their Cascading Effects on Grapevine Physiology are linked to Berry and Wine Chemistry, Frontiers in Plant Science, 11, 790.

Bois, B., Pauthier, B., **Brillante, L.**, Mathieu, O., Leveque, J., Van Leeuwen, C., Castel, T., Richard, Y. (2020). Sensitivity of grapevine soil water balance to rainfall spatial variability at local scale level. Frontiers in Environmental Science, In press.

**Brillante, L.**, Kurtural, K. (2019). Piu' fenoli gestendo la chioma e con stress idrici controllati. Vite & Vino, 2019/12.

Cecotti, H., Rivera, A., Farhadloo, M., **Pedroza, M.A.** (2020). Grape detection with convolutional neural networks. Expert Systems with Applications, 159, 113588. doi:10.1016/j.eswa.2020.113588.

Zimdars, S., Schrage, L., **Sommer, S.**, Schieber, A., Weber, F. (2019). Influence of glutathione on yeast fermentation efficiency under copper stress. Journal of Agricultural and Food Chemistry **67**(39): 10913-10920.

**Sommer, S.** (2020). Monitoring the Functionality and Stress Response of Yeast Cells using Flow Cytometry. Microorganisms **8**: 619.

### Grants and funding proposals

**Brillante, L.** (2020). Estimating grapevine water status at the regional scale through remote sensing and  $\delta^{13}\text{C}$  analysis of grape musts. submitted to the Agricultural Research Institute (ARI), project duration 1 year, funding request \$10,000.

**Brillante, L.** (2020). ARI Campus Grant - Control of vine mealybugs in organic production (*Planococcus Ficus* Signoret). submitted to the Agricultural Research Institute (ARI), project duration 2 years, funding request \$191,036.

**Brillante, L.** (2020). Control of vine mealybugs in organic production (*Planococcus Ficus* Signoret). submitted to the American Vineyard Foundation (AVF) through Unified Grant Management for Viticulture and Enology, project duration 2 years, funding request \$56,000.

**Brillante, L.** (2020). Remote sensing assisted scouting of virus infections in vineyards. submitted to the Agricultural Research Institute (ARI), project duration 3 years, funding request \$299,000.

**Brillante, L.** (2020). Remote sensing assisted scouting of virus infections in vineyards. submitted to the USDA-CDFR Specialty Crop Block Grant. project duration 3 years, funding request \$278,000.

**Brillante, L.** (2020). Physiological responses of grapevine to salt stress and remediation by CaSO<sub>4</sub> amendments in Central Valley of California. submitted to the Agricultural Research Institute (ARI), project duration 2 years, funding request \$143,930.

**Brillante, L.** (2020). Ecophysiological characterization of vineyards through proximal and remote sensing of soil and canopies for site-specific irrigation management. submitted to the Agricultural Research Institute (ARI), project duration 2 years, funding request \$194,326.

**Brillante, L.** (2020). Decision Support and Remote Sensing Tools for Salinity Management and Crop Yield Sustainability under Saline Conditions. submitted to the Agricultural Research Institute (ARI), project duration 2 years, funding request \$28,000.

**Brillante, L.** (2020). Enhancing Subsurface Drainage Disposal and Sustainable Forage Productivity at the SJRIP Facility using State-of-the Art Remote Sensing Technologies. submitted to the 2020 Drainage Reuse Grant Program, project duration 2 years, funding request \$25,000.

**Brillante, L.** (2020). – Solar panel collocation and grape production in vineyards. submitted to the DOE – EERE Solar Energy Technologies Grant program, project duration 3 years, funding request \$225,000.

**Pedroza, M.** (2020). Techniques for Boosting Glycosidic Aroma Hydrolysis in white wines using New Commercial Yeasts. submitted to the Agricultural Research Institute (ARI), project duration 1 year, funding request \$36,770.

**Pedroza, M.** (2020). Techniques for Boosting Glycosidic Aroma Hydrolysis in white wines using New Commercial Yeasts. submitted to the American Vineyard Foundation (AVF) through Unified Grant Management for Viticulture and Enology, project duration 1 year, funding request \$46,337.

**Pedroza, M.** (2020). Bodily responses as a new parameter to estimate emotions evoked by wine aroma: practical applications. submitted to the Agricultural Research Institute (ARI), project duration 1 year, funding request \$10,000.

Licon Cano, C.C., **Pedroza, M.**, Dervishian, G., Pheasant, S.M. (2020). Characterization Of Food Volatiles By Stir Bar Sorptive Extraction (SBSE) Coupled With Gas Chromatography (GC) - Tandem Mass Spectrometry (MS). submitted to the National Institute of Food and Agriculture through the USDA, project duration 3 years, funding request \$484,189.

**Shrestha, A.,** Rana Dangi, S., Gao, S., and **Sommer, S.** (2020). Impact of winter cover crops on soil health, greenhouse gas emission, and wine quality in vineyards, submitted to the California Specialty Crops Block Grant Program, project duration 3 years, funding request \$380,681.

**Shrestha, A.,** Mitchell, J.P., and Fidelibus, M.W. (2020). Potential of the use of roller crimper technology in termination of cover crop in vineyards, submitted to the American Vineyard Foundation (AVF) through Unified Grant Management for Viticulture and Enology, project duration 2 years, funding request \$39,008.

**Sommer, S.** (2020). Design and Implementation of a Sustainable Wastewater Treatment and Recycling System for Wineries, submitted to the American Vineyard Foundation (AVF) through Unified Grant Management for Viticulture and Enology, project duration 2 years, funding request \$67,000.

**Sommer, S.** (2020). Design and Implementation of a Sustainable Wastewater Treatment and Recycling System for Wineries, submitted to the Agricultural Research Institute (ARI), project duration 2 years, funding request \$67,000.

**Sommer, S.** (2020). Implementation of a Sustainable Wastewater Treatment and Recycling System for the University Agricultural Laboratory, submitted to the National Institute of Food and Agriculture through the USDA, project duration 3 years, funding request \$486,600.

**Sun, Q.** (2020). The Effect of Aging on Phenolic Content in Cabernet Sauvignon Wines Made from Different Vine Canopy Treatments. submitted to the Agricultural Research Institute (ARI), project duration 1 year, funding requested \$10,000.

**Sun, Q.** (2020). Evaluation of the effects of single high-wire mechanical pruning system on Berry Composition and Wine Chemistry of four wine grape varieties in the San Joaquin Valley. submitted to the Agricultural Research Institute (ARI), project duration 3 year, funding requested \$90,000.

**Sun, Q.** (2020). Total phenolics and total anthocyanin of three different wine grape varieties in San Joaquin Valley (SJV). submitted to the University of California Cooperative Extension, project duration 1 year, funding requested \$3,000.

**Sun, Q.** (2020). Evaluation of Interactive Effects of Mechanical Leafing and Deficit Irrigation on Berry Composition and Wine Chemistry of *Vitis Vinifera* cv. Cabernet Sauvignon in the San Joaquin Valley. Submitted to the American Vineyard Foundation (AVF) through Unified Grant Management for Viticulture and Enology, project duration 2 years, funding requested \$20,000.

**Van Zyl, S.,** Person, E., Groves, L., Mehlman, M. (2020). The effects of foliar applied calcium carbonate in table grapes – from berry formation to post harvest storage, submitted to the Agricultural Research Institute (ARI), project duration 2 years, funding request \$40,000.

### Service contracts

**Van Zyl, S.** (2019). Fetzer Vineyards and Winery – Grape juice sample analysis. \$6,000.00 per year.

**Van Zyl, S.** (2019). Allied Grape Growers – Grape juice sample analysis. \$15,000.00 per year.

**Van Zyl, S.** (2019). Agajanian Vineyards – Grape juice sample analysis. \$3,000 per year.

**Van Zyl, S.,** Person, E., Groves, L., Mehlman, M. (2020). Oro Agri Inc. – Calcium Carbonate applications. \$5,000 per year for two years.

## Summary

written	# of proposals		Amount of funding		
	funded	pending	requested	received	pending
28	13	9	\$3,259,877	\$735,000	\$1,601,470

## Financial Statement

The following table summarizes the budget and expenses from the VERC Operating Fund (#34281).

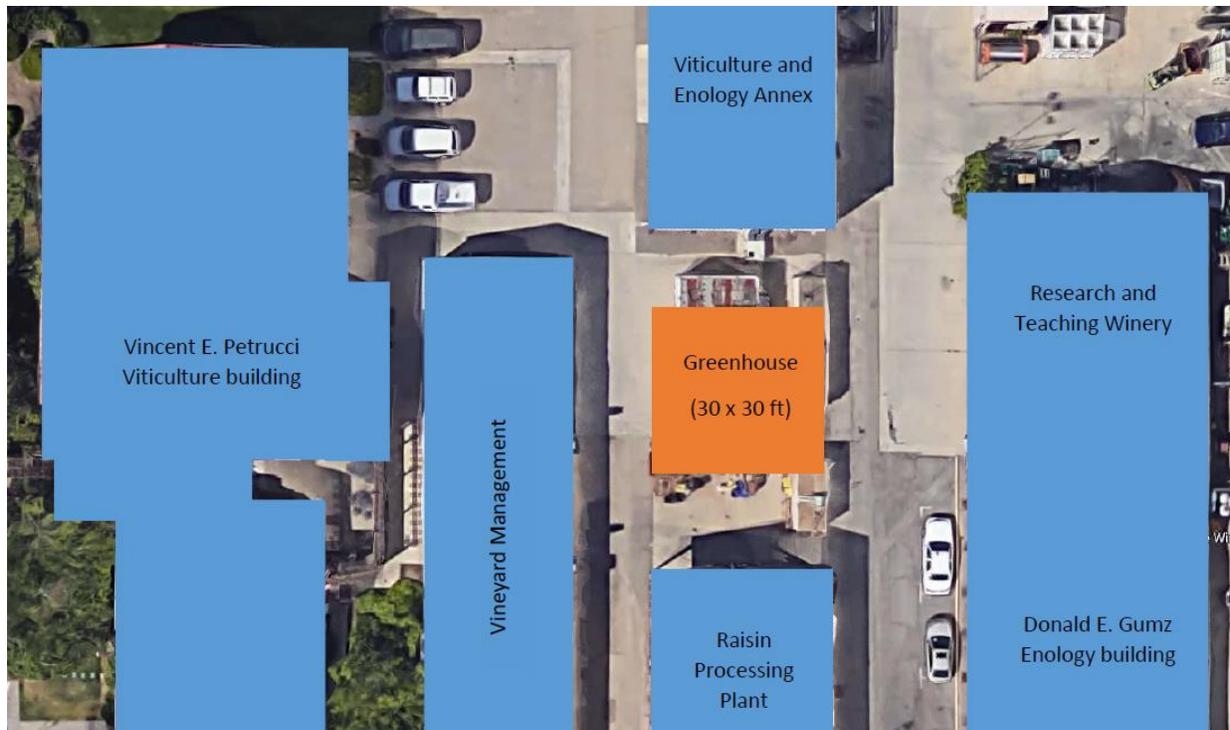
Fund Fdescr	Dept Fdescr	Account Fdescr	Current Budget	Actuals	Encumbrances	Balance Available	% Used Fiscal Year		
90000 - TF-CSU Operating Fund	34281 - Viticulture & Enology ReschCtr	601921 - Management & Supervisory Sals	127,200.00	123,600.00	0.00	3,600.00	97%		
		601931 - Regular Staff Salaries	153,760.00	102,239.35	0.00	51,520.65	66%		
		604812 - Cellular Telephones		1,870.00	0.00	(1,870.00)			
		604813 - Telephone Equipment Charges		419.16	0.00	(419.16)			
		604814 - Telephone Line Charges		726.60	0.00	(726.60)			
		619001 - Other Equipment			1,678.43	0.00	(1,678.43)		
		619802 - Cap-Equip/Furn>\$5000/item	(211,000.00)	(211,000.00)	0.00	0.00	100%		
		619803 - Cap-Inst Equip/Furn>\$5000/item			2,729.60	0.00	(2,729.60)		
		619804 - Cap-Comp Equip>\$5000/item			4,547.81	0.00	(4,547.81)		
		619806 - Equip/Furn<\$5,000/item			8,588.13	0.00	(8,588.13)		
		619807 - Computer Equip<\$5,000/item			5,580.94	0.00	(5,580.94)		
		660001 - Postage and Freight			93.73	0.00	(93.73)		
		660002 - Printing	(69.00)	4,394.46	0.00	(4,463.46)	(6,369%)		
		660003 - Supplies and Services	20,000.00	1,308.23	848.64	17,843.13	11%		
		660805 - Auto Repairs			1,848.25	0.00	(1,848.25)		
		660814 - Office Supplies			1,962.84	0.00	(1,962.84)		
		660815 - Plant Operation Services			15,585.61	0.00	(15,585.61)		
		660972 - Fuel/Gasoline Expense			588.57	0.00	(588.57)		
			34281 - Viticulture & Enology ReschCtr Total		89,891.00	66,761.71	848.64	22,280.65	75%
		90000 - TF-CSU Operating Fund Total			89,891.00	66,761.71	848.64	22,280.65	75%
Grand Total			89,891.00	66,761.71	848.64	22,280.65	75%		

The following table summarizes the third-party research funding for active projects in 2019/2020 (new funding with start date after June 30, 2020 is not included).

<b>VERC Current Activity of Grant Funding for 2019-2020</b>			
<b>Investigator</b>	<b>Project Title:</b>	<b>Agency/Industry Name</b>	<b>Amount</b>
<b>Brillante</b>	Grapevine Salts Stress	AVF	\$23,000
	Grapevine Water Status	ARI	\$10,000
	Daou Mountain Terrior	Daou Mountain Vineyards	\$23,030
	Organic Mealybug Control	AVF	\$55,905
	Virus Infected Grapes	CDFFA	\$154,584
	Physiological responses of grapevines	AVF	\$49,437
	Service Contract	Michael Wolf Vineyard	\$932
<b>Van Zyl</b>	Producing Red Wines	ARI	\$55,000
	Spoilage Effects in the Wine	California Winegrape Inspection Advisory Board	\$65,000
	Grape Juice Samples & Analysis	Fetzer Vineyards	\$6,000
	Sample Testing	Agajanian Vineyards & Wine Company	\$3,000
	Pierce Disease (ID & Durability of Novel Sources)	ARI	\$193,774
	Evaluation of OR-151	ARI	\$75,000
<b>Pedroza</b>	Emotions of Wine	ARI	\$30,000
<b>Sun</b>	Effect of gypsum compost	ARI	\$23,000
	Berry Composition & Wine Chemistry	The Wine Group	\$15,000
	Mechanical Leafing & Deficit Irrigation in Cabernet Sauvignon	UC Regents/AVF	\$3,000
<b>Gu</b>	Manda 31 Grapevine	Manda Fermentation Co, Ltd.	\$25,000
<b>TOTAL FUNDING 2019-2020</b>			<b>\$810,662</b>

## Space and Equipment Utilization

The Vincent E. Petrucci Viticulture building houses the majority of research space that is utilized by Viticulture and Enology faculty and staff. The building includes offices and laboratories, as well as a library collection as part of the Henry Madden Library and administrative offices. Every faculty member has a laboratory assignment to maintain an active research program and encourage undergraduate and graduate student research. Currently due to a very active research, the department chair Dr. Anil Shrestha, Enology faculty Dr. Miguel Pedroza, and the Bronco Chair for Viticulture Dr. Luca Brillante use additional laboratory space in the Jordan Agricultural Research Center provided by the college. Other buildings used by faculty and staff for research are the Donald E. Gumz Enology building, the Viticulture and Enology Annex, and the Raising Processing Plant. All building resources are utilized to maximum capacity at this point due to the fully staffed department and center. Renovation and expansion plans will create more usable research space in the future.



In an attempt to make the utilization of resources more transparent, VERC has created an equipment database that includes all the major pieces of analytical instrumentation. The database is now shared with the other Centers and laboratories within the Jordan College (Jordan Agricultural Research Center, Center for Irrigation Technology, Institute for Food and Agriculture, Graduate Laboratory) with the goal to include all the equipment that is currently owned by the College. The idea is that researchers will be able to see what resources are available, where the instrumentation is located, and who they can contact to request instrument time. This might lead to an improved attitude of sharing and encourage more collaborative research within the College and among all colleges that are involved in agricultural research.

Similar to the equipment sharing efforts, there will be a stronger emphasis on sharing laboratory space as well. While this is already common practice in most laboratories in VERC, an updated space policy (see Changes in Governing Policies) that is adapted from the space allocation policy of the College, will be implemented. The new policies and procedures handbook will be available to all faculty, staff, and industry partners in the Fall 2020.

The upcoming renovation and expansion projects mentioned above include the construction of a viticulture and enology greenhouse and the renovation of the research and teaching winery. The greenhouse project was started years ago by the Fresno State Viticulture Club who raised a large portion of the budget. The College and a private donor are contributing to the final budget as well, which led to the creation of a project plan and involvement of a building company in Spring 2020. The project is currently in the planning stages and drawings should be finalized in the next few weeks. The goal is to be under construction later in the fiscal year 2020/2021. The size of the greenhouse was originally planned to be 1200 square feet but was reduced to 900 square feet due to traffic and accessibility restrictions.

The second large project, the research and teaching winery, was made possible by a generous gift of Donald E. Gumz after whom the Enology building was named in Spring 2020. The project is currently in the planning stages by a group of architects. Fire marshal's approval is still pending as well as the removal of asbestos and lead paint from the area. Construction is scheduled to begin in 2021 if the process is not further delayed by COVID-19.

Both building will increase the available research and teaching space for faculty, staff, and students, and further the mission of the viticulture and enology programs.

## Industry Advisory Board

### Members and General Information

The viticulture and enology industry advisory board (IAB) is a joint board for the academic department and the research center. Most of the members have been on the board for several years and there are no personnel changes to report for the last fiscal year.

Prefix	First Name	Last Name	Position	Company	Street Address	City	State	Zip Code
Mr.	Dwayne	Cardoza	Chairman	Raisin Bargaining Association	1258 W. Manning Ave	Fresno	CA	93706
Mr.	Jim	Coleman	CEO	E.&J. Gallo Winery	600 Yosemite Blvd	Modesto	CA	95354
Mr.	John	Crossland	Owner	Crossland Vineyards			CA	
Mr.	Jerry	DiBuduo	President	DiBuduo Land Management Co., Inc.	2555 W. Bluff Ave, #157	Fresno	CA	93711
Mr.	Nat	DiBuduo		Independent Consultant			CA	
Ms.	Cathy	Ference		Constellation Brands			CA	
Mr.	Matt	Frank	Viticulturist	Trincher Family Estates	100 St. Helen HWY, P.O. Box 298	St. Helena	CA	
Mr.	Fred	Franzia	CEO	Bronco Wine Co.	6342 Bystrum Rd	Ceres	CA	95307
Mr.	Keith	Horn				Napa	CA	
Mr.	Wayne	Kirschenman	President	Kirschenman Enterprises, Inc.	12826 Edison Hwy	Edison	CA	93220
Ms.	Dianne	Nury	President	Vie-Del Company	11903 S Chestnut Ave	Fresno	CA	93725
Mr.	Rick	Stark	Grower Relations	Sun Maid	13525 S Bethel Ave	Kingsburg	CA	93631
Mr.	Brian	Vos	CEO	The Wine Group	2916 S Reed Ave	Sanger	CA	93657

Last Name	Email	Business Phone	Cell Phone	Industry	Position on Advisory Board	Term begin	Term end	# of terms served
Cardoza	<a href="mailto:dwayne.cardoza@gmail.com">dwayne.cardoza@gmail.com</a>		(559) 269-7831	Raisins	Member	3/22/2019	6/30/2020	1
Coleman	<a href="mailto:james.coleman@ejgallo.com">james.coleman@ejgallo.com</a>			Wine	Chairman	7/1/2016	6/30/2020	6
Crossland	<a href="mailto:jcrossland@vineyardpro.com">jcrossland@vineyardpro.com</a>	(805)550-1564		Wine Grapes	Member	7/1/2016	6/30/2020	2
DiBuduo	<a href="mailto:jdibuduo@dlmco.com">jdibuduo@dlmco.com</a>			Table Grapes	Member	7/1/2017	6/30/2021	2
DiBuduo	<a href="mailto:nat.dars@gmail.com">nat.dars@gmail.com</a>			Wine Grapes	Member	7/1/2016	6/30/2020	6
Ference	<a href="mailto:cathy.ference@cbrands.com">cathy.ference@cbrands.com</a>		(707) 484-8798	Wine	Member	7/1/2018	6/30/2022	3
Frank	<a href="mailto:mfrank@tfwines.com">mfrank@tfwines.com</a>		(916) 919-5266	Wine Grapes	Member	3/22/2019	6/30/2020	1
Franzia	<a href="mailto:fredtfranzia@bruncowines.com">fredtfranzia@bruncowines.com</a>			Wine	Member	7/1/2016	6/30/2020	5
Horn	<a href="mailto:horn4@comcast.net">horn4@comcast.net</a>	(707) 974-3800		Wine	Member	7/1/2017	6/30/2021	2
Kirschenman	<a href="mailto:wkirschenman@keiproduce.com">wkirschenman@keiproduce.com</a>			Table Grapes	Member	7/1/2017	6/30/2021	2
Nury	<a href="mailto:dnury@vie-del.com">dnury@vie-del.com</a>	(559) 834-2525		Wine	Vice Chair	7/1/2018	6/30/2022	6
Stark	<a href="mailto:rstark@sunmaid.com">rstark@sunmaid.com</a>			Raisins	Member	7/1/2016	6/30/2020	4
Vos	<a href="mailto:brian.vos@thewinegroup.com">brian.vos@thewinegroup.com</a>			Wine	Member	7/1/2017	6/30/2021	4

### Meeting Agendas

Meeting agenda on October 17, 2019

1.	Call to Order	J. Coleman	5 minutes
2.	Approval of Agenda	All	5 minutes
3.	Approval of Minutes	All	5 minutes
4.	Introduction new VERC technician W. Conmy	S. Sommer	5 minutes
5.	VERC Research Advisory Committees	S. Sommer	30 minutes
6.	College Update	D. Nef	15 minutes
7.	Department Annual Report	A. Shrestha	20 minutes
8.	Research Center Annual Report	S. Sommer	20 minutes
9.	Items form the floor		15 minutes
10.	Adjournment		
			120 minutes total

Meeting agenda on January 16, 2020

1.	Call to Order	J. Coleman	5 minutes
2.	Approval of Agenda	All	5 minutes
3.	Approval of Minutes	All	5 minutes
4.	Vineyard Planting Update	M. Salwasser	15 minutes
5.	VERC Research Advisory Committees	S. Sommer	20 minutes
6.	Bylaws update	N. DiBuduo, D. Nury	15 minutes
7.	Department Update	A. Shrestha	20 minutes
8.	Events planned in 2020	S. Sommer	20 minutes
9.	Items from the floor		15 minutes
10.	Adjournment		
			120 minutes total

The meeting on April 16, 2020 was cancelled due to COVID-19 travel and meeting restrictions.

### IAB Updates

The update of the board bylaws has been on the agenda in the past few years and, under the leadership of Dianne Nury and Nat DiBuduo, a new draft was created. The changes include the annual meeting schedule, sub-committees, and reporting responsibilities of the board as well as V&E leadership. The bylaws update is scheduled for discussion and vote as soon as a regular meeting schedule resumes after COVID-19.

Prior to the October 2019 meeting (see agenda), the chairman of the IAB suggested to reestablish the research advisory committees (RAC) that were part of the board’s support structure for research and education in the past. The RAC members help and encourage especially young faculty to engage with industry and identify areas of applied research. Two previous IAB members were selected to recruit industry representatives in addition to the existing board that would strengthen and broaden the scope of research. Hal Huffsmith and Dr. Nick Dokoozlian prepared the following summary of responsibilities that was presented to the IAB and approved in the January 2020 meeting:

The committees will serve in an advisory capacity to VERC and are charged with the following:

- Identification of key research opportunities in both viticulture and enology
- Liaison with other members of the industry to facilitate research collaboration, in kind support and funding opportunities
- Prioritization of research objectives and projects
- Review of project proposals and providing input to research scientists
- Other tasks as defined by Director and agreed upon by the committee members

Two committees will be formed – one focusing on viticulture and the other on enology - and be governed as follows (adopted from the previous committee charge):

- Each committee consists of 3 to 5 members; one member will be elected Chair

- The viticulture committee shall include industry members from the table, raisin and wine grape sectors of the industry
- The membership term will be 3-years, with one optional renewal for an additional 3 year term
- The committees will meet 2 to 3 times per year, and coincide appropriately with the research and academic calendars

The regional focus of the committees is the Central Valley – Lodi to Bakersfield

At present the committees will focus on research; committee scope could be expanded at the request of the VERC Director and V&E Department Chair

Hal Huffsmith and Nick Dokoozlian have both offered to serve on the committees as needed or otherwise. Initially, Hal will assist with the formation of the viticulture committee and Nick will focus on the enology committee.

The RAC recruiting process is currently underway and will be finalized by the industry advisory board as soon as the regular meeting schedule resumes.

## Changes in Governing Policies

As outlined in the annual report 2019/2020, updates and changes of policies and procedures were on hold between 2015 and 2019. In an effort to update the old policies, a handbook was drafted that is currently under final review by the Viticulture and Enology administration. Following here is the table of contents of the handbook, specific important changes of former policies are discussed below.

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**Building naming and signs:** Two buildings have been renamed in the past fiscal year. The former MIVAC building is now named the Viticulture & Enology Annex. It is classified as a research and teaching space and is used as a pilot plant winery while the actual pilot plant is under construction. The second new name is the Donald E. Gumz Enology building, a part of the old Enology building that was named in honor and memory of Mr. Gumz. The building will house the new research and teaching winery as well as the main teaching lab. Signage for all these changes and existing structures is in planning.

**Laboratory usage policy:** The primary use of laboratory equipment within the Viticulture and Enology Research Center depends on the funds that were used to purchase the equipment. Sharing equipment is at the discretion of each researcher if equipment is used project specific or the VERC director if equipment was purchased with general funds. Each researcher in viticulture and enology may receive a laboratory space allocation as long as an active research program is maintained. In accordance with the overall College policy on laboratory space, these assignments can be reviewed annually. Supplies and replacement parts for shared equipment are the responsibility of the researcher using it.

**Building and key card access:** Access doors to laboratories as well as the lab entrance door to the V.E. Petrucci Viticulture building were converted to keycard access. Other connecting doors, the graduate student office, and the entrance doors to the V.&E. Annex are scheduled for replacement as well. The goal is to have better control over shared areas where students need access. Providing and taking entrance privileges away is much easier and more transparent this way. Other doors are scheduled to be re-keyed to limit the number of metal keys that need to be in circulation.

**VERC vehicles:** A new vehicle booking system has been established that uses a Google calendar instead of a physical paper copy. Vehicle key access as well as the vehicle logs were also modified to make the system more user friendly. The Dodge van can no longer be taken into the field or vineyard, this car is for person transport on paved roads only. The Ford Excursion and the Ford F250 are designated field vehicles. The system for fuel charge-backs has been made more transparent as well by sharing the process details with faculty when their project accounts are charged.

**Conference room:** The conference room in the V.E. Petrucci Viticulture building is currently under construction. Phases I and II out of three are completed which makes the conference room fully functional as of June 2020. It was not entirely usable or open for reservations for an extended period of time last fiscal year. The usage and reservation policy will be modified before meetings and conferences are allowed on campus again.

## 2020-21 Goals and Objectives

The goals and objectives will partially carry forward from the past fiscal year because of the COVID19 pandemic and the resulting restrictions on campus operation. Some of the expectations, especially in the areas of hiring and construction needed to be revised and readjusted. The budget situation within the CSU system put additional pressure on campus processes and lowered the probability of making significant progress.

The goals I., II., and V. that were only partially achieved in the past year carry forward into 2020-2021 with the expectation to close at least one of them. Two new goals are added (new goals III. and V.).

- I. Hire a permanent laboratory and research technician stateside to support faculty research programs and research winemaking in VERC.
- II. Renovate and expand research space with priority set on a greenhouse and the research winery.
- III. Address accessibility, wayfinding, and compliance in all laboratories and buildings associated with Viticulture and Enology
- IV. Elaborate on existing assistantship and scholarship opportunities to increase accessibility and establish new opportunities for graduate student research.
- V. Reorganize laboratory and equipment allocation to further align VERC with policies and procedures in JCAST.