

**RAMAIAH COLLEGE OF ARTS, SCIENCE & COMMERCE**  
**MSR Nagar, Bengaluru – 560 054**  
**DEPARTMENT OF BIOTECHNOLOGY & GENETICS**

**INDUSTRIAL VISIT REPORT**  
**JULY 2023**

The Department of Biotechnology & Genetics and Department of Microbiology jointly organized one day Industrial Visit to Domaine SULA, Ramnagar and KMF, Mandya for VI sem B.Sc Students on 5<sup>th</sup> July 2023. The total number of students was 143 accompanied by four faculties, Dr. Vinutha M., Dr. Pavithra Kumari, Dr. Yogish and Dr. Ramesh. The visit was a part of the course under Industrial Biotechnology and Industrial Microbiology as per the syllabi of the Bengaluru City University. The visit was organized to enhance the knowledge, to understand the working mechanism and to give insight of the internal working environment in the industry. It enhances the student knowledge on practical aspects of the course and improves and strengthens the practical skills in fermentation technology.

Mr. Rajeev Samant, a committed environmentalist established Sula Vineyards in 1999, in Nashik, Maharashtra and later in Ramnagar, Karnataka. He started Sula Vineyards with the goal of making quality wine in India, with the help of an eminent California winemaker, Kerry Damskey. At Sula all the processes are guided by sustainability and protecting the environment. Sula has the core values which aim at preserving and enhancing the art of winemaking. This paved the way for the emergence of India's Wine Capital and today Domaine Sula is the India's leading wine company, spearheading the charge of Indian wine across the world.

Wine production is thought of originated in the Northern Zagros Mountains of Iran around 4000 BCE. Wine production and consumption has been found to be originated in the 15th century and is thought of originated in the Northern Zagros Mountains of Iran. The process of production of wine has flourished, and contemporary science and technology have enhanced the industrial and global wine production. Depending on the alcohol content, wine is made from fruits such as berries, apples,



grapes, cherries, palm, and rice that are partially or totally fermented. *Vitis labrusca* and *Vitis vinifera* are the most common species of grape used in winemaking as they have all the necessary elements, including pulp, juice, and seeds that include important acids, sugars, minerals, tannins, and vitamins. Viticulture is a discipline of horticulture that cultivates and harvests wine grapes, whereas enologists research the winemaking and breeding processes, as well as fermentation.

The fruits generally must have a high concentration of fermentable carbohydrates. Typically, grapes contain 5-25% of total soluble sugar. The different steps involved in wine making involve harvesting of fruits which includes assortment of fruits and berries. The next step is crushing which involves mechanical crushing and extraction. This technique produces juice and a small amount of colour. The obtained entire mass is referred to as Must. For white wine the harvested fruit is de-steamed and the skin of the grapes is removed. The must is optimised for the TSS and pH values. TSS is typically tuned between 17 and 22%, and pH between 3 and 4, depending on yeast strains is adjusted. In Primary fermentation the optimised Must is inoculated with 2% to 10% inoculum and fermented at the optimal temperature. For red wine red wine the temperature is adjusted to 22-27°C for 3-5 days and for white wine preparation the temperature is adjusted to 10 to 21<sup>0</sup> C for 7 to 14 days. Primary fermentation allows for the rapid expansion of yeast cells as well as the conversion of sugar to ethanol. During this process the TSS will reduce to between 9 and 10 percent.

The secondary fermentation is carried out in stainless steel or oak barrels. During the secondary fermentation, aromas are produced. It takes almost a year for secondary fermentation to occur.

Malolactic fermentation precedes secondary fermentation. The stabilised, sanitised wine is now stored at 15-20°C for 3 to 6 months under strict anaerobic conditions. Typically, the fermentation of sweet wines is ended when the sugar concentration falls to 4-6%. Further laboratory testing, Blending and fining, preservation and bottling of wine is carried out. Depending on the type of grape, yeast strain, fermentation process, etc., there are different varieties of wines. Some of the notable wine varieties are Red wines, Dry wines, Sweet wines, Sparkling wines, Still wines and Fortified wines.



III year B.Sc (C/MB/BT/G) students at Sula Winery Pvt. Ltd, Ramnagar.



Resource person explaining the process of fermentation



Barrels for Fermentation Process



Bottling Section at SULA Winery Pvt. Ltd.



**Department of Biotechnology and Genetics, MSRCASC**  
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