

Research and Development for Commercial Applications

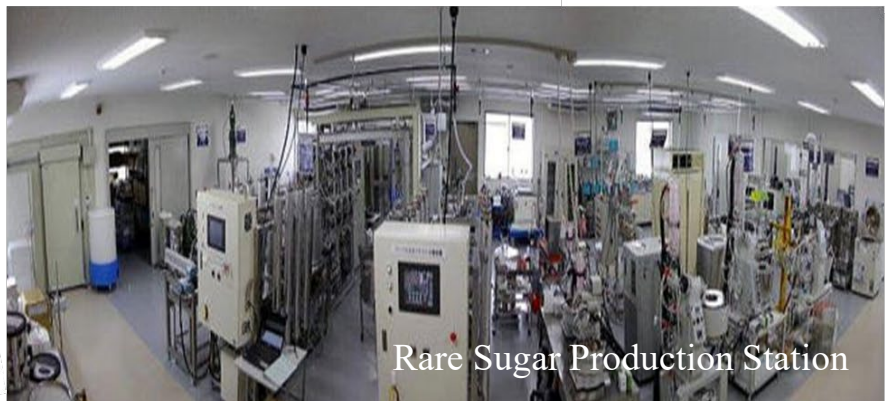
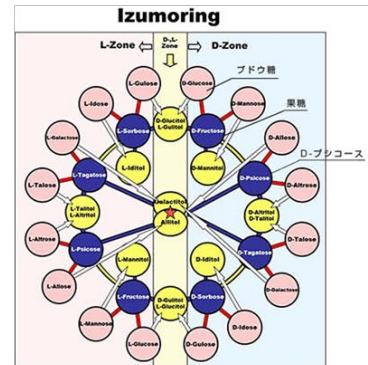
2022

The outcomes of research and development for a practical cultivar, a processing product, and a new technology by Faculty of Agriculture, Kagawa University, are utilized widely in local industry and society.



Rare Sugar R & D for Commercial Applications

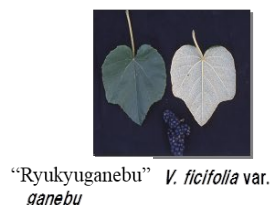
Prof. Emeritus Ken Izumori and collaborators had examined many microbial enzymes since the middle of 1970's. Their discovery of the unique enzyme, D-tagatose 3-epimerase, made it possible to produce rare sugar D-allulose by conversion of D-fructose. Izumoring, a blueprint design of rare sugar production, describes enzymatic reactions to produce aldose, ketose, and sugar alcohol. Discoveries of physiological functions of rare sugars to microbes, plants, animals, insects, human, etc., are directly connected to application developments for economic and societal benefits in a global community.



Monument for "Birthplace of Rare Sugar Studies" was erected at where rare sugar-related microbe was discovered (in the campus of Faculty of Agriculture).

Wine-Brewing by Breeding of New Variety “Kadaino R-1”

When temperature exceeds 25 degrees Celsius, the anthocyanin accumulation in rind of a fruit is inhibited in major grape cultivar such as “Kyoho”. Wild variety “Ryukyuganebu” distributes over subtropical Amami Islands and Ryukyu Islands, has a dark color of the rind of a fruit even under a high temperature. The new varieties were crossbred with this “Ryukyuganebu” and “Muscat of Alexandria”, and “Kadaino R-1” accumulating a high anthocyanin even under high temperature was selected and introduced for brewing of wine with a superior polyphenol content and manufactured as the Kagawa University brand wine.



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Combination of Crossbreeding



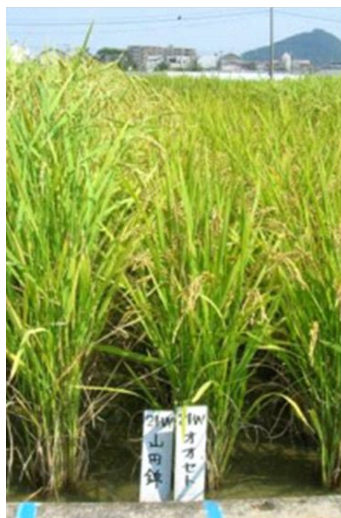
“Kadaino R-1”



Kagawa University
Brand Wine

The First Prefecture-originated Rice for Sake-Brewing: “Sanukiyoimai”

In 1995, breeding program of rice varieties suitable for Sake brewing in Kagawa was started by requests of the Kagawa brewer cooperation. Crossbreeding of "Ohtose" and "Yamada-Nishiki" was continued for ten years, and finally the team of Kagawa University, Kagawa Prefecture, and Kagawa brewing cooperative selected and registered “Sanukiyoimai” in 2006, "Sanukiyoimai" shows excellent characters such as a large grain, few protein contents, and a high yield. All Sake-brewing makers in Kagawa prefecture use “Sanukiyoimai” now.



“Yamada-Nishiki”
“Sanukiyoimai”
“Ohtose”



Kagawa University, Faculty of Agriculture, and Kagawa Agricultural Experimental Station started a joint breeding program in 2006. After 8 years of Kiwifruit breeding with wild variety “Shima Sarunashi” originated in Japan, the breeding program brought 5 cultivars with superior characters which are easy to grow and their fruits are a half size compering with those of regular Kiwifruit cultivars and have high sugar content with 17-18%. These cultivars were named as “Sanuki Kiwicco®” as the brand name and commercialized on January 2014 mainly in fruit shops carrying high grade fruits in major department stores in Tokyo, Osaka, and Kagawa prefecture.



Fruits package of “Sanuki Kiwicco”



Natural view of fruits on the tree



Content analysis

Olive product: olive leaf extract for health-oriented food products

Olive cultivation and development of olive-related products are the regional peculiarity of Kagawa prefecture. Olive leaf extract powder containing rich polyphenolic compounds is added to multiple food products for contributing a development of health-oriented foods with functions such as an antioxidative property.



Olive in Shodo island



Bread with olive extracts (Left and right)



Olive leaf extract powder



Pasta with olive extracts