

Integrated use of ozonized water for a better management of sulphites in winery

Riferimenti

Tipo di progetto

Gruppo Operativo

Acronimo

OZOPLUSWINE

Tematica

Difesa da malattie e infestazioni

Information

Time frame

2019 - 2021

Durata

24 months

Partners (no.)

6

Regione

Veneto

Comparto

Viticultura

Localizzazione

ITH34 - Treviso

ITH35 - Venezia

ITH36 - Padova

Costo totale

€218.999,97

Fonte di finanziamento principale

Programma di sviluppo rurale

Programma di sviluppo rurale

2014IT06RDRP014: Italy - Rural Development

Programme (Regional) - Veneto

Parole chiave

Fertilisation and nutrients management

Farming equipment and machinery

Food quality / processing and nutrition

Sito web

<https://www.prosecco.wine/it/news/progetto-ozo-plus-wine>

Project status

completed

Objectives

The modern wine consumer is more and more focused on health aspects and rewards genuine products. Therefore reducing the use of harmful chemicals both in vineyard and cellar is one of the main target of the research. With a totally innovative approach, the project will introduce yeast strains, belonging to the *Starmerella bacillaris* species into the vineyard. These yeasts has antifungal activity (against the grey mould rot) and, once they reach the cellar on grape surfaces, they start alcoholic fermentation improve the quality of the wine without requiring the sulfite addition.

Activities

During grape ripening the vineyards will be treated with increasing concentrations of *Starmerella bacillaris*. In some cases, before yeast addition the vineyard will be treated with with ozonized water to improve the colonization performance of *Starmerella*. The diffusion of the gray mold rot on the grape cluster will be assessed comparing untreated control. The grapes will be harvested and processed. In the vineyard and during the fermentation process, the presence of *Starmerella* will be quantified by microbiological and molecular analyzes. The wine quality will be assessed.

Context

Sulfur dioxide and sulphites in general are among the most common environmental pollutants and preservatives used in the food industry. The negative effects of sulphites on human health have been extensively documented. In cellar, sulphites are added to the must before starting alcoholic fermentation and at the end of fermentation to block the activity of harmful microorganisms and to protect wine from oxidation. In the first case it is important to add sulfur dioxide as soon as possible, in order to avoid the development of spoilage yeasts present on the grape bunch which can attribute unpleasant organoleptic characters to the wine. Many less toxic molecules have been tested with the aim of replacing sulphites during finification, but to date no equally effective solution has been obtained.

In the industrial winemaking, the pathogenic microorganisms responsible for the deterioration of the fruit must be avoided to reach high grape quality. This is accomplished through the use of pesticides. These molecules are toxic to humans both through inhalation and through the consumption of wine. They are able to alter the soil ecosystem and contaminate water springs. Therefore their use should be reduced, if not avoided. A harmless and sustainable alternative to pesticides is represented by the use of antagonistic microorganisms, the bio-control agents, which are able to compete with pathogens and therefore to defeat them. The yeasts used in the project as bio-control agents have been isolated by the Research Group of the University of Padua from grape bunches collected in vineyards in the Veneto region and therefore are part of the microbial community that characterizes local wine production.

Applicazione integrata di acqua ozonizzata per una migliore gestione dei solfiti in cantina

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<https://www.innovarurale.it/pei-agri/gruppi-operativi/bancadati-go-pei/applicazione-integrata-di-acqua-ozonizzata-una-migliore>

Partenariato

Role	Azienda	Address	Telephone	E-mail
Leader	Cantine Viticoltori Veneto Orientale Soc Coop Agricola	Via Arzeri, 2 Fraz Campodipietra 31040 Salgareda TV Italy	0422 744018	info@vivocantine.it
Partner	CIRVE - Centro Interdipartimentale per la Ricerca in Viticoltura ed Enologia - Università degli Studi di Padova	Via XXVIII Aprile 14 31015 Conegliano TV Italy	0438 450475	segreteria.conegliano@unipd.it
Partner	CREA-VIT - Centro di ricerca per la viticoltura ed enologia di Conegliano	Via XXVIII Aprile, 26 31015 Conegliano TV Italy	0438 456711	ve@crea.gov.it
Partner	Consorzio di tutela della denominazione di Origine Prosecco	Via Filodrammatici, 3 31100 Treviso TV Italy	0422 1572383	ricerca@consorzioprosecco.it
Partner	Consorzio Tutela Doc Delle Venezie	Via Pallone, 20 37121 Verona VR Italy	348 2564071	info@dellevenezie.it
Partner	INOXGAN ITALIA SRL	Via Dell'Artigianato, 39 31050 Zenson di Piave TV Italy	0421 344690	info@inoxgan.com

Pratiche abstract

Description

Protocol for recovering microbial cells from the surface of grape bunches and must and procedure for extracting microbial DNA

The main objective of the project is to evaluate the effectiveness of the yeast *Starmerella bacillaris* as a biocontrol agent in the vineyard and, when the grapes treated with the microorganism are processed in cellar, as co-starter in winemaking. To exhibit its activity, this yeast must colonize the surface of the grapes and consequently the must. Therefore, identification systems that allow to quantify the microorganism both in vineyard and in cellar must be available. These methods are based on the analysis of DNA form the microrganisms present on the surface of the grape and in the must. These matrices are complex and rich in substances (polyphenols, sugars, organic acids) which inhibit the enzymatic activities used in the

identification analyzes. For this reason during the first part of the project existing DNA extraction protocols were adapted to analyze these plant matrices by comparing different methods and commercial KITS. In addition, various washing procedures of the grape bunch were tested in order to develop the procedure that allows to collect the highest number of microbial cells.

Description

Molecular protocol for identification and quantification of *Starmerella bacillaris*

In order to quantify *Starmerella bacillaris* in vineyards and in must and to evaluate its impact on the microbial community of the grape bunch and on the presence of the gray mold rot (*Botrytis cinerea*), a molecular identification protocol has been developed. Since the genomic sequence of the yeast strain was previously determined by the Research Team (University of Padova), a unique DNA region, only present in the tested strain of *S. bacillaris*, have been identified. These DNA region, if amplified, allows the unambiguous strain identification. Through the use of quantitative PCR, the number of copies of the specific sequence present in the sample can be determined, allowing to calculate yeast concentration.

Link utili

Titolo/Descrizione	Url	Tipologia
Sito web del progetto	https://www.prosecco.wine/it/news/progetto-ozoplus-wine	Sito web
Article - Enolo - Ozoned water in the vineyard in the name of sustainability!	https://www.enolo.it/acqua-ozonizzata-in-vigna-innome- della- sostenibilita/	Materiali utili
Article - ValdoTV - The results of the Ozoplus Grape and Ozoplus Wine Projects were presented	https://www.valdotv.com/2021/11/22/presentati-irisultati- dei- progetti-ozoplus-...	Materiali utili
Consorzio delle Venezie DOC	https://dellevenezie.it/ozowine-primi- importanti-risultati/	Link ad altri siti che ospitano informazioni del progetto