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ESPECIALLY OF PREPARATION NATURAL ALCOHOL-CONTAINING BEVERAGES

ОСОБЛИВОСТІ ПРИГОТУВАННЯ НАТУРАЛЬНИХ АЛКОГОЛЬНИХ НАПОЇВ

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The article describes the technology of production of natural fruit alcoholic beverages are present. Systematized and concentrated material for the preparation of raw materials for processing. The conditions for obtaining a quality drink are described in detail. The current requirements for the quality of wines have been introduced. The conditions for storage of finished products are specified.

Key words: *fruits, processing, wine, quality.*

Each owner racks his brains in autumn what to do with apples, pears and other fruits that have grown in the garden. Perhaps the most correct solution, along with the preparation of sulfated puree, jam, preserves, confiture and dried products would be to send some of the raw materials to juice, cider and of course, natural wine [2, 3, 4].

Alcoholic beverages (wines, liqueurs, calvados) from fruit raw materials are widespread in different countries. In Greece in the 10th century BC, medicinal drinks were prepared, adding fruits, berries, aromatic and medicinal plants to grape wines. Ancient recipes still find their place in industry today. Natural fruit wine can festively complement various food products: meat, fish, vegetables, cheeses, fruits, confectionery. As all flavoring products are consumed in limited quantities with various dishes with meals or as an aperitif [3].

Natural fruit wine contains a large amount of valuable nutrients (over 300). In many cases, it can serve as a medicinal product. It is known that natural wine strengthens weakened heart muscle, helps with atherosclerosis, has radioprotective properties, and removes heavy metals from the body. Sparkling wines are

recommended for use in cases of tuberculosis, but at the same time, one should not consume a lot of wine or wine drinks for diseases of the liver, kidneys, stomach ulcers and other acute diseases [4, 7].

The first thing I would like to draw your attention to is the preparation of wine is a lot of work, and preparation for the process is an even more sensitive issue. Any wine is a product of fermentation of fruit or berry juice with wine yeast. Wine yeast requires simple sugars to function effectively. So in the fruits of apple trees of early varieties, they can accumulate up to 6-8%, late - up to 10-12% (in the forest-steppe zone) and up to 13-15% (in the southern regions). For processing, you can take any fruits in the technical stage of maturity, that is not overripe (the presence of which increases the viscosity and the amount of sediment), the varietal cut is not important, but it is advisable to take fruits with moderate acidity (0,7-0,8%), otherwise the drink it will turn out to be pronounced sour or flat in taste. It is known from the practice of winemaking that each percentage of sugar, theoretically, under ideal conditions can give 0,5-0,6 alcohol by volume. Thus if theoretically the fruits of apple trees of late ripening contain up to 10% sugar, then as a result of fermentation, only 5-6 alcohol by volume is formed and this is enough to make a dry cider. For the making of table wine with an 8-12% alcohol by volume and more, it is advisable to add another 10% sugar to the apple wort by adding granulated sugar about 100 g per 1 liter which will contribute to the formation of up to 10-12% alcohol by volume. If you plan more alcohol, then the amount of sugar is increased to 150 g per liter. Naturally obtained ethyl alcohol is a good preservative for natural wine. It should be borne in mind that there are not enough preserving units in dry table wine materials [1, 4, 8].

Preparation of raw materials consists in inspection - selection of overripe and green fruits, washing contaminated ones and grinding. The optimal size of the pieces is 0,5-1,0 cm in length, and 0,2-0,4 cm in thickness, juice is squeezed out of the resulting pulp. The pulp is pressed slowly, gradually increasing the pressure, while it is advisable to loosen it 2-3 times to increase the juice yield. From 1 kg of fruit, 0,5-0,7 liters of cloudy juice can be obtained (the juice yield depends on the degree of maturity, the physiological state of the fruit, varietal characteristics, and weather conditions of growing). The resulting juice settles for 7-20 hours in a cool place, and then decanted from the sediment, while it is necessary to filter the juice through a cloth or gauze folded in several layers. It is advisable to carry out pasteurization when the fruit is heavily contaminated or damaged by rot. Granulated sugar is added to the clarified juice, if possible, ammonium nitrate (0,1-0,3 g / l) and poured into fermentation tanks 3-, 10- or 20-liter bottles for fermentation, filling them by 3/4 of their volume. The thick that remained is re-settled, and the remaining juice is decanted [1, 5, 7, 9].

The resulting wort (juice and sugar), due to the rapid multiplication of various microorganisms present on the fruits, turns sugar into alcohol, carbon dioxide and other related compounds. The optimum temperature for fermentation is 16-21 ° C. The temperature of the wort itself in the middle of the container can rise by 8-10 ° C. To isolate the wort from the outside air, but allow the carbon dioxide that forms to escape freely, the vessel is closed with a water seal (in practice, you can use a rubber glove with small holes).

Self-fermentation occurs on days 2-3, after 5-7 days intensive fermentation occurs during which due to intense heating, the wort can overheat and the quality of the future drink deteriorate (the freshness of the aroma is lost and bitterness appears). Therefore, at temperatures above 25-27 ° C, it is necessary to cool the wort by covering the container with a wet cloth, or transfer it to a cool room. It is important to know that carbon dioxide in high concentrations is dangerous to humans, therefore if the room is small and there is a lot of wine, certain measures should be taken, the easiest way is to ventilate or open the doors of the room [1].

Intensive fermentation lasts 5-10 days, then a period of slow fermentation and additional fermentation begins, but this period depends on the dynamics of the wort temperature. At this time, it is advisable to top up the containers by 90-95 %. Slow fermentation contributes to the formation of a quality wine. At the end of fermentation, a sediment forms at the bottom, and the wort is clarified. Thus, after 2-4 weeks, the young wine is ready and must be decanted (removed from the sediment) and transferred to a cool room, in which there are no extraneous odors. The finished drink is stored in full glass containers, it is advisable to pour the wine several times to speed up its maturation (table).

For the preparation of fortified wines with an alcohol content of 16,0% vol. and more alcohol is added, preferably with rectified food alcohol (96,6% vol.). Requirements for dry natural wines (table).

The wine is stored in a dry cool room at a temperature not exceeding 10-15 ° C. If it is bottled, they are placed in a horizontal position, but it should be noted that in oak barrels, the wine matures much faster, forming a delicious bouquet. During storage, natural cold treatment from -1 to -5 ° C has a positive effect on the quality and stability of young wine. 3 months after the end of fermentation, the wine is ready for consumption [1, 8, 9].

The formation of the characteristic features of the wine (type) can last from 2 to 5 months, while strong wine materials self-clarify and are released from carbon dioxide. As soon as the wine reaches maximum transparency, the stage of its formation is completed.

Table

Modern requirements for dry ordinary wines

Group of wines	Indicator					
	Volume fraction ethyl alcohol, %	Mass concentration of sugars, g / dm^3, not more	Mass concentration of titrated acids, in terms of tartaric acid, g / dm^3	Mass concentration of volatile acids, in terms of acetic acid, g / dm^3, not more	Mass concentration of the reduced extract, g / dm^3, not less	Mass concentration of sulfuric acid, mg / dm3, not more (total / free)
White	9,0-14,0	3,0	5-7	1,2	16,0	200/20
Pink	9,0-14,0	3,0	5-7	1,3	17,0	200/20
Red	9,0-14,0	3,0	5-7	1,5	17,0	200/20

And yet all types of wines have their own characteristics and advantages. For example, Stalin liked to drink young - "green" wine, and W. Churchill - aged and mostly collectible and champagne Pol Roger. An interesting case, the French delegation in Lithuania was treated to table wine and asked to evaluate it, all the delegates were convinced that it was a collector's grape wine, and it turned out to be table wine from gooseberries. Therefore from any qualitative raw materials it is possible to prepare a qualitative drink. In ancient times, the Greeks diluted wine 2-3 times and drank only the last glass on holidays undiluted: pure wine was drunk in honor of the gods, and those who drank undiluted wine daily were called alcoholics, at the same time the Scythians also liked to drink undiluted wine.

Conclusion.

I would like to say that there is no civilization that would not know about the healing properties of natural wine drinks and everyone can decide what type of wine they like. Folk wisdom says: "Everyone drinks the wine he deserves". Honored Winemaker of the "Magarach" Institute N. S. Okhrimenko said: "What does it mean to drink moderation? It means to drink enough to feel a surge of strength, energy, clarity of thought, sharpness and accuracy of perception of the world."

Bibliographic list

1. Виноградарство і виноробство (на фермерських господарствах, малих підприємствах і в домашніх умовах): навч. посібник для студ. спец. "Технологія бродильних виробництв і виноробство" / Ф. Малик та ін. К.: 1995. 303 с.

2. Збірник технологічних інструкцій і нормативних матеріалів з плодово-ягідного виноробства: Кн.1. Технологія плодово-ягідних вин / Деменков О.П., Гончарук В.Я., Сидоренко В.М. та ін.; За ред. д-ра техн. наук О.М.Литовченка. – Дніпропетровськ: Січ, 1998. 316 с.

3. Кондратенко П.В., Литовченко О.М., Тюрін С.Т. Концепція розвитку плодово-ягідного виноробства в Україні. – К.: ІС НААН України, 1997. – 17 с.

4. Косюра В.Т., Донченко Л.В., Надыкта В.Д. Основы виноделия. М.: Юрайт, 2019. 422 с.

5. Литовченко А.М., Тюрин С.Т. О современных требованиях к плодам, ягодам, сокам, напиткам и винам. К.: Институт садоводства УААН, 1994. 41с.

6. Литовченко О.М. Плодово-ягідне виноробство України у XXI столітті. Садівництво. 2000. №50. С. 301-316.

7. Литовченко А.М., Тюрин С.Т. Технология плодово-ягодных вин. Симферополь: Таврида, 2004. 368 с.

8. Технохімічний контроль продукції рослинництва: навч. посіб. / Н.Т.Савчук, Г.І.Подпрятов, Л.Ф.Скалецька, П.І.Нинько, С.М.Гунько, В.І.Войцехівський. К.: Арістей, 2005. 256 с.

9. Царенко О.М. Управління якістю агропромислової продукції: навч. посіб. / О.М.Царенко, В.П. Руденко. – Суми: Університетська книга, 2006. – 431 с.

У статті викладена технологія виробництва натуральних плодових алкогольних напоїв. Систематизовано та узагальнено матеріал по підготовки сировини до переробки.

Детально описані технологічний прийоми для отримання якісного напою. Наведено діючі вимоги до якості вин. Конкретизовано умови зберігання готової продукції.

Ключові слова: *плоди, переробка, вино, якість.*