RESEARCH OF DILUTION FACTORS OF WINE MATERIAL IN THE CONTEXT OF OF AGRICULTURAL PRODUCTS IN THE REPUBLIC OF AZERBAIJAN*

Tariyel M.Panahov,

The Ministry of Agriculture of the Republic of Azerbaijan; the Centre of Agrarian Science and Innovation, ORCID: 0000-0001-8323-4395, E-mail: zvino@yandex.com

Jahangir A.Shafizada

Vine-growing and and wine-making Scientific-Research Institute, AZ0118, Baku city, Absheron region, Mehdiabad settlement, January 20th str.,

ABSTRACT

The article deals about the factors influencing to dilution of wine material with high nebulous obtained from Magrasa grape sort. It was defined by the experience that the wine obtained from Madrasa wine (products of 2011-2014) posessed high turbidity and its dilution created some difficulties. Bad diluted wine material requires more filter- cardboard cost and percolation (filtering) is very slow. In relation with this, the reduction opportunities of dilution agent's costs were taught in the shortening possibility of dilution period and in the processing of sour red wine material.

Key words: *Filter, dilution, bentonite, gelatin, ultrasound, turbidity degree, titratable acidity*

In the roadmap for sustainable production and processing of agricultural products in the Republic of Azerbaijan, the formation of a competitive agricultural sector by improving the quality of agricultural potential science and education is set as one of the main strategies. At the same time, the development of the system of science, education and innovation services in agriculture, the results of agrarian research, the development of mechanisms for applying their results, improving the logistics of research institutes, deepening in connection with international science centers.

At present, Azerbaijan has taken new steps in its development. It is this policy that forms the basis of our independence, security, modernization, social welfare and sustainable economic development. Purposeful repair work has reached a new level of high quality, meeting the challenges of the agrarian sector and its recent dynamic development, as well as other areas. The adoption of the head created a real basis for the widespread application of advanced regulatory and support mechanisms in the state agricultural sector.
Ensuring food security in the country and minimizing dependence on the domestic market, strengthening export potential, modernizing the electricity sector, more flexible application of intensive development mechanisms, improving the material well-being of farmers and restructuring local production. Today, the main tasks facing the agricultural sector are the growth of agricultural production, the restoration of ecosystems, the development

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of productivity, greater use of land and water resources, the creation of new varieties and breeds that can meet the needs of industry.

According to statistics, many farmers have already been included in e-agriculture (from 180,000 to 420,000). The internal capabilities of the electronic agricultural system and its connections with external systems are being expanded, and it is a single system that lays the foundation for the establishment of an agricultural chain. Carries out the formation of modules in the ECTS, which involve all business potential from the initial stage of agricultural products and agricultural products to the final stage. Providing information and advisory services to farmers provides a basis for innovation. Over the past 16 years, the gross domestic product has increased 13.4 times, industrial production 2.7 times, agricultural production 1.9 times, non-oil exports 5.1 times, including exports of agricultural and processed products about 5-6 times. Last year, the growth in the agricultural sector was 7.2%, including 11.7% in crop production and 3.5% in livestock.
Strategic Road News on Agricultural Production and Processing in the Republic of Azerbaijan The development of the Science, Education and Information Consulting System in the field of agriculture has been managed as one of the 9 strategic goals.

In order to ensure the sustainability of development in the agricultural sector, scientific research conducted in accordance with the principles of science-practice-production, based on modern scientific achievements, should serve the development of the agricultural sector on a scientific basis and ultimately the interests of farmers. The realization of these goals will be possible through the restructuring of agricultural research institutes, strengthening their material and technical base and bringing the human resources to the required level and increasing the interest of young people in the field of agricultural science.

In order to ensure the dynamic development of the agricultural sector in the conditions of market relations, it is necessary to increase the efficiency of agricultural research, taking into account the best international practices. In order to achieve these goals, the activities of Scientific Research Institutes, Regional Agrarian Em Centers, support points, auxiliary experimental farms should be thoroughly analyzed and restructured taking into account modern challenges.

There are several scientific research institutes in the country dealing with the problems of the agrarian sector. Adapting the activities of these Scientific Research Institutes to the requirements of modern times, making changes in the scientific research system based on best practices, providing the entire agrarian sector with new technologies, has become an important requirement of the day.
In order to increase the production of agricultural products, conducting theoretical and applied scientific research on the most important issues related to the protection of plants, animals, including soil, water, genetic resources and the environment, and coordinating scientific research in this field by other government agencies. requires development and mutual implementation. In order to implement the national agrarian policy on a scientific basis, with the participation of young scientists and specialists, the priorities of scientific research in this field should be identified and applied in a short period of time by conducting experiments in production conditions.

The tasks set for the agrarian sector in the strategic road map and state programs can be fulfilled by restructuring the scientific development of this field in accordance with the requirements of market relations.
Today, with the establishment of the European Union and the FAO, "Strengthening information and consulting services for agricultural use" is being implemented. Enlightenment of farmers in the development of agriculture, economic development of the economy, the application of modern social innovative and digital technology along with higher production potential, the application of high-quality new varieties, hybrids and breeds, seeds, breeding, planting materials on a scientific basis.

Dilution of wine materials with low acidity is a sufficient important issue, also, the processing of bruise with heat during preparation of red wine makes diffucult the dilution process [2].
Because of the juice of realtively quick ripening product is less extractable mainly in plain area, the heat working became standart operation, the heartburn should be carried out in pure culture of shiver.
It was defined by the experience that the wine obtained from Madrasa wine (products of 2011-2014) posessed high turbidity and its dilution created some difficulties. Bad diluted wine material requires more filter-cardboard cost and percolation (filtering) is very slow.

In relation with this, the reduction opportunities of dilution agent’s costs were taught in the shortening possibility of dilution period and in the processing of sour red wine material.

The bentonite is applied more among the disperse materials used in wine industry [1]. Less quantity of bentonite doesn't negatively influence to the quality of taste of the product. But its usage in a big dosage can influence negatively to the color intensivity, it causes worsening of smell, reduction of dry substances, loss of wine is allowed by being swallowed by bentonite. At the same time, the bentonite accelerates the separation of inresistable colloide substances that are excess from young wine, phenol and nitrogen compound, polysaccharides, metal and other substances that pass to the sediment. If it is necessary, the processing with bentonite are conducted together with the operation of rubberizing with gelatin [3].

As the control, the processing experiment of suspension with bentonite concentration and wine material by being 5% of its mass, 1,0-3,5 q/dm^3. The results and visual observations showed that the dilution degree of wine material in control experiment is not sufficient to conduct next technological operations. At the same time, the sediment creates turbid easily by being in soft concentration and makes diffucult next processings. One of the methods directed to reduce the bentonite exploitation is influencing it by ultrasound after issuing bentonite to the diluted product [4,5]. In relation with this, by the purpose of maing intensive the dilution process, the ultrasound was applied in direct control rubberizing of wine material. The rubberizing was implemented by using bentonite and gelatine together with bentonites according to methodology accepted in wine-making.

The test control dilution was conducted in cylindrical container (volume 250 sm^3) sized with bentonite suspension with gelatine (0,2%). The rubberizing, processing with ultrasound, mixing and putting in peace for 48 hours were provided here. The control to the dilution process was provided by the support of turbidity measuring. The apparatus with "Nejnost" series was used for the influence of ultrasound. The turbidity of researched examples until processing was as following (with NTU): 1-527; 2-268; 3-736; 4-462; 5-698.

In most cases, the processing of wine material with ultrasound allowed to reduce the indicator of turbidity (Table 1). Additionally, the gelatine also supports to reducing of turbidity of wine material.

Depending on preparation methods of the examples of wine materials to analyze the results (table 1) , it is purposeful to divide them into groups: 1 and 5th variantsa re not worked additionally; 2nd variant worked with enzymes; 3-4th variants – wored with application of ultrasound in the stage of preparation of juice.

Table 1

The turbidity degree of examples prepared by different methods, NTU

Examples	Bentonite exploitation, g/dm^3					
	1,0	1,5	2,0	2,5	3,0	3,5
1	20,8/10,9	14,4/4,2	1,7/3,8	0,9/0,8	0,6/4,0	0,5/2,1
2	1,9/1,1	1,3/0,8	0,8/0,6	0,3/0,6	0,4/0,5	0,8/0,4
3	76,0/50,5	71,8/27,0	34,4/17,4	23,1/15,9	3,5/2,1	1,1/1,5
4	16,1/9,9	5,2/5,4	3,1/1,6	2,6/13,3	5,4/2,4	6,8/1,6
5	1,8/1,6	1,6/0,9	1,4/0,4	3,4/0,3	2,0/0,4	4,0/1,1

The mark related to ultrasound application together with bentonite is issued in a numerator of the fraction, the mark related to ultrasound application together with bentonite and gelatine are issued in the denominator of the fraction in Table 1.

Presented results shows that working with ultrasound in rubberizing stage reduces the turbidity of wine material (600 times). At the same time, in some cases, the required dilution degree is not achieved by adding gelatine fluid additionally. It should be noted that while conduction of control experience in 1,0...3,5 q/dm^3 bentonite concentration range the turbidity of wine material increased. In most cases, they were such examples that they were prepared by processing of bruise with ultrasound.

The wine material prepared wihtout additional processing in lower limit of 1,5q/dm^3 of bentonite concentration was not in required dilution degree. While working together with ultrasound the dilution of wine material was provided in the dosage being limited 1,5...2,5q/dm^3 of bentonite.

The wine material prepared with *Rapidase CR* pherment preparation was diluted by less cost to rubberizing materials without gelatine in comparison with other examples. This shows that it is possible to achieve any quality of the product by biocatalyse and then ultrasound influence. At this time, the increasion of bentonite concentration reduced the processing efect with ultrasound (the relation of turbidity of example of control

experience to the turbidity of example prepared with ultrasound reduces: Table 2) and the application of maximum dosage of bentonite was excepted.

Table 2

Relation of turbidity of example of control experience to the turbidity of example prepared with ultrasound

Examples	Bentonite exploitation, g/dm^3					
	1,0	1,5	2,0	2,5	3,0	3,5
1	11,5/22,0	9,2/31,9	35,8/15,8	4,6/5,0	3,8/0,6	4,1/0,9
2	27,0/44,3	15,9/25,2	13,0/13,8	11,1/5,3	9,0/7,0	1,8/3,3
3	8,0/12,1	6,1/16,4	4,0/7,9	0,9/1,4	2,6/4,3	5,9/4,2
4	44,3/72,2	84,4/81,2	332,9/616,0	36,9/7,3	9,8/22,5	6,5/27,7
5	177/198,1	151,2/284,8	18,7/65,8	3,2/33,6	3,8/19,3	0,8/2,8

The mark related to ultrasound application together with bentonite is issued in a numerator of the fraction, the mark related to ultrasound application together with bentonite and gelatine are issued in the denominator of the fraction in Table 2.

It should be noted that, preparation of wine materilas with ultrasound together with rubberizing materials, reduced the titratable acidity up to 0,3-1,3 q/dm^3 , laso, it changed the pH of examples, and this is not desirable at all. Thus, in the result of conducted results, the influence of ultrasound to the dilution of wine material was defined.

It was defined that the optimal dosage of bentonite for dilution of wine materila prepared from Madrasa grape is between 1,5 and 2,5 q/dm^3.

Apart from this, it was defined that adding gelatine fluid while processing with ultrasound supports to the reduction of turbidity of red wine material.

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