

VITICULTURE AND WINEMAKING IN HERZEGOVINA AS A DRIVER OF ECONOMIC DEVELOPMENT

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Abstract

The work, titled "Winery Herzegovina," deals with the cultivation of vines, grape production, and winemaking in Herzegovina. It consists of six chapters. The first three chapters provide an abstract, introduction, and methodology. The fourth chapter delves into the history of wine production. The fifth chapter explores various types of wines and their classifications. The sixth chapter focuses on vineyard diseases and their prevention.

The landscape, climate, soil, and social factors in Herzegovina make it possible to cultivate high-quality grape varieties, resulting in the production of premium wines. Two native grape varieties, Žilavka and brandy, have been cultivated here for a long time, producing yields and quality that rival anywhere else.

Stone Vineyards are unique in their transformation of a stone desert into an oasis of luxury and beauty. In the Herzegovina region, the most famous event is the annual grape harvesting days, celebrated in all areas involved in viticulture and winemaking. Drawing from their experiences, valuable specialized articles and manuals have been written about vine cultivation and the prevention of various diseases associated with these topics. Mostar, the regional center of Herzegovina, hosts the Grape Harvest Days in Čitluk, where various types of wines are showcased each year. Additionally, a new publication, "Vintage Days," is released, summarizing research findings related to grapevines.

The development of the wine industry in Herzegovina is influenced by various factors, including economic, political, and social aspects.

Keywords: region, wine, grapes, spirits

INTRODUCTION

With its sub-Mediterranean and Mediterranean climate, Herzegovina falls into the regions where Mediterranean fruits and vegetables thrive. Many refer to it as the "California of Bosnia and Herzegovina." Here, grapevines, figs, peaches, mandarins, apples, pomegranates, olives, and various other varieties, including medicinal herbs like sage, heather, and lavender, flourish. Due to this mild climate, Herzegovina is the largest and only producer of grapes and wine. Two indigenous grape varieties, Žilavka and Blatina, have long been established here, yielding crops and quality unmatched elsewhere.

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Viticulture is an agricultural branch focused on the cultivation of grapevines and the production of grapes and wine. Some common names for grapevines include vines, grapevines, vines, vinolozas, or grapevines. Grapevines are climbing plants that form into shrubs as they grow, with heights ranging from 5 to 15 meters. The leaves come in various shapes and shades of green, depending on the grapevine variety. They blossom from June to July, with the flowering period lasting only 4 to 5 days. Grape clusters ripen from July to October, depending on the grape variety and the region where they grow. The size and color of grape berries vary from one variety to another, and grapes can be consumed fresh, dried, or processed into fruit juices or alcohol. The most renowned product of grapevines is wine.

1. METHODOLOGY AND OBJECTIVES

In the preparation of this work, available literature and sources on the mentioned topics were utilized. The main methods employed in this work include the analysis of existing literature, synthesis, description, and comparison. Various techniques and procedures derived from the long-standing work of different scientists in the field of wine and viticulture were also used, all with the aim of achieving the highest quality results in grapevine cultivation and the production of fine wines and brandies. The objective of this work was to elucidate definitions, concepts, procedures, and steps for a comprehensive understanding of this subject matter. It also aims to highlight common diseases that affect grapevines from their initial growth to harvest, as well as the proper production of exceptional wines and brandies characteristic of the Herzegovina region. The textual content is complemented by photographs that facilitate a better understanding of the presented grapevine varieties. Public education regarding wine production, which is either the primary or secondary occupation, is essential, as well as the preservation of tradition and the proper protection of the environment from various pesticides, safeguarding soil, air, and water quality.

2. HISTORICAL OVERVIEW OF GRAPEVINE CULTIVATION

2.1. Historical Overview of Grapevine Cultivation

In the world of viticulture, there are five cultivation zones categorized by the number of sunlight hours and temperature, which are key prerequisites for growing quality grape varieties. Alongside wheat, barley, and olives, grapevines are one of the oldest cultivated plant species. Its origins likely trace back to the Caspian Sea area or Southern Europe. The ancient Phoenicians cultivated grapevines, and it spread to the Adriatic islands from the islands between Asia and Greece. It is known that grapevines were cultivated in Egypt over 6,000 years ago. This plant was brought to our region by the Roman Emperor Marcus Aurelius. In 1874, a grapevine disease called downy mildew (*peronospora*) was introduced to Europe from America and first appeared in English vineyards. In 1860, a grapevine aphid (*phylloxera*) emerged in France and rapidly spread across Europe, devastating all European grapevines. After such a

catastrophe and with great effort and financial investment, new vineyards were established, using American grapevines as the rootstock, as they were resistant to phylloxera (Cindrić, 1980).

The noble grapevine (*Vitis vinifera*) has been a companion to humans throughout history. Just as the exact time when humans invented the wheel or discovered and started using the benefits of fire is unknown, the exact moment when humans began practicing viticulture and winemaking is also uncertain. It is only known that the association between humans and wine began a long time ago, and humans have long recognized the benefits of this beverage. Additionally, it is unclear when humans learned to make wine. Indigenous people initially cultivated grapevines in our regions, followed by the Greeks, who continued the tradition, and later, the Croats (Cindrić, 1980).

2.2. Historical Overview of Grapevine Cultivation in Herzegovina

Herzegovina is a region that boasts a tradition of grapevine cultivation dating back at least 2,200 years. In our part of the world, the favorable climatic conditions for the development of agriculture began around 5,000 years BC. This period also marks the transition of human society from a nomadic, hunting-based way of life to a more creative phase of agricultural production. Such a shift in lifestyle led to the development of agriculture and animal husbandry. Near the mouth of the Neretva River, there was a Greek emporium, a place where Greeks and Illyrians exchanged their products, possibly as early as the 9th century BC. These regions seem to have been a crossroads of various cultures and influences for centuries, even before the arrival of the Greeks. The Greek influence in the Herzegovina region was significant, as there is evidence of a thriving trade between the Greeks and Illyrian tribes. Illyrians were familiar with grapevines even before the Romans arrived in our lands, and the culture of grape cultivation and winemaking spread inland, both along the Neretva Valley and via overland routes (Fazinić, 1971).

With the arrival of the Romans, the Illyrians quickly mastered the technology of winemaking. When the Romans arrived in 229 BC, winemaking received a new boost. An ancient writer suggests that grapevines should be cultivated on gently sloping, east or south-facing, dry terrains. The land should be plowed to a depth of one meter before planting, with planting distances ranging from two to four feet. The Romans were adept at soil cultivation, fertilization, and already knew that certain grape varieties thrived in specific regions. The Villa Rustica in Mogorjelo near Čapljina is a valuable monument of Roman culture and way of life in this area. Within the fortress, there were economic premises where vessels for storing wine were kept. With the arrival of the Slavs and the Middle Ages, their influence left its mark. The Slavs were skilled farmers who encountered grapevines in Herzegovina and quickly learned how to cultivate them (Fazinić, 1971).

It is known that the people of Dubrovnik had vineyards in the present-day Herzegovina region, which were tended to by local residents. Vineyards often led to conflicts between the people of Dubrovnik and the rulers of Herzegovina, as the former had to pay rent for owning vineyards and sought to be free from such obligations. Stećci, stone monuments dating back to the 12th century, often feature grapevines and grape motifs, which clearly illustrate the importance of this culture in the lives of the inhabitants of Herzegovina. Hundreds of such sites can be found in Herzegovina, and almost every Herzegovinian village has a stećci necropolis, with some having several. One of the sites with the most beautifully decorated stećci is Radomilja near Stolac, dating back to the 14th century. Additionally, written documents mentioning wine and grapevines have appeared (Cindrić, 1980).

During the Ottoman Empire's occupation of Bosnia and Herzegovina in 1482, a long period of stagnation in winemaking began. Numerous written documents from this era provide clear evidence of the intensity of grape cultivation and winemaking. Most villages in Herzegovina at the time had vineyards. Travelers passing through Herzegovina during this period often mentioned Herzegovina as a wine region, and Herzegovinian wines as expensive but excellent and tasty. Herzegovina supplied Bosnian monasteries with wine and grapes. During the Ottoman rule, viticulture in Herzegovina did not experience significant growth, but it did not disappear. One positive aspect from this period was the efforts of Ali-pasha Rizvanbegović to expand agricultural areas and establish new vineyards (Fazinić, 1971).

During the Austro-Hungarian Monarchy's rule, in just ten years (1882-1892), grape production increased from 420 tons to 9,200 tons. Such growth in grape and wine production can be attributed to a well-developed agricultural development strategy, which involved training local personnel in viticulture and winemaking through various courses and sending young people to study at the prestigious Klosterneuburg School of Viticulture near Vienna. Additionally, two vine and fruit-growing stations were established, the first in Gnojnice near Mostar in 1886 and the second in Lastva near Trebinje in 1894. The primary tasks of these stations included the study and selection of local grapevine varieties, the introduction of new ones, and later, rootstocks for grapevines. They also focused on protecting grapevines from diseases and pests and working to improve wine quality by introducing new production technologies. During this period, vine experts working on selection activities identified Žilavka and Blatina as the most interesting varieties from Herzegovina's diverse assortment. This was the golden age of Herzegovinian viticulture and grape cultivation, as such rapid growth had never been recorded before or after. The vineyard area reached 6,040 hectares in 1912, a figure never surpassed thereafter. This was a time when Herzegovinian wines reached international wine markets. For the first time, Herzegovinian wines appeared at international wine events in Paris, London, Budapest, Vienna, Brussels, Lausanne, Trieste, and Barcelona, where the quality of wines was judged, and Herzegovinian wines consistently won top awards (URL 1).

The First World War had a devastating impact on the vineyards of Herzegovina. The vineyards of Herzegovina entered the new state entity of the Kingdom of SHS with their areas halved compared to pre-war times, so Herzegovina had 3,020 hectares of vineyards in 1918. The first vineyard restoration from 1920 to 1928 only partially improved the situation because by 1922, there were already 3,707 hectares of vineyards. After this, a major economic crisis occurred, and Herzegovinian farmers faced numerous difficulties, from low purchase prices to high indebtedness, which negatively affected the development of viticulture. Herzegovina entered World War II with 3,500 hectares of vineyards, but Herzegovinian wines continued to be present at international wine quality competitions, maintaining the continuity of winning top awards.

World War II had a profound impact on viticulture and winemaking. The reasons for the destruction of vineyards in World War II can primarily be attributed to the inability to continuously tend to the vineyards due to a lack of labor force and the effects of wartime events. As a result, Herzegovina emerged from World War II with 3,021 hectares of severely neglected vineyards.

Significant vineyard restoration began more intensively in the 1950s when the first scientific institutions in Mostar were established with the aim of revitalizing viticulture and winemaking. By that time, there were around 3,500 hectares of vineyards, and new and larger wineries were built in Ljubuški, Čitluk, and Stolac. During this time, six distinctly viticultural Herzegovinian municipalities were established: Mostar, Čitluk, Ljubuški, Čapljina, Stolac, and Trebinje. This period marked the export of Žilavka and Blatina to most European countries and even the first overseas exports. Thanks to their quality and the efficient organization of Hepok⁷¹, Žilavka and Blatina became the most exported wines from the then Yugoslavia.

What was missing in Herzegovina's wine story, which other wine regions in Europe and the world have, is the "Wine Routes" program. This program, besides improving the sales of domestic wines, revitalizes other aspects of cultural, economic, and social life. Its goal is to create a new image of Herzegovina, or to establish the market brand "Herzegovina – producer of wines from autochthonous varieties Žilavka and Blatina." The development of viticulture in Herzegovina, from ancient times to the present, along with the main grape varieties found in Herzegovina and their accompanying types, has been discussed. Žilavka is said to carry the stamp of Herzegovina, indicating its perfect adaptation to the Herzegovinian terroir. The stone vineyards at the Blizanci site near Čitluk are also fascinating. Located on a rocky and inaccessible terrain, this vineyard thrives with various grape varieties, yielding a large and high-quality harvest throughout the year (URL 1).

⁷¹ Herzegovina Agricultural Combine, commonly referred to as HEPOK, located in Mostar, was the cornerstone of agricultural development in this part of former Yugoslavia. Known as a producer of wines, both alcoholic and non-alcoholic, it suffered extensive devastation during the conflicts of the 1990s.

2.3. Stone Vineyard

In the early 1980s, on an extremely rocky and inaccessible terrain, consisting of 70-90% stone, the renowned Stone Vineyard "Blizanci" (Twins) emerged (Figure 1). The Stone Vineyard is located not far from Čitluk, in the southern part of the Brotnjo plateau in Bosnia and Herzegovina, along the Čitluk-Žitomislići road. This 30-year-old vineyard is unique in the world because grapevines thrive in a stony desert. Approximately 100 hectares of land in the vineyard are dedicated to cultivating indigenous grape varieties, Žilavka and Bena. The management of the water regime during critical stages of vegetation is achieved through a drip irrigation system. Žilavka grapes grown in this vineyard are known for their high sugar content due to the climate, rocky terrain, and irrigation system, and they are used to produce the famous Kameno wine, which has been produced since 1990. The vineyard is owned by the Čitluk Winery (Vodič-Brotnjo, 2020).

Figure 1. Stone Vineyard, Blizanci



Source: Photo by Jelica Galić, 2022.

2.4. Climatic Characteristics in Herzegovina

In Herzegovina, only Neum exhibits typical Mediterranean climate characteristics. All other areas up to an elevation of around 400 meters, except for semi-highland regions (known as lowland Herzegovina), fall into the second zone of the Mediterranean climate (Figure 2). This is a zone of modified but clearly defined Mediterranean climate, characterized by maximum precipitation in the winter with shorter dry periods. A secondary maximum in precipitation, which is not pronounced, occurs in April, while the main maximum shifts to October. Summers are hot but somewhat less dry and somewhat cloudier compared to the classic Mediterranean climate. In the third zone, there are semi-highland peripheral areas ranging from 400 to 600 meters above sea level: Posušje, as well as the peripheral parts of the municipalities of Široki Brijeg, Mostar, Stolac, Trebinje, and Bileća. In this zone, the Mediterranean climate is significantly altered due to its exposure to the influence of mountain climate. The main drawback of the climate in lowland Herzegovina is the insufficient amount of moisture

in the summer months. This condition dictates earlier planting (before May 10) and the effective management of water conservation through soil cultivation to maximize the use of winter and spring moisture in the soil (Musa, 2007).

Figure 2. Climate of Bosnia and Herzegovina



Source: Musa, 2007.

2.4.1. Geomorphological and pedological characteristics

The Herzegovina region suitable for grapevine cultivation coincides with the area of the lowland Herzegovina region, which encompasses limestone plateaus (Bekija, Brotnjo, and Dubrave), Humine (a fertile area between Ljubuško and Ljubinj), fields along the Neretva River (Bijelo, Mostarsko, Ševaš, and Gabela fields), Bregava (Vidovo), Trebišnjica (Popovo), fields in the Vrlika – Mlade – Trebižat river system (Bekijsko and Ljubuško-vitinsko), Lištice (Mostarsko blato), and the Neum – Klek bay on the Adriatic Sea coast (Musa, 2007), (Figure 3).

The region is almost divided into two parts with distinct features, west and east, along the Neretva River valley, although they likely formed a single entity during the early

diluvial period. The terrain on the right side of the Neretva gradually descends southwestward and southward in relation to the Neretva's course. As the terrain rises, the influence of the Mediterranean climate weakens, and there is a greater influence of the mountain climate. This leads to less favorable conditions for the cultivation of high-quality grapevine varieties.

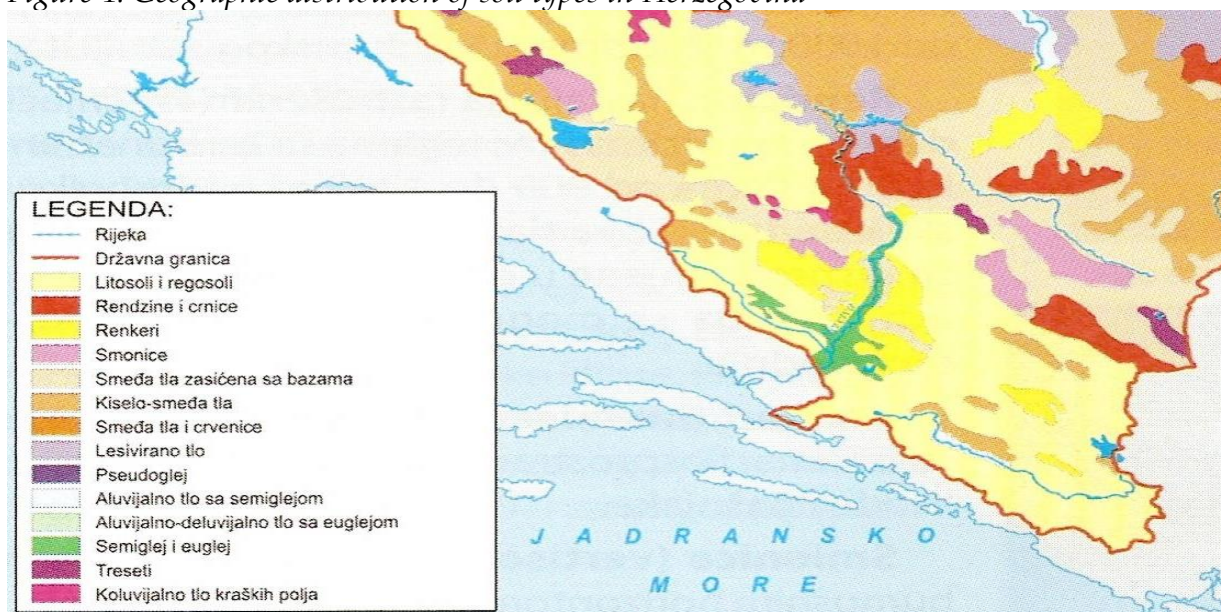
Figure 3. Geographic regions of Bosnia and Herzegovina



Source, Musa, 2007.

The soil in the grapevine cultivation areas of Herzegovina belongs geologically to various-aged limestone formations. The rest of the terrain consists of alluvial surfaces of karst fields and river valleys (Musa, 2007), (Figure 4).

Figure 4. Geographic distribution of soil types in Herzegovina



Source: Musa, 2007.

2.4.2. Key grape varieties in Herzegovina

The origin of the name "Žilavka" is difficult to pinpoint precisely, but one assumption is that it symbolizes the fine veins that become visible in fully ripe grapes through their thick yet translucent skin. The addition of "Hercegovina" seems to suggest that it is nowhere as lush, gentle, benevolent, and generous as in Herzegovina, where it originated, formed its characteristics, adapted, and identified itself with the sunny and rocky ambiance of Herzegovina. Žilavka is an autochthonous grape variety of Herzegovina. It has vigorous growth, regular and satisfactory fertility. This is a medium-class variety that ripens at the end of September. The weight of the clusters ranges from 150 to 200 grams. It is grown on low, medium-high, and high stems and thrives on shallow and karst soils, showing excellent resistance to drought. Žilavka wine is of high quality with a distinctive aroma. It has a wonderful crystal-clear, greenish-yellow color, a specific aroma, a harmonious ratio of alcohol and acidity, and a rich extract that sets Žilavka apart from other wines. Žilavka is a strong wine with 12-14% alcohol content. Its true fullness and distinctiveness are achieved through longer aging in the bottle. Herzegovinians enjoy it with lamb, boiled or grilled, as well as with eel and other freshwater and marine fish, with cheese in a bladder, and prosciutto. Žilavka is characterized by its crystal clarity and is served at a temperature of 12°C (URL 2).

Blatina is a black autochthonous variety from Herzegovina. The variety is vigorous and has a functionally female flower, which is why it is always cultivated with other varieties such as Kambuša, Merlot, and Trnjak, which also serve as pollinators for Blatina. Due to rain during pollination, it can sometimes fail to produce fruit, which is why it is called "empty barrel." Blatina is a high-quality, and from selected positions, it becomes a top dry red (black) wine made from the same grape variety with the addition of up to 15% pollinator varieties. The weight of the clusters ranges from 200 to 300 grams. It is grown on medium-high stems on warm and dry slopes. It is a strong and fresh, dry red wine with 12-13.5% alcohol. It has a dark red color, distinctive aromas, a full and harmonious taste. As a southern wine, it has a satisfactory concentration of acids. It is good for the wine to age for a few years in wooden barrels, as its quality improves up to five years of age. It is recommended to drink it with strong meat dishes, game, especially roasted, fish stews, and beef prosciutto appetizers. It is best enjoyed slowly, pure, at a temperature of 18-20°C in well-shaped glasses, or in a rustic setting, poured from a wooden jug. Be cautious of its strength! It contains condensed sunshine, gathered all the summer heat of Herzegovina (URL 3).

2.5. Companion Varieties to Žilavka and Blatina

Bena: Bena is a white wine grape variety. It has normal and regular pollination. It ripens in the first half of September, and the average cluster weight is around 130 grams⁷². This variety is suitable for warmer regions and is highly resistant to downy

⁷² The gram (symbol g or gr) is a unit of mass. It represents one-thousandth of a kilogram. The gram

mildew and powdery mildew, which are grapevine diseases. Bena is a variety that thrives on shorter pruning and can grow on less favorable soils and in less favorable positions due to its high durability.

Krkošija: Krkošija has irregular pollination due to the appearance of anomalies in the structure of its flowers. The weight of the clusters varies from 100 to 200 grams. It prefers short pruning and well-drained soils with sufficient moisture, such as red soils in the Brotnjo, Dubrava, and Ljubuško areas. It is less tolerant of drought and infertile soils. On fertile soils, it produces grapes of good quality with a good sugar and acid content. It yields a wine with a greenish-yellow color and good extract but without a strong aroma. It does not represent a significant quality on its own, but it can be used in suitable proportions to create a good and quality blend, which is its greatest value.

Smederevka: Smederevka is a white wine variety named after Smederevo in Serbia. It appeared in Herzegovina in the 1970s and 1980s. Due to its low alcohol content (10 to 11%), acidic taste, and straw-yellow color, it is used in table wines that are abundant in the market.

Chardonnay: Chardonnay is a white grape variety. Its narrow homeland is the Champagne and Burgundy regions. It is resistant to gray mold. Due to its consistent yields and the quality of wine obtained from its grapes, it has spread to all continents. It benefits from long pruning. Chardonnay wines are excellent for making sparkling wines.

Vranac: Vranac is the most famous Montenegrin black wine variety, also found in Herzegovina, Dalmatia, and Macedonia. The cluster is large and cylindrical, loosely arranged with long stems. The berries are large, round, and have a dark blue, highly pigmented, thin, and smooth skin. The average cluster weight is 150-350 grams. Wine made from this variety contains 12-13.5% alcohol and has a pleasant taste.

Merlot: Thanks to its very good yield and resistance to low winter temperatures and fungal diseases, this French variety is quite widespread in the world. It has moderate vigor, medium-thick shoots, and long, reddish-brown leaves. The flower is hermaphroditic, the cluster is medium-sized, loose, and pyramid-shaped. Wines of this variety are rich in alcohol, total acidity, ruby-red color with a raspberry aroma.

Cabernet Sauvignon: Cabernet Sauvignon is a widely spread French wine variety present in Herzegovina. It is equally successful on deep and dry soils and does not have special pruning requirements. It has good resistance to fungal diseases. This variety yields good and regular crops with sugar content in the must up to 23%. Wine made from this variety is ruby-red, full-bodied, and harmonious in taste.

was originally defined as the "absolute mass of pure water of one cubic centimeter at the melting point of ice." The word "gram" is derived from the Latin word "gramma," which means a small weight or mass.

Plavac Mali: Although in small quantities, Plavac Mali also thrives in Herzegovina. It has regular and good yields and is resistant to fungal diseases. The berries of Plavac Mali have thick skins, firm texture, high sugar content, and a characteristic late ripening. Depending on the location, its alcohol content is usually from 12 to 13.5%. Plavac Mali wines are notably strong and dry with a dark purple to dark red color and modest, discreet, and pleasant varietal aroma. Throughout history, it has been a drink of laborers⁷³ but also an ornament on the most luxurious table. (URL 1).

2.6. Types of rakija in Herzegovina

Lozovača (Loza): Lozovača is a grape rakija produced by distillation of noble grape varieties. Lozovača in circulation must contain 40 to 55% alcohol by volume and ingredients prescribed by the regulations on the quality of alcoholic beverages. It falls into the category of strong alcoholic beverages. Typically, it is colorless, but if stored in old wooden barrels, it can take on the color of the wood. It has a strong aroma and a sharp taste. Under the name "travarica," a product can be put into circulation, obtained from natural fruit brandies, grape brandies, or mixed brandies, along with fruit and grape distillates and the addition of aromatic and bitter medicinal herbs, mainly aromatic distillates or suitable essential oils. The alcohol content ranges from 40 to 52 vol.%. It has a yellowish-light color and pronounced fused aromas of various types of medicinal herbs.

Medovača: Medovača is an alcoholic beverage with a base of grape brandy to which a certain amount of honey from various plant origins is added. Since honey is a complex product of bee metabolism, it is also a mixture of fruit and grape sugars, aromatic and mucous substances, formic acid, essential oils, and water. Therefore, brandies prepared with the addition of honey vary depending on the origin and quantity of honey added. Due to the addition of honey, as with "travarica," the alcohol content ranges from 40 to 52%. Depending on the color and type of honey, different colors of medovača brandies are produced. However, most medovača brandies have a yellow-golden color and a pronounced honey aroma (URL 1).

2.7. Grapevine Diseases

Downy Mildew (*Peronospora*): Downy mildew is the most well-known disease that attacks grapevines. The prerequisites for this disease, most common in mid-May, include a soil temperature of 8°C lasting for a minimum of 24 hours, rain, moisture on the leaves lasting for a minimum of 4 to 6 hours, and leaves with a diameter of 5-10 cm. Downy mildew affects all parts of the grapevine. The most characteristic symptoms occur on leaves, flowers, and clusters. On leaves, transparent spots appear, and underneath them, during humid weather, a white, powdery coating forms. Downy mildew on clusters is evident from the formation to the berry's shriveling.

⁷³ heavy, an agriculturist or farmer who cultivates the land under contract. (Unlike a serf, a heavy man is personally free).

Infected berries first turn bluish and then dark, shrivel, and dry up. It is one of the most destructive diseases in viticulture worldwide, causing significant losses every year in Herzegovina and other countries. In years of severe outbreaks, despite protective measures, it can ruin most of the harvest and seriously weaken the vines due to the massive destruction of leaves. It is treated with chemical agents (Beš, 1996).

Grey Rot (Siva Plijesan): Grey rot is a disease that most often appears before the harvest, causing gray rot on individual berries or entire clusters. Sometimes it can occur earlier but is most dangerous during ripening. It usually attacks one cluster, but if clusters are densely packed, it can affect the entire vine. Berries are infected through open wounds and cracks caused by various factors: attack by grapevine moths, berry cracking due to powdery mildew, berry cracking due to shallow root systems after heavy rain, strong winds, hail, wasp attacks before ripening, etc. In addition to affecting berries and clusters, this rot can also affect newly budded shoots, shoot tips, and leaves. Buds and parts of the shoot die due to the attack, and the leaves develop brown spots. The disease can be treated.

Powdery Mildew (Pepelnica): Powdery mildew affects the green parts of the vine. On these parts, grayish coatings are formed due to the disease, causing young leaves to deform and often dry out. Infected berries are completely covered with a grayish powdery coating, which, like with leaves, leads to fruit drying. In later stages of the disease, berries crack and become more susceptible to gray rot. This disease is treated with chemical agents (Beš, 1996).

CONCLUSION

Grapevine is one of the oldest cultivated plant species. It is known to have been cultivated by indigenous people, followed by the Greeks and later the Croats. The exact timeline of when humans began viticulture is uncertain. However, it is certain that even in ancient times, as seen in the Old Testament story of Noah, who planted a vineyard and made wine after leaving the ark following the great flood, grapevines have been intertwined with human history. It can be said that wherever the history of human civilization begins, grapevines have been present.

Herzegovina is a region that can proudly boast a tradition of grapevine cultivation dating back at least 2,200 years. The most famous autochthonous grape varieties in Herzegovina are Žilavka and Blatina. Quality testing of Žilavka and Blatina, in comparison to international grape varieties, has shown that none of the latter has been able to establish itself in Herzegovina. This underscores the high quality and perfect adaptation of Žilavka and Blatina to the soil and climate of Herzegovina.

Grapevine cultivation in Herzegovina is a challenging and labor-intensive endeavor that involves the hard work of all family members. Despite the difficulties, grapevine cultivation holds immense significance in the lives of Herzegovinian residents. However, by the late 1980s, grapevine cultivation in Herzegovina faced a crisis.

Various factors contributed to this crisis, including economic, market-related, technological, and demographic factors. The labor force, a crucial component of grapevine cultivation, experienced a rapid decline during this period, leading to social and demographic changes such as declining birth rates, children pursuing non-agricultural careers, and substantial emigration of the workforce to Central, Western, and Northern Europe.

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