

NATURAL DISASTERS ON THE ISLAND OF VIS IN THE 1930S: ANALYSIS OF NATURAL HAZARDS IN THE CONTEXT OF THE DEVELOPMENT AND IMPORTANCE OF WINEMAKING AND VITICULTURE

VREMENSKE NEPOGODE NA VISU 30-IH GODINA 20. STOLJEĆA; ANALIZA PRIRODNIH NEPOGODA U KONTEKSTU RAZVOJA I ZNAČAJA VINARSTVA I VINOGRADARSTVA

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Summary

*Weather changes and their belonging manifestations in the form of meteorological phenomena have always been largely associated with economic ascents and descents, and have entailed a series of economic, cultural and political changes that have left their mark on the entire history of a particular region. Meteorological changes, but causally also those in the economy, are also visible in the 1930s in the Adriatic region, where in some cases they completely destroyed economic activities and yields. This paper deals with the disasters that plagued the island of Vis in the period from 1935 to 1939 on numerous occasions and in various occurrences. Some contemporary newspaper articles in Split's *Novo doba*, *Jadranski dnevnik* and *Jadranska straža* remained, as well as detailed writings on the destruction of vineyards and yields in the fund for the Economy of the Banovina of Croatia (HDA, BH-OSG, IV, 39039-44 / 1939). The overall problem has been viewed from multiple perspectives; variability of weather and its impact on the overall situation, natural hazards as a considerable factor in the complete destruction of viticulture and their reciprocal echoes, and people's perceptions of these hazards as disasters that present themselves within the confines of oral history.*

Keywords: environmental history, island of Vis, weather-induced events, viticulture, economic history

Ključne riječi: klimatologija, otok Vis, vremenske nepogode, vinogradarstvo, ekohistorija

INTRODUCTION

The study of history involves observing a number of factors that have influenced the appearance of everyday life and consequently the history that has unfolded to the present day. One such factor, no doubt, are the changing weather and climate in a particular area affecting a particular community. For example, surplus or lack of precipitation can have a serious impact on the life of residents. These kinds of natural hazards affect human existence in more aspects and because of that, they are often perceived as disasters.¹ From the methodological perspective of observing space, the perspective of time should be

¹ Mladen Maradin, "Varijabilnost padalina u Hvaru i Crikvenici" *Geoadria* 13/2 (2008): 133.

used causally. Specifically, Braudel's transhistorical concept of long-lasting structures (*longue durée*) shall be applied with regard to the correct statement of Hrvoje Petrić: *Many major environmental factors do not depend on a human, although some of them significantly affected people.*² Despite interdependence and intense interactions, communities could hardly condition the positive or negative consequences of climatological and weather phenomena that affected the community and changed the course of history of its inhabitants and their environment, for better or for worse. The influence of ecological phenomena, such as weather-induced disasters, has indisputably influenced the history of institutions, customs, more folk than sacral, from which it is clear that they influenced on people's everyday lives. The dependence of viticulture and winemaking on weather conditions is a perfect example of the intertwining of economy and ecohistory in which interactive reflection and consideration of the entire demographic, social and economic history is brought together.³ Natural hazards and disasters were, in a broader picture, the cause of changes that affected the economy, nutrition and, consequently, food shortage, which caused various problems for people. Despite differences among European political entities, these kinds of changes were a reminder that they share the same fate in times of prosperous or, as in this case, difficult periods, which were often caused by natural hazards.⁴ By one of the definitions, a natural hazard is a physical event itself, in some cases affecting human society, while a natural disaster is a term which describes the human perspective, interpretation and management of some high-magnitude natural hazards and their consequences.⁵ One such example is certainly the impact of natural hazards on the economy of the island of Vis in the 1930s. Along with the spread of phylloxera, this was the culmination of all the environmental changes that began to affect Dalmatian viticulture in the late 19th century, and by the middle of the 20th century they irreversibly damaged the tradition of viticulture. This has been reflected to this day by the fact that wine cooperatives and larger winegrowing communities do not exist, but there are only remnants of self-sufficient wine production within the family community. From today's perspective of people who are not as dependant on agriculture as those in times past it may be a bit abstract to imagine how much a dry year or a weather-induced disaster like a flood could affect human life. There is no doubt that mentioned weather conditions affect people today as well, but the impression is that natural hazards affecting agricultural land used to be much more likely perceived as a disaster, in the case of Vis at least. Confirmation of this thesis is reflected in the folk customs that were conducted in the community.⁶ This is also confirmed by *Novo doba* where it is emphasized that people from Vis are specifically related to winemaking: *because viticulture is the most important and only agricultural branch on the island of Vis, it is completely understandable that decay of vine has upset and affected winemakers of this most wine-growing part in the state.*⁷ Situations on the eastern Adriatic coast were not uncommon, when a chain of troubles posed by weather severely hit the economy, causing consequent severe food shortage, declining immunity, migration and spread of diseases, and long-term

² Hrvoje Petrić, *Pogranična društva i okoliš: Varaždinski generalat i Križevačka županija u 17. stoljeću* (Samobor; Zagreb: Izdavačka kuća Meridijani; Društvo za hrvatsku ekonomsku povijest i ekohistoriju, 2012), 28.

³ Frederick Cartwright, Michael Biddis, *Bolest i povijest* (Zagreb: Naklada Ljevak, 2006), 11.

⁴ Rober Delort, Francois Walter, *Povijest europskog okoliša* (Zagreb: Barbat, 2002), 137.

⁵ Christian Rohr, "Coping with Natural Hazards in the Southeast Alpine Region in the Middle Ages and in Early Modern Times" in: *Man, Nature and Environment Between the Northern Adriatic and the Eastern Alps in Premodern Times*, ed. by Peter Štih and Žiga Zwitter, Ljubljana: Ljubljana University Press, Faculty of Arts & Historical Association of Slovenia, 2014., 291–292.

⁶ Vrančić, "Prilog etnološkom istraživanju", 78. In addition to traditional activities for the protection of vines, such as potassium fertilization and treatment with copper sulfate, the protection of vineyards from bad weather also included some partly-magical customs. Our findings correspond with Ida Vrančić's research in that families threw blessed salt on the burning vine stumps before the storm, the crackling of salt in fire was considered an effective means of dispelling the storm. To achieve the same effect, a burning stump, the so-called *glavinja*, was often thrown to the farmyard during storms, along with a chain for hanging pots, and in rainy weather a little wine was ritually poured to the yard to keep the vineyards protected. The custom of burning a Yule log on the hearth on Christmas Eve, New Year's Eve and the Epiphany served the same purpose because the ash obtained this way was carried to vineyards for the purpose of blessing. Moreover, traditionally interwoven palm and olive branches that were blessed in the church on Palm Sunday were carried to vineyards and placed in dry stone walls there to prevent possible weather-induced disasters and vine pests.

⁷ *Novo doba*, 2nd March 1939.

financial stagnation of the eastern Adriatic coast. Disasters were often connected to each other and thus formed a chain of disastrous phenomena.⁸

From all the above mentioned, it is clear that the study of the topic related to economy and ecohistory is necessary in order to holistically encompass, and ultimately understand, the historical reality of the island of Vis in the first half of the 20th century. Historiographical observation of a relatively isolated area in the first half of the 20th century, should take into account all the factors that continuously influenced the economic, demographic and other social development of the population of such a specific area since the end of the 19th century. The paper presents the economic picture of Dalmatia as the most necessary framework for the topic and focuses on the analysis of previously unpublished and unexplored historical sources. Lack of previous research on the history of the island represents a challenge for this paper. The history of fishing and its connection to climate change, as far as Vis is concerned, is dealt with in Š. Županović's book, but he does not offer more detailed data that would help observe the viticulture of the town of Vis. He briefly mentions exclusively marine climatological influences that are related to Komiža as a fishing village.⁹ Therefore, a distinction should be made between two settlements on the island, Vis and Komiža, one as exclusively a wine and the other as a primarily fishing part of the island.

The analysed sources include several articles from the Split daily newspapers *Novo doba* and *Jadranski dnevnik*, articles from the journal *Jadranska straža* and documents on the destruction of vineyards and crops that are kept in the fund of the Economy of the Banovina of Croatia (HDA, BH-OSG, IV, 39039-44 / 1939). In order to clarify the collected written sources and the culture of viticultural everyday life, it was decided that it is necessary to use the testimonies of five still living or indirect witnesses of the time who spent their entire working life in coexistence with viticulture.¹⁰ The oldest interviewee was born in 1915 and the youngest in 1950. Semi-structured interviews with narrators were carried out as part of ethnological field research conducted on the island of Vis in two periods, first in 2016 and second in 2019.

GEOGRAPHICAL VISUALIZATION OF THE ISLAND - FROM ECOHISTORY TO NISOLOGY AND BACK

Precipitation is one of the most variable climate elements and its occurrence and abundance depend on latitude, air mass humidity, intensity and movement of air currents which are influenced by local factors as landforms and distance from the sea.¹¹ It is a great challenge trying to estimate precipitation (and other climatological elements) on the island of Vis based on measurements on Hvar because Vis even today has a different amount of precipitation compared to most of the Mediterranean regions.¹² The island of Vis is located in Central Dalmatian archipelago, covering 89,72 km². The island stretches in east-west direction 17 km and 8 km in north-south direction. It is built of Upper Cretaceous (limestone), Triassic (gypsum, marl) and Pleistocene (sandstone, conglomerate) deposits and has eruptive rocks.¹³ The archipelago includes the island of the same name, rocks and rocks awash and smaller islands around Vis as well as the islands of Biševo, Svetac, Jabuka and Palagruža. Before considering the geographi-

⁸ Ivan Jurković, "Model uzročno-posljedičnih veza osmanske ugroze, klimatskih nepogoda, gladi i kuge na privredu hrvatskih i slavonskih vlastelinstava u zadnjim desetljećima 15. i početkom 16. stoljeća" *Tabula: časopis Filozofskog fakulteta, Sveučilište Jurja Dobrile u Puli* 12 (2014), 139–149.

⁹ Šime Županović, *Ribarstvo Dalmacije u 18. stoljeću* (Split: Književni krug, 1993).

¹⁰ Marko Poduje (deceased), Vicko Zorotović, Jakov Matijašević (deceased), Ivo Poduje (deceased), agronomist and oenologist Srećko Roki.

¹¹ Kristina Krklec; Sanja Lozić; Dražen Perica, "Neke značajke klime otoka Visa" *Naše more* 59/3-4 (2012): 154.

¹² *Ibidem*, 159.; Data from the Archive of Croatian Meteorological and Hydrological Service is not available at the moment because the Archive was damaged by earthquake in Zagreb. We found out that in the State Archive in Split there are meteorological data concerning the island of Vis but they have not been analysed so far because this articles focuses on 1930s and the data in the Archive concern period until 1918.

¹³ "Vis" s.v., Hrvatska enciklopedija (<https://www.enciklopedija.hr/natuknica.aspx?ID=64802>)

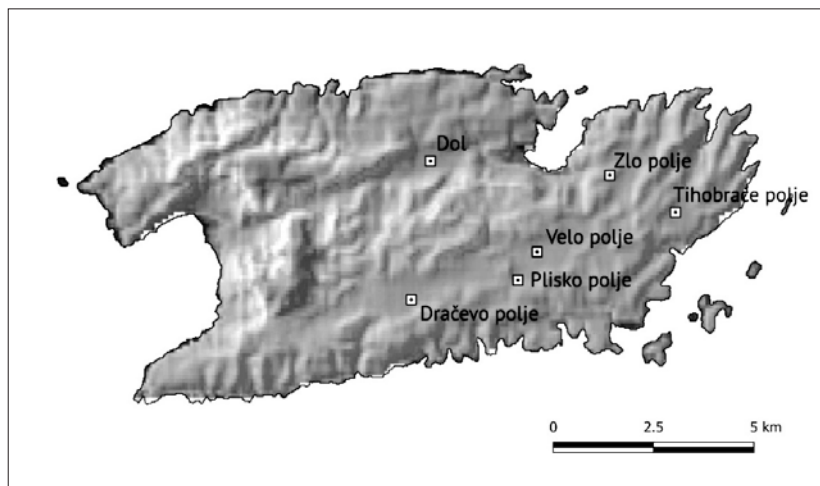


Figure 1. Relief map of the island of Vis with marked largest karst poljes*

* We would especially like to thank Veronika Ilić, student of geodesy, for making this map.

cal characteristics and climatology of the island of Vis, its specific position in the context of the whole Mediterranean should be considered.

The island is characterized by Mediterranean climate and limited areas of highly fertile soils for agriculture. People partly co-created their environmental conditions and chose vine as the most favorable culture that could thrive there. Viticulture marked the entire economic history of the island, especially throughout the early modern period. As early as in the Classical Antiquity and Hellenism, Issa winemaking had a great reputation as witnessed by Agatharchides, a historian and geographer from the 2nd century BC, who claimed that the *wine from Issa, an island in the Adriatic Sea, in comparison with others, is the best* (Athen. I, 51).¹⁴ Fertile areas, used in the Classical Antiquity already, have remained the eternal emblem of the island's viticulture.¹⁵ Winemaking and wine selling declined in the late Antiquity in parallel with economic decline in this period in general. Due to the lack of sources related to the island of Vis in the Middle ages we do not have data about wine selling.¹⁶ High importance of late medieval Vis viticulture is evidenced by a travelogue from the end of the 15th century in which it is stated that the island of Vis *produces only wine*. The same is confirmed by a number of sources through the medieval and early modern history of Vis, later leading to the most fruitful period at the turn of the 19th and 20th centuries.¹⁷ Several centuries of continuous cultivation of the karstic depressions with thick soil impacted on soils of poljes, located only in the inner parts of the island. Most of the red soils are accumulated there, as well as on sand deposits in certain places.¹⁸ Because of the need to increase arable land inhabitants have reshaped significant areas of steep slopes by building terraces for grapevine cultivation.¹⁹ They are mostly planted with vines and also figs, carob and olives. Due to the limestone composition, the island does not contain bodies of surface water.²⁰ All these factors, starting from the issue of irrigation as well as the predominantly karstic terrain, were a challenge in the development of viticulture and, accordingly, the original varieties adapted to the sparse land were planted. Specific variety of vine from Vis called *bugava* (white wine) tolerated the sparse terrain the most, as well as *rukatac/okatac* and *kurteloška* which were also adapted to such environmental conditions. These varieties were adapted to small fertile plots of land while *plavac* was exclusively grown on sandy terrain on the south-eastern side of the island of Vis and on the island of Biševo.²¹ The biggest and most important poljes

¹⁴ Branko Kirigin, *Issa – grčki grad na Jadranu* (Zagreb: Matica hrvatska, 1996), I.

¹⁵ Grga Novak, *Vis* (Zagreb, JAZU, 1961), 15–20.

¹⁶ Novak, *Vis*, 25–55.

¹⁷ Šime Peričić, "Razvitak gospodarstva otoka Visa u prošlosti" *Radovi Zavoda za povijesne znanosti HAZU u Zadru* 41 (1999), 74. - 75.

¹⁸ *Ibidem*, 62.

¹⁹ Kristina Krklec, Sanja Lozić, Ante Šiljeg, "Geomorfološke značajke otoka Visa" *Naše more* 59/5-6 (2012), 298.

²⁰ *Ibidem*, 62.

²¹ According to the testimonies of still living winemakers (see footnote no. 7).

rich in vineyards until half a century ago were: *Velu poje* (Velo polje), *Zlopoje* (Zlopolje), *Tihobraći poje* (Polje tihe braće), *Dol* (Dol), *Plisku poje* (Plisko polje), *Dracevu poje* (Dračevo polje), etc.²²

ECONOMIC UPS AND DOWNS OF VIS AT THE TURN OF THE CENTURY

The main activity on the island of Vis at the turn of the century was viticulture, in addition to the traditionally dominant fishing. The profiling of Vis as a “wine island” has its roots in the late 1850s, and the ecohistorical cause of this profiling is to be found in the powdery mildew epidemic throughout the Mediterranean, which had affected large “wine countries” such as Italy and France earlier than Dalmatia, which in this aspect represented hitherto incomparable competition opportunities. Although Vis wine was of significant quality before, its quantities were moderate, so it could not stand out on the market at that time due to the quantity of wine production on the Apennine Peninsula. In the seventies of the 19th century, the phylloxera hit France, so the wine surplus from the other markets soon reached France, along with the Italian and Austro-Hungarian markets. Since 1874, when large exports began, Vis developed economically extremely fast, and this boom lasted until the end of the 19th century. In this regard, the importance of the development of railway transport in the Austro-Hungarian area (Dalmatia had no railway connection, but its existence in the Monarchy was important for the economy in general) as well as the development of steamship lines that enabled direct and easy transport should be emphasized.²³ The quality of Vis wine is sufficiently evidenced by the fact that at the exhibition in Ghent in 1903, it represented Dalmatia, and Vis merchant Roko Brdanović was awarded a gold medal and an honorary diploma.²⁴ Vis wine that was poured in Trieste inns was also noticed by the famous writer James Joyce, who often stayed in Trieste in the early 20th century. He stated that the best wine he had ever drunk was the so-called *Opollo di Lissa*, in the Vis dialect called *Opol*.²⁵ The peak of viticulture on the island of Vis in the last decade of the 19th century is reflected in the figures of wine production, so in 1888 the island produced almost 100,000 hl, which is four times more than twenty years earlier. The statistical reports issued by Giuseppe Modrić show an increase in wine production before phylloxera, continuously amounting to slightly more than 100,000 hl as shown in the Table 1.²⁶

At the end of the century, Vis, like the whole of Dalmatia, began to fall into a general crisis. Reasons for the crisis of viticulture in Dalmatia and its islands at the turn of the century were on the one hand institutional, and elementary on the other. The institutional cause of the crisis was the already outdated trade agreement of 1892, the so-called “Wine clause” which primarily affected the decline in the island’s wine prices. With the “wine clause”, the Vienna Parliament released the import of wine from Italy, which

Table 1. The amount of wine production on the island of Vis from 1890 to 1893 (Peričić, “Razvitak gospodarstva...”, 77).

County	Year (in hectoliters)			
	1890	1891	1892	1893
Komiža	24 000	29 000	27 500	34 000
Vis	100 000	90 000	80 000	100 000
TOTAL	124 000	119 000	107 500	134 000

²² Novak, *Vis*, 9-12.

²³ Novak, *Vis*, 277.

²⁴ *Ibidem*. 131. The presentation of the wine from Vis at the exhibition in Ghent is just one of many. Thus, the wine from the island of Vis was presented at exhibitions in Trieste in 1882, the Jubilee Exhibition in Zagreb in 1891 where it won an honorary medal, at the first wine exhibition in Trieste in 1900 and in 1925 at the exhibitions in Šibenik and Split (*ibid.*).

²⁵ Carla Carloni Mocerero, *La casa di Amalia: Specchio di James Joyce* (Empoli: Ibiskos editrice di Antonietta Risolo, 2007), 52.

²⁶ *Ibidem*. 77.

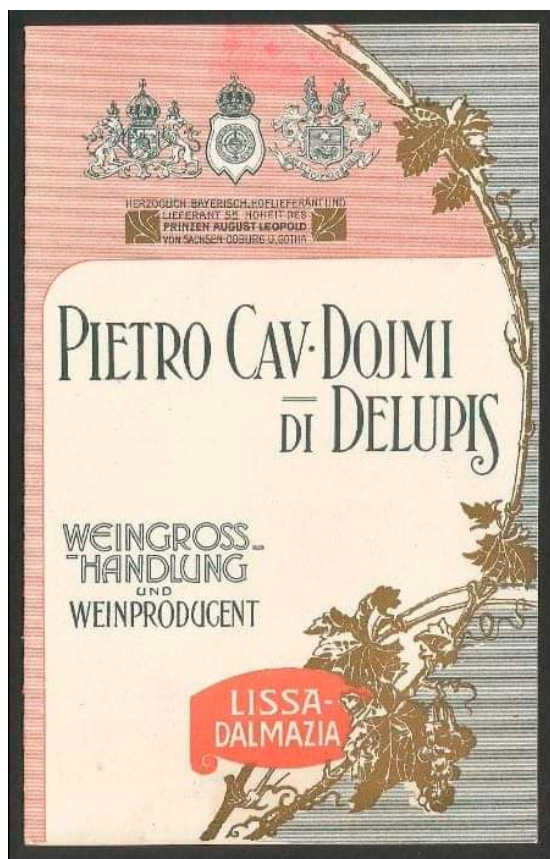


Figure 2. Label of the winning wine of Pietro di Delupis at one of the exhibitions from the turn of the century (source: private archive of G. Mladineo)

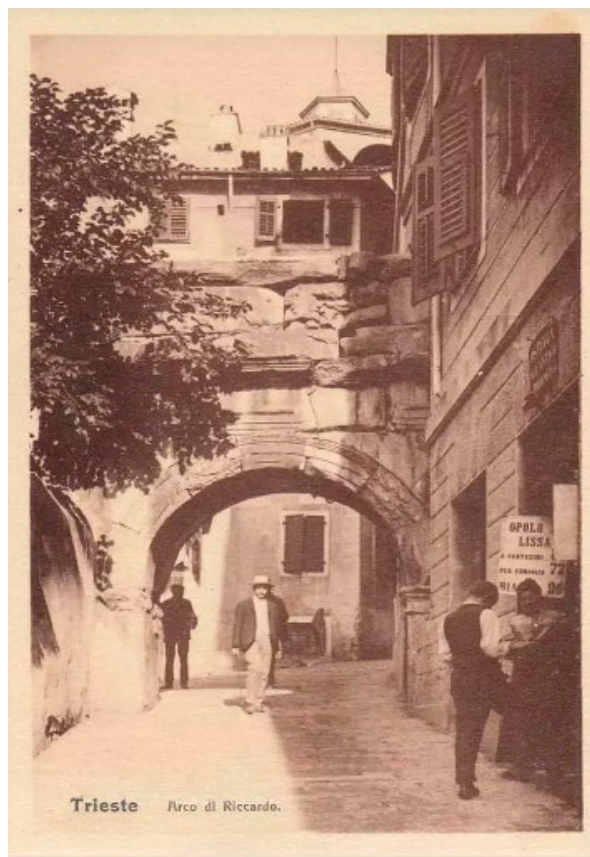


Figure 3. Photograph of a street in Trieste where the picture shows an inn offering Opollo di Lissa (private archive A. Miklić)

increased the supply of wines on the market. This caused a drop in the price of Dalmatian wines.²⁷ The negative consequences caused by the “clause” in the economy are visible in the reduction of the market price of wine, the decline in production and the decline in purchasing power, which resulted in a decline in the standard of living of the islands’ population. It is this “clause” that can be associated with the times of crisis for the Dalmatian islands because it marked the period of the strongest emigration processes (an example is the emigration in 1890s of 1,095 inhabitants from the Hvar district, which included the islands of Hvar and Vis).²⁸ The wholesale wine trade, which was in full swing until the end of the First World War, continued to exist, but to a far lesser extent.²⁹ It is important to point out that at the beginning of the 20th century, the steamship company Topić started operating on Vis, which was a key exporter of Vis wine to, at the time, almost cosmopolitan Trieste, a transit point for the Central European maritime economy.³⁰

In addition to the institutional factor of the “wine clause”, the final blow to all Dalmatian viticulture was the phylloxera epidemic (first appearance in 1894), which in fact abruptly ravaged the island’s viticulture.³¹ Devastation of vineyards by phylloxera was one of the main economic push factors for the mas-

²⁷ Josip Defilippis, “Promjene u poljoprivredi i selu Dalmacije u posljednjih stotinjak godina” *Društvena istraživanja-Časopis za opća društvena pitanja* 86 (2006), 148.

²⁸ Ivan Lajić, *Stanovništvo dalmatinskih otoka – Povijesne i suvremen značajke depopulacije*, [Biblioteka – Demografske povijesne studije] (Zagreb: Consilium: Institut za migracije i narodnost Sveučilišta u Zagrebu, 1992), 123-133.

²⁹ Novak, *Vis*, 279.

³⁰ Novak, *Vis*, 279.

³¹ Ivan Lajić, *Stanovništvo dalmatinskih otoka – Povijesne i suvremen značajke depopulacije*, [Biblioteka – Demografske povijesne studije]

sive emigration from Dalmatia. Consequences were emigration of more than 20,000 Dalmatians in 1906. The island of Vis was one of the lucky ones because it was spared of phylloxera epidemic that year.³² Four years later, in 1910, that was not the case and the island was ravaged by phylloxera.³³ Emigration of people from Dalmatia, especially from the islands, was a huge issue. In the period 1892–1924 Vis (570) was just behind Brač (697) and Korčula (683) one of the islands with the highest numbers of emigrants due to phylloxera, taxes and the falling wine prices.³⁴ Progress in viticulture on the island of Vis was not possible until 1920s when intensive works were performed to rebuild the war-abandoned vineyards, but also to raise the economy in general that had been neglected thirty years long.³⁵ Nonetheless, the turbulent period of the Dalmatian entry into the new state union in 1918 created a new turning point in the development of viticulture in the region. The reason for this should be sought in the problem of the newly created market, which, compared to the former Austro-Hungarian market, was much smaller. Before 1918, about 600,000 hl per year of Dalmatian wine were sold on Austrian, Hungarian and other markets within the former Monarchy without customs duties, while on the other hand the continental part of Croatia produced wine that was subject to customs in the Austrian part of the monarchy. Due to many factors, the viticulture of the Dalmatian region stagnated in the new state, primarily due to the difficult placement of wine, as well as unequal competition from other regions. Furthermore, the Kingdom of Yugoslavia did not encourage viticulture as did Spain, France and Italy whose cheap wines were more competitive and conquered the markets of the former members of the Habsburg Monarchy.³⁶ This was recorded even in the Split newspapers which inform us that not only adverse weather conditions affected people dependant on viticulture but also the factor of economy which affected *wine trading with taxes about 200 percent of its value*.³⁷ The change of trade routes, the development of railways, which raised land transport to a higher level, led to a great stagnation of maritime traffic, and thus wine exports. Of course, the new state itself did not care much about maritime traffic and the development of maritime activities, so the former “Gibraltar of the Adriatic” remained isolated on the margins of the new state. In the minds of the island’s population, viticulture was a part of everyday life. Our oral-history research confirmed the thesis of Ida Vrančić, stating that the period from 1918 to 1925 was remembered as particularly difficult because it was marked by general scarcity.³⁸ Another period of economic difficulties in Dalmatia began in early 1930s, as evidenced by a series of articles from the Split’s daily newspaper at the time, *Novo doba*. The authors of these articles see the reason for these conditions in the ubiquitous poverty, which is why Dalmatia was unable to withstand further deterioration of the situation, i.e. rising prices and generally unfavourable market conditions. Compared to the 1920s, in the mid-1930s the prices of agricultural products were about 44% lower, which speaks about the poor economic situation the Dalmatian peasant found himself in.³⁹ The only bright spot of Dalmatian agriculture was viticulture, which was developed particularly favourably in the interwar period along the coast and especially on the islands, but this activity was severely damaged by the pest *phylloxera*, which destroyed about 78,000 hectares of vineyards. The journalist and socialist from Šibenik, Jerko Dorbić, emphasized that in 1929 *only 12,176 ha remained from the old vineyards, and in addition there are over 21,000 ha of vineyards*

(Zagreb: Consilium: Institut za migracije i narodnost Sveučilišta u Zagrebu, 1992), 123-133.

³² Anica Čuka; Lena Mirošević; Josip Faričić; Vera Graovac Matassi, “Phylloxera revisited: the spread of grapevine disease in Dalmatia and its influence on socio-economic development and agricultural landscape” *Annales – Anali za Istarske in Mediteranske studije – Series Historia et Sociologia* 27 (2017), 111.

³³ *Ibidem*, 112.

³⁴ Anica Čuka; Vera Graovac Matassi, Ante Blaće, “Emigration from Dalmatia (Croatia) to the United States from 1892 to 1924 – Analysis of the Ellis island database” *Društvena istraživanja* 29 (2020), 63.

³⁵ Novak, *Vis*, 279.

³⁶ Marija Benava Penić, *Privreda južne Dalmacije u međuratnom razdoblju (1918. – 1941.)*, doctoral dissertation (Zadar: Sveučilište u Zadru, 2011), 60-61.

³⁷ *Novo doba*, 18th May 1935.

³⁸ Field research of the author on the island of Vis (for names of interviewed people in: footnote no. 7); cf. Ida Vrančić, “Prilog etnološkom istraživanju otoka Visa” *Ethnologica Dalmatica* 12 (2003), 77.

³⁹ Aleksandar Jakir, *Hrvatska povijest u 20. stoljeću: Dalmacija u međuratnom razdoblju 1918. – 1941.* Biblioteka Hrvatska Povijesti (Zagreb: Leykam International, 2018), 209.

Table 2. Area statistics of old (second column) and renewed (third column) vineyards and yield of vineyards in Dalmatia 1927 (fourth, fifth and sixth column – in hectolitres). *Privreda i radnici, Split 1929., 40, in: Jakir, Dalmacija..., 215.*

County	In hectares:		hectoliters:		
	Old vineyards:	Renewed vineyards:	White wine:	Red wine:	Total:
Šibenik	34	8200	30120	75000	105120
Split	380	5600	9100	57880	66980
Hvar	2300	2800	31285	29900	61185
Benkovac	-	2050	15305	33368	48673
Krk	-	-	3711	35809	39520
Korčula	4000	2800	12200	31600	41800
Imotski	420	960	18750	15000	33750
Biograd na Moru	-	-	7000	22500	29500
Dubrovnik	1353	200	7666	19008	26674
Knin	21	1800	5500	14500	20000
Metković	1668	19	1400	17218	18618
Sinj	60	180	1620	6420	8040
Kotor	340	32	266	7140	7406
Supetar	200	1800	2250	4950	7200
Makarska	1400	780	-	4000	4000
Total:	12 176	27 012	114 173	374 293	518 466

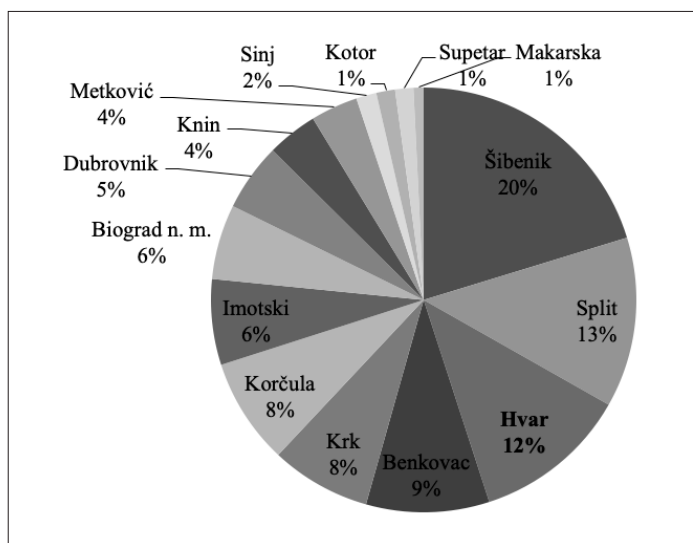


Chart 1. Graphic display of wine production (by counties) in Dalmatia in 1927. Data source: see Table 2.

restored by planting American vine. He wrote also that the amount of produced Dalmatian wine is on average around 8000 hl per year but according to Dorbić the amount of produced wine was primarily influenced by climatic conditions.⁴⁰

Although it is difficult to claim how correct the data in Table 2 and Chart 1 are and for which purpose they were used, it is important to also mention the data documented by *Jugoslavenski Lloyd*, a steamship company of long-distance sailing.⁴¹ It provides information that in 1935 grapevine in Dalmatia covered 40000 ha and that the average hectare yielded 17 hl of wine. The data from 1934, presented by Aleksandar Jakir, is also important. He claimed that in the same year 177,000 hl of white and 507,500

⁴⁰ Jakir, *Dalmacija*, 214-215.

⁴¹ "Jugoslavenski Lloyd" s.v., Hrvatska tehnička enciklopedija (<https://tehnika.lzmk.hr/jugoslavenski-loyd/>)

hl of red wine were produced in the area of the Primorska Banovina⁴². As a matter of several factors mentioned above, the foundations for the restoration of vineyards were laid in the interwar period, which only reached the level of production of the end of 19th century in the 1930s, as confirmed by the fact that 4/5 of the population was engaged in viticulture.⁴³ The maximum production, according to Aleksandar Jakir, was reached in 1938 with about 775,000 hl of wine.⁴⁴ The popularity of both wine production and consumption is evidenced by the interesting fact that despite the weak consumer power of the population, the culture of wine consumption was at an extremely high level. Between 1930 and 1939, wine consumption per capita in the Kingdom of Yugoslavia was in a high seventh place in the world.⁴⁵ When interpreting the excellent yield of 1938, data on weather conditions that affected Dalmatia in preceding years dealt with in this paper should be taken into account. Information presented so far made it clear that the whole wine economy system was strongly dependent on weather and climatic conditions and occurrence of grapevine diseases.

THE COLLISION OF ECO- AND ECONOMIC HISTORY IN 1935 AND 1936⁴⁶

According to 20th century data, weather-induced grape harvest failures on Vis can be traced back to the beginning of the century. In June 1902 and July 1903 hail inflicted great damage on the vineyards in the amount of 400,000 crowns or 15,000 hl. Although amounts of wine produced in years to follow are not known, Peričić assumes that this was the case until 1924, because the vine of *Kaštelka*, *Grk* and *Vugava* was grown there.⁴⁷ In this case, the testimonies of the old winegrowers who pay attention to the conditions in which these varieties can be grown should be taken into account. *Vugava* and *Grk*, Vis indigenous white varieties, are easily subject to sudden weather changes such as hail and frost which, if they occur between April and July, can cause catastrophic consequences for viticulture.⁴⁸ Collective institutions belonged to the main actors of restoration of vineyards. As the newspaper from 1936 claimed, they were the ones who *revitalized viticulture on Vis*.⁴⁹ Although the media of Split just began to report on adverse weather conditions in 1935/1936, eyewitness reports differ from this – if we can rely on their memories, great frosts in May occurred in 1933/1934 and many vineyards as well as other crops grown on the island froze. One of the eyewitnesses recalled, for instance, that on May 1st, 1934, all the carob trees on the island (one of the major sources of income apart from wine) were nipped by frost.⁵⁰ It was a series of adverse weather events that have affected the island's mild climate. Adverse weather events returned in the spring of 1935 and reached their climax in November 1935, but they continued to ravage the island until the end of 1936. On May 8th, 1935 newspapers report that *on the Saturday morning sudden frost damaged the vineyards around the city*. Same newspapers report that *the best poljes have been damaged, so it is calculated that 15000 hectoliters of wine is lost. Therefore the damage is estimated at about 4-5 million dinars*.⁵¹ In October, after the harvest, newspapers from Split mention not only the frost that occurred in the spring, but also drought that lasted for several months.⁵² One of the newspapers mentioning this is *Jadranski dnevnik* which reports that *the spring frost has done big damage on some parts of Vis... smaller areas of vineyards have been damaged on Vis and Mljet because of hail... The biggest damaged done to the vines was from drought* [according to the newspaper at least]. *This year's*

⁴² Primorska Banovina was administrative unit in the Kingdom of Yugoslavia in period of 1929–1939. It covered the area of today's Split-Dalmatian County, Šibenik-Knin County, part of Zadar county, part of Dubrovnik-Neretva County and part of western Herzegovina between Konjic and Mostar.

⁴³ Peričić, "Razvitak gospodarstva", 78.

⁴⁴ *Ibidem*. 215.

⁴⁵ Milan Dragaš, *Vinogradarstvo* (Beograd: Zavod za izdavanje udžbenika NRS, 1961), 330.

⁴⁶ Reports of the hazards in 1935/1936 either are not yet known to authors or do not exist, which is not the case for hazards in 1939.

⁴⁷ Peričić, "Razvitak gospodarstva", 78.

⁴⁸ The aforementioned narrators. See footnote no 7.

⁴⁹ *Novo doba*, 22nd February 1936.

⁵⁰ See footnote no. 7.

⁵¹ *Novo doba*, 8th May 1935.

⁵² *Novo doba*, 6th November 1935; *Novo doba*, 7th November 1935.

*abnormal drought which in some parts lasted over six months destroyed most of income from vineyards.*⁵³ In the following year 1936 Vis was also affected by adverse weather events like drought, heavy rain and frost. Four months of the dry period decreased the quantity of wine. On September 6th, 1936, heavy rain began to fall after four months of drought. This created a large torrent of water that flowed from Cunkovica (hill above Kut) towards Kut in the eastern part of the town of Vis, carrying with it a pile of stones and trees. Moreover, newspapers state that water overturned and destroyed wine barrels in the taverns of Kut. It is obvious that the combination of drought and flood annulled any possibility of prosperity in 1936. It is not surprising that the narrators recalling this weather-induced event, which called into question their survival and was briefly described also in the newspapers, remembered very well what had happened. Dependence of subsistence of the population on weather conditions is also indicated by the somewhat bizarre fact that the heavy rain destroying the streets, and even taking away some sheep, was not perceived as a disaster but as a positive event, given that the previous drought heralded a gloomy and infertile year for residents mostly dependent on grape yields. Perceptions of the heavy rain are based on memories collected from aforementioned narrators, so their reliability is questionable in this case, nonetheless it is worth being mentioned. The lack of water caused by the drought prompted the population to call for the construction of a reservoir with a sufficient amount of water; the town, and its primary activity viticulture, were not able to survive, let alone develop without it.⁵⁴ The bizarre joy that the population probably felt with the appearance of torrents and rains can be explained by the absence of hail that would significantly threaten the vineyards. As documented in 1935, the island's hail-frightened inhabitants felt its consequences, as *Novo doba* writes, on July 8th of the same year, when hail ruined the vineyards in the area around Kut, in Zlopoje it damaged 70% of the plantations, while in Velo Poje and Jubišće about 50% of plantations were damaged. Apart from hailstone hits, the threat to the economy were hail-induced frost and ice, and in this case they damaged almost all the vineyards on the island for which we do not have precise statistics. The tragedy caused by bad weather not only took its toll on the economy, but also on people's lives, so on October 3th, 1936, during heavy thunderstorm, lightning struck a field hut where three people were seeking shelter from the rain. A young man harvesting the crops together with his two assistants were killed by lightning in this building. After these weather hazards, the locals forgot about the drought. In 1937 and 1938 they managed to recover and they optimistically looked at the future.⁵⁵ Results of recovery became apparent in 1938, when 150,000 hl of wine were produced on the island, which equaled the peak of production from the most fruitful periods. Peričić assumes that production would have been even higher if the market had not shown weak demand. Red wines from Jelsa, Vrboska and Vis stood side by side with Italian and Spanish wines. The most famous varieties were *kurtelaška*, *marāština* and *vugava*.⁵⁶ A shorter but much more intense natural hazard of disastrous dimensions followed in 1939.

NATURAL DISASTER IN 1939

The following disaster of 1939 is documented in the correspondence of the Municipal Administration in Vis, the Administration of Hvar and Vis districts, the district agronomist and the *ban* authorities, specifically the Department of Peasant Economy and *ban* Dr. Ivan Šubašić himself.⁵⁷ It stands in the telegram of the Municipal Administration in Vis sent on October 12th, 1939 to the Ban's authority in Zagreb, that *yesterday a strong cloudburst and hail destroyed the grapes in not yet harvested vineyards on Vis*. The fact that not only the crop was damaged, but *in some areas the soil was completely removed*

⁵³ *Jadranski dnevnik*, 12th October 1935.

⁵⁴ *Jadranska straža*, July 1936.

⁵⁵ Goran Mladineo wrote about the adverse weather events in a short online article: *Viške vremenske nepogode 1936. godine* (<https://kut-vis.blogspot.com/2014/12/viske-vremenske-nepogode-1936-godine.html>).

⁵⁶ Peričić, "Razvitak gospodarstva", 79.

⁵⁷ All the correspondence on these events is preserved in the Croatian State Archives under signature HDA-OSG-BVBH, IV/2 30028-44094/1939., 62/161 and HDA-OSG-BVBH IV./3b 30206-44289/1939., 88/161.

Table 3. Percentages of vineyard damage on the island during the 1939 disaster, table was prepared by the district agronomist V. Tabain and the court appraiser I. Bradanović (HDA-OSG-BVBH, IV / 3b, 38237/1939)

Area of vineyard	Damaged surface of vineyard (ha)	Percentage of damage in grape harvest	Amount of damage in hl of wine	Amount of damage (money - Dinars)	Damaged cause due to cloudburst or hail
Kutac	20	90 %	720	180 000	Cloudburst and hail
Bilica	15	90 %	540	135 000	Cloudburst and hail
Podmirje	20	80 %	560	140 000	Cloudburst and hail
Pribina dolca	3	90 %	108	27 000	Cloudburst and hail
Vela Gomila	10	90 %	360	90 000	Cloudburst and hail
Krvavac	50	50 %	1500	375 000	Cloudburst and hail
Malo Zlopolje	45	60 %	1620	405 000	Cloudburst and hail
Paklenica	7	80 %	224	56 000	Cloudburst and hail
Galija	15	60 %	450	112 500	Cloudburst and hail
Ljubišće	40	50 %	1200	300 000	Cloudburst and hail
Smokova	47	70 %	1645	411 250	Cloudburst and hail
Tihobraće poje	42	50 %	1050	262 500	Cloudburst and hail
Vaganj	11	60 %	297	74 250	Cloudburst and hail
Milna	28	60 %	672	168 000	Cloudburst and hail
Brgujac	15	60 %	360	90 000	Cloudburst and hail
Podstražje	14	50 %	280	70 000	Cloudburst and hail
Čavojnica	60	70 %	1680	420 000	Hail
Prementur	8	80 %	256	64 000	Hail
Stončica	35	80 %	1120	280 000	Hail
Korita	31	40 %	496	124 000	Hail
Poljica	48	40 %	768	192 000	Hail
Lorca	29	40 %	464	116 000	Hail
Dol	18	30 %	270	67 500	Hail
TOTAL	611	-	16 640	4 160 000	-

from the vineyards [by hail], so that not only soil but also vines disappeared, speaks of the damage caused.⁵⁸ The disaster also significantly damaged the infrastructure of the island, where it destroyed roads and field cart tracks.⁵⁹ The scenario from 1935 seems to have been replicated this year as well, because the swollen water pouring down the hill destroyed and devastated both roads and local houses, and this time also the Vis cellars. Swollen water, reaching a height of 1.5 meters destroyed cellars and in vineyard cellars, lifted vessels, even full barrels of new wine. The district agronomist estimated this damage at 56,250 dinars, i.e. 225 hectoliters of wine.⁶⁰ It should be noted that some winegrowers (family farms) lost up to 50 hl or more wine due to this disaster. Of course, the statement from the source is also interesting, that in addition to wine, water destroyed various other things, especially foodstuffs that people have been storing for several months (...) due to the existing war threat. The disaster not only affected the primary economic branch of viticulture, but also animal husbandry, killing 44 rams, one horse and goats and a lot of poultry. It should be noted here that although Vis was not primarily engaged in cattle breeding, it was an activity that contributed to self-subsistence of the local community. What was left in the vineyards, could not be transported to further processing points after the harvest

⁵⁸ HDA-OSG-BVBH, IV/2 39039/1939.

⁵⁹ *Ibidem*; The water destroyed roads, field cart tracks, partially local streets, so traffic was interrupted due to damage on the mentioned roads and field cart tracks. In some places the roads are completely ruined and in some they have dissolved so that it is almost impossible to repair the damage.

⁶⁰ HDA-OSG-BVBH, IV/3b, 38237/1939.

Table 4. Numerical report on the damage to field cart tracks and roads on the island during the disaster of 1939. Prepared by the district agronomist V. Tabain and the court appraiser I. Bradanović (HDA-OSG-BVBH, IV / 3b, 38237/1939).

Area	Surface of land carried off (ha)	Amount of damage (Dinars)	Remark
Čunkovica	4	120 000	Bulk of material, completely ruined land
Valica	2	60 000	Bulk of material, completely ruined land
Musun dolac	2	60 000	Bulk of material, completely ruined land
Kulac	1	30 000	Pavements torn down and land carried off
Bilica	0.25	7500	Pavements torn down and land carried off
Pribina dolci	1.50	45 000	Pavements torn down and land carried off
Vela gomila	0.70	21 000	Pavements torn down and land carried off
Paklenica	0.95	28 500	Pavements torn down and land carried off
Galija	1.80	54 000	Land carried off to the foundation
Ljubišće	1.40	42 000	Land carried off to the foundation
Smokova	3.70	111 000	Land carried off to the foundation
Vaganj	3.20	80 000	Land carried off to the foundation
Milna	4.30	126 000	Pavements torn down and land carried off
Brgujac	3.80	114 000	Pavements torn down and land carried off
TOTAL	30.60	899 000	-

because the torrent of water completely destroyed the field cart tracks and local roads where *dozens of wagons of earth and stones were piled up*. The source emphasizes the importance of the activities of the Croatian Peasant Protection, which was already active in Vis at that time. Perhaps the most important part of the source related to the disaster is the report from the district agronomist, which describes in detail the area affected by the disaster as well as the problems that preceded the disaster. It is important to this paper that this disaster devastated precisely those parts of the island where the variety *plavac* (grapes for red wine production) was grown, which was harvested the latest among all varieties, and this was the main export product from Vis. Although the winemakers had already harvested white grape varieties and made wine from them, the torrent took away that wine, annulling the harvest results. It is also important to note that the white grapes were ravaged by *vine moth attacks* in the same year, as well as the wet weather, aggravating the damage. The table provided by the district agronomist shows this. It includes the damaged areas in hectares, the percentage of damaged grapes as well as the amount of damage in hectoliters of wine. That damage was converted into a sum of money which amounted to 4,160,000 dinars. Furthermore, the district agronomist and court appraiser, marked the exact area of the island that was damaged by cloudburst, and that by hail.

In the mentioned document (HDA-OSG-BVBH, IV/2 39039/1939), we can notice discrepancies between the assessment of the extremes of this weather disaster, considering that the municipality noted the highest water level of 1.5 m, while the district agronomist estimated that the water in the taverns rose to 2.4 m. The question of eventual exaggerated damage assessment for the purpose of obtaining aid remains open, but the range of areas affected by the disaster certainly indicates that this hazard had greatly damaged viticulture on Vis. In addition to the assessment of the damage in the vineyards, the district agronomist estimated the value of lost food at 35,000 dinars. Damages related to beekeeping, sheep breeding and poultry farming were also mentioned. The total damage caused by the disaster was estimated by the district agronomist at 5,502,000 dinars.⁶¹ The district administration, in order to provide help to the viticulture of Vis due to the 1939 shock, also proposed the establishment of a vineyard

⁶¹ HDA-OSG-BVBH, IV/2 39039/1939.

nursery in Vis: the Municipality of Vis prepared the ground and asked for the *establishment of a special wine school*.⁶²

The disaster almost took its death toll, directly endangering the youngest population, which was prevented by the timely reaction of the gendarmerie. The reason for this should be sought in the very position of the then craft school and kindergarten, because the whole southern side of this complex was incised in a hill where it was directly exposed to a torrent from the hill above.⁶³ After the torrent, the Hvar district administration proposed the construction of a dam in the area of the riverbed that was located on the Cunkovica hill.⁶⁴ And it is more than obvious that the district administration understood the challenge posed by the riverbed located between the hills of Cunkovica and Lučko brdo, where in fact the torrent flows to the area of the town of Vis called Kut. The dam which links both locations (Cunkovica and Lučko brdo) was finally built in 1939 and has remained in function ever since, but fortunately no such hazardous situation has repeated.⁶⁵

In the frame of recovery from the damage caused by the disaster, the district organization of the Croatian Peasants Party (HSS) for the island of Vis sent its letter to the *ban*, where *on behalf of the entire membership of the Croatian Peasants' Party on this exposed island* they asked for most generous help. We can also identify the broader political aspect included in the restoration following this disaster.⁶⁶ The Croatian Peasant Party, which won the elections on the island in 1935, got involved in rebuilding the economy, so in a new letter from the Municipal Administration of Vis signed by the mayor Ivanko Farolfi, a zealous HSS member, it is clear that all benevolence of the *ban* was expected, who himself was a member of the same party.⁶⁷

CONCLUDING REMARKS

The great weather-induced events, socio-political upheavals and their manifestations in a relatively short period of time completely devastated the viticulture of Vis and thus left an indelible mark both in economic development and in the memories of people to whom wine meant life. "Island of wine and fishing" was particularly vulnerable to weather-induced events causing difficulties in vineyards and wine economy. The island as a space is an example of an isolated environment, nonetheless it has been an integral part of the broader environmental and societal milieu. Consequently, by studying the history of Vis, we can observe key changes at the micro and macrohistorical level. The inclusion of all main elements is a key epistemological principle in such an analysis. This way, interrelations between perceptions of the economy in space, its geographical visualization, and time as a multifaceted structure, became the basis for studying weather influences on a particular economy. The fact proven in the paper that adverse-weather events like heavy rains, droughts and frosts have almost irreversibly devastated viticulture on several occasions should be understood in terms of environmental history, i.e. in history created by the interaction between humans and nature, a cycle that flows irreversibly, but at certain points reference events mark those Braudelian structures and conjunctures.

⁶² HDA-OSG-BVBH, IV/2 39044/39.

⁶³ HDA-OSG-BVBH, IV/3b, 38237/1939.

⁶⁴ HDA-OSG-BVBH, IV/2 39044/39.

⁶⁵ *Ibidem*.

⁶⁶ HDA-OSG-BVBH, IV/2 39044/39.

⁶⁷ *Ibid*; *Winemakers of Vis and this municipal administration believes that you, Ban, will strive to make this westernmost point of our homeland, in this severe disaster feel that it is in its free homeland for which we thank You in advance and greet you with Croatian peasant greeting.*

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SAŽETAK

Vremenske promjene i njihova očitovanja u vidu meteoroloških pojava oduvijek su uvelike bili povezani s gospodarskim uzletima i padovima, a za sobom su povlačili čitav niz ekonomskih, kulturnih i političkih promjena koje su ostavljale traga na čitavoj povijesti određenog kraja. Meteorološke promjene, ali kauzalno i one u gospodarstvu, vidljive su 30-ih godina 20. stoljeća i na Jadranu gdje su u pojedinim slučajevima potpuno uništili gospodarske djelatnosti i urode. U ovom radu pristupa se nepogodama koje su poharale otok Vis u vremenskom rasponu od 1935. do 1939. godine u više navrata i u više različitih pojava. Kao svjedoci vremena ostali su neki novinski članci splitskog Novog doba, a o nepogodama iz jeseni 1939. ostali su detaljni spisi o uništenju vinograda i uroda u fondu za Gospodarstvo Banovine Hrvatske (HDA, BH-OSG, IV, 39039-44/1939). Cjelokupni problem sagledan je iz više perspektiva; vremenske pojave i njihov utjecaj na cjelokupnu sliku, vremenske nepogode kao faktor potpunog uništenja vinogradarstva i njihovi recipročni odjeci, te ljudske percepcije tih nepogoda koje su predstavljane u okvirima oralne historije.

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