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ACADEMIÆ SCIENTIARUM HUNGARICÆ
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Gábor Demeter and Beatrix F. Romhányi
Special Editors of the Thematic Issue

Contents

ARTICLES

- | | | |
|---|---|-----|
| ÉVA BODOVICS | Weather Anomalies and Their Economic Consequences: Penury in Northeastern Hungary in the Late 1870s | 179 |
| SÁNDOR RÓZSA | Evaluation of the Floodplain Farming of the Settlements of Nagykunság Based on the First Cadastral Survey | 213 |
| BEATRIX F. ROMHÁNYI,
ZSOLT PINKE,
AND JÓZSEF LASZLOVSKY | Environmental Impacts of Medieval Uses of Natural Resources in the Carpathian Basin | 241 |
| MIKLÓS KÁZMÉR
AND ERZSÉBET GYÓRI | Millennial Record of Earthquakes in the Carpathian-Pannonian Region: Historical and Archaeoseismology | 284 |
| ANDRÁS GRYNÆUS | Dendrochronology and Environmental History: The Difficulties of Interpretation | 302 |
| VIKTÓRIA KISS | Transformations of Metal Supply during the Bronze Age in the Carpathian Basin | 315 |
| ZOLTÁN CZAJLIK | Along the Danube and at the Foothills of the North-Eastern Hungarian Mountains: Some Data on the Distribution of Stone Raw Materials in the Late Iron Age | 331 |

BOOK REVIEWS

- Ottoman Law of War and Peace: The Ottoman Empire and its Tributaries from the North of the Danube. By Viorel Panaite. Reviewed by Gábor Kármán 343
- Tábori sebesültellátás Magyarországon a XVI–XVIII. században [Care for the wounded in the field in Hungary in the sixteenth, seventeenth, and eighteenth centuries]. By Katalin Mária Kincses. Reviewed by Katalin Simon 347
- Styrian Witches in European Perspectives: Ethnographic Fieldwork. By Mirjam Mencej. Reviewed by Gergely Brandl 350
- The Habsburg Civil Service and Beyond: Bureaucracy and Civil Servants from the Vormärz to the Inter-War Years. Edited by Franz Adlgasser and Fredrik Lindström. Reviewed by Máttyás Erdélyi 355
- Az uradalom elvesztése: Nemesi családok a 19. századi Békés megyében [The loss of the estate: Noble families in Békés County in the nineteenth century]. By Adrienn Szilágyi. Reviewed by Krisztián Horváth Gergely 358
- Deszkafalak és potyavacsorák: Választói magatartás Pesten a Tisza Kálmán-korszakban [Plank walls and freebee dinners: Voter behavior in Pest in the era of Kálmán Tisza]. By Péter Gerhard. Reviewed by Réka Matolcsi 362
- Men under Fire: Motivation, Morale and Masculinity among Czech Soldiers in the Great War, 1914–1918. By Jiří Hutečka. Reviewed by Tamás Révész 366
- The Fortress: The Great Siege of Przemyśl. By Alexander Watson. Reviewed by Kamil Ruszala 369
- Tiltott kapcsolat: A magyar–lengyel ellenzéki együttműködés 1976–1989 [A forbidden relationship: Oppositional cooperation between Hungarians and Poles, 1976–1989]. By Miklós Mitrovits. Reviewed by Ferenc Laczó 373
- Dissidents in Communist Central Europe: Human Rights and the Emergence of New Transnational Actors. By Kacper Szulecki. Reviewed by Una Blagojević 377
- Corn Crusade: Khrushchev’s Farming Revolution in the Post-Stalin Soviet Union. By Aaron Hale-Dorrell. Reviewed by Alexandra Bodnár 380



Weather Anomalies and Their Economic Consequences: Penury in Northeastern Hungary in the Late 1870s*

Éva Bodovics

Hungarian National Archives, Borsod-Abaúj-Zemplén County Archives

bodovics.eva@mnl.gov.hu

This study investigates an episode of penury in 1879–1880 in Borsod and Zemplén Counties which occurred as one of the negative consequences of a short-term weather change which was experienced across Europe in the late 1870s and early 1880s. From the mid-1870s on, due to the wetter and cooler weather, the annual crop yields repeatedly fell below the usual and expected averages in Hungary. After a catastrophic harvest in the autumn of 1879, when the quantity of harvested cereals was sufficient neither for reserves nor for spring sowing, the situation became severe. 1878 had also been a bad year for agriculture: the severe floods in the second half of 1878 not only had washed the crops from the fields but had also covered them with thick sludge that made it impossible to sow in autumn.

Since the spring of 1879 was characterized by unfavorable conditions for agriculture (increased rainfall, widespread floods, low average spring temperatures), the local and national authorities continuously kept their eyes on the crops. Thanks to this preliminary attention, the administration was able to respond quickly and in an organized manner to the bad harvest in July and August and could avert catastrophe at national level. The leadership of the two counties responded more or less in the same way to the near-famine conditions. First, they asked the Treasury to suspend tax collection until the next harvest at least so that the farmers who were facing financial difficulties would not have to go into debt. Second, they appealed to the government for financial and crop relief to save the unemployed population from starvation. For those who were able to work, they asked for the approval of public works and major construction projects from the Ministry of Transport and Public Works. For many, such state-funded road construction or river regulation projects were the only way to make a living. Third, the county administrations also gave seeds for spring sowing to the farmers. While Borsod county survived the years of bad harvests without dire problems due to the higher proportion of better quality fields, in the more mountainous region of Zemplén, most landowners had smaller and lower quality lands, and they often chose to emigrate to avoid starvation. These difficult conditions may have provided the initial impetus for mass emigration to Western Europe and America.

Keywords: weather anomalies, penury, crisis management, Hungary, late nineteenth century

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Hungary, as a predominantly agricultural country, has always been highly vulnerable to weather conditions. Both extremes of the precipitation spectrum, meaning too much or too little precipitation accompanied by temperature fluctuations and complemented by theoretical and technical backwardness in farming, have often led to subsistence crises.

Several people have already dealt with the history of penuries and famines in Hungary caused by the droughts of the nineteenth century: the distress of 1814–17¹ and the famine of 1845–47,² and 1863–64.³ However, wet and cool weather, especially during spring and summer months, can also badly damage crops, resulting in penury and, in the worst case, famine. This is especially true when there is unusually humid and cold weather for years in a row. This happened in Hungary beginning in 1875, and this caused distress in the northeastern parts of the country after the catastrophic harvest of 1879. Though our research does not cover other regions of Hungary, press products and economic sources suggest that the poverty caused by the weather extremes was not limited to the northeastern counties.

Neither the unfavorable weather nor the subsequent difficult economic situation were unique to Hungary. Rather, the crises caused by extreme weather was hit much of Europe.⁴ The year 1879 marked a turning point in economic growth in many countries, with grain being imported in several places due to the high rate of crop losses (up to 50 percent) that generally occurred. The influx of cheap grain mostly from America and Russia led to a sharp drop in the price of the cereals produced in Europe. In England, for example, the 50-year recession, the so-called agrarian crisis, began in 1879.⁵ As Hubert H. Lamb put it, “1879 turned the decline into a collapse.”⁶

In the works written on the history of the Hungarian crisis,⁷ which affected the agricultural sector as well, the focus of research has been on the inflow of cheap grain and the consequent fall in domestic grain prices, and the relationship between the crisis and the weather anomalies of the era has not

1 Hodgyai, “Ínséges évek.”

2 Czoch, “A reformkori közigazgatás”; Rémiás, “Az 1847. évi éhínség”; Ungár, “Az 1845–47. évi.”

3 Boa, “Az 1863–64. évi aszály”; Katus, “Az 1863–64. évi aszály.”

4 Lamb, *Climate, History and the Modern World*.

5 On the agrarian crisis in Great Britain, see Perry, *British Farming*.

6 Lamb, *Climate, History and the Modern World*, 233; Bichet et als., “Enhanced Central European summer.”

7 Sándor, *A XIX. századvégi agrárválság*; Kaposi, “A 19. századi agrárválság”; Kaposi, “Válság és alkalmazkodás”; Kaposi, „Agrarkrise in Ungarn”; Klement, “Die Agrarkrise”; Kiss, “Gabonaválság a 19. század végén.”

been examined. There had been a decline in agricultural prices in the country before 1879, so the explanation is not primarily to be found in the weather conditions, but we nonetheless must take into account the possibility that food and feed shortages due to a series of bad harvests and the catastrophic harvest of 1879, accompanied by impoverishment, could certainly have contributed to and deepened the depression. Our research, the initial findings of which are included in the present paper, is intended to fill this lacuna in the secondary literature.

This paper is divided into three sections. In the first, we examine the weather conditions of the last third of the nineteenth century, highlighting anomalies in temperature and precipitation. Next, in our discussion of conditions in two northern counties, we show how adverse weather affected agricultural production at the regional level. According to the sources, a series of poor harvests led to distress in several districts in late 1879 and early 1880. In the third part of the paper, we present the extent of this need and the official measures taken to address it. Although our paper focuses on events and conditions in these two northeastern counties, we also briefly discuss the situation in the neighboring counties in order to provide a wider context.

Sources and Methods

Given the aim of the paper, we used statistical and descriptive sources in our research. To observe the weather anomalies, we used the yearbooks of the predecessor to the current Hungarian Meteorological Service, which began publication in 1873.⁸ Collected under standardized conditions, these instrumental data are available from 1871 on for some settlements in the country. As the monitoring network expanded, weather data from other settlements were added to the yearbook over time. Consequently, we have data from different periods for the settlements in the northern region that we examined. The longest data series, dating back to 1871, are from Eger and Eperjes (today Prešov, Slovakia).

To examine the temperature, we used monthly averages calculated on the basis of the daily temperature averages recorded immediately after detection.⁹ With regard to precipitation conditions, we examined the monthly precipitation data aggregated from the daily data.

⁸ *Meteorológiai Évkönyvek.*

⁹ The temperature was measured three times a day, at 7 a.m., 2 p.m., and 9 p.m.

The data in the yearbooks were theoretically recorded in a centrally regulated way and under conditions with state-approved means, so we can consider them more reliable than those recorded in previous periods, but we must nonetheless be careful, because improper recording techniques or various bias factors may have affected the accuracy of the data. One such factor is the change of the location of the measuring station over time, which for example occurred in the case of Kassa (today Košice, Slovakia). The homogenization of our data, which could increase its accuracy and reliability, would make it possible to eliminate problems like this. However, homogenization would also require the examination of additional metadata (measurement-related data), which we are unable to perform because we lack the professional meteorological knowledge. We hope that soon meteorologists will also homogenize the data from our period, as they have done for the data from the twentieth century.

In order to be able to examine the characteristics of our data over a longer period, we also included in our research the data from Budapest, the city with the oldest data series in Hungary. These homogenized data series are from the *váraljmet.hu* meteorological website. The homogenization and interpolation of the data to the meteorological station of Pestszentlőrinc are carried out by ZAMG (*Zentralanstalt für Meteorologie und Geodynamik*).

In addition to the weather data series, the range of our statistical sources is expanded by the county yield results, which we collected from the relevant volumes of the Hungarian Statistical Yearbooks.¹⁰ Regarding the accuracy of the data, it should be noted that they were recorded on the basis of the accounts and estimates provided by landowners, but more importantly, the landowners tended to underestimate the actual yield at the time of the surveys, as they feared a tax increase.¹¹ In addition, it is conceivable that farmers reported higher crop losses than the losses that they actually suffered in hopes of receiving state compensation. These are merely assumptions, but we can suspect that the situation may have been more favorable, if not necessarily by much, than the picture drawn by the data.

Descriptive sources were also included in the research in order to identify inaccuracies in the statistical data and the experiences behind the numbers. As our main goal was to present the official measures taken to manage the crisis, we used the documents of the county administrations, which means the reports

10 *Magyar Statisztikai Évkönyvek*

11 Vörös, “A magyar mezőgazdaság.”

issued by the so-called *szolgabíró* or, roughly, sheriff at the district level and the *alispán* or deputy lord lieutenant at the county level. The magistrates in charge of running the districts (*járás*) served law enforcement, administrative, and judicial functions, and the *szolgabíró*s normally submitted their reports on the conditions of their district every six months. However, due to the growing destitution, the *alispán* required monthly reports, and these reports enable us to present in detail the course and management of the crisis. After the *ispán* or lord lieutenant, the *alispán* was the second deputy in the county administration and also the figure who actually held control of the county. Reports from the *szolgabíró*s (district deputies) and the leaders of the settlements also went to the *alispán*, who, on the basis of these reports, submitted an exhaustive report to the Ministry of Interior on the affairs of the county every six months. Almost all of the *szolgabíró*s' and *alispán*'s reports are found in the Borsod-Abaúj-Zemplén County Archives of the Hungarian National Archives. In addition to these sources, materials published in the *Borsod. Miskolczi Értesítő* [Borsod. Miskolcz Gazette], an organ of the local press, were also examined.

Weather Conditions in Northern Hungary, 1871–1900

Instrumental data collected with standardized tools and methods have been available for Hungary since 1871. The development of the network of meteorological stations took place gradually, beginning in the Transdanubian areas and spreading to the regions in the east and northeast. Each station was connected to the network at different times, so while we have data from some areas from the very beginning, other parts of the country only appeared on the “weather map” of the country 10 or 15 or 20 years later. Of the northeastern region examined in greater detail in our study, the data sets from only two cities, Eger (the seat of Heves County) and Eperjes (the seat of the former Szepes County, today Prešov, Slovakia), date back to 1871; in the other settlements, measurements began to be taken a few years later.

Temperature between 1871 and 1900

In the diagram showing the annual average temperature of the settlements belonging to the northeastern Hungarian and upland regions, apart from the differences due to the geographical location, the curves of the individual towns mostly follow one another in the same rhythm without significant jumps (Fig. 1).

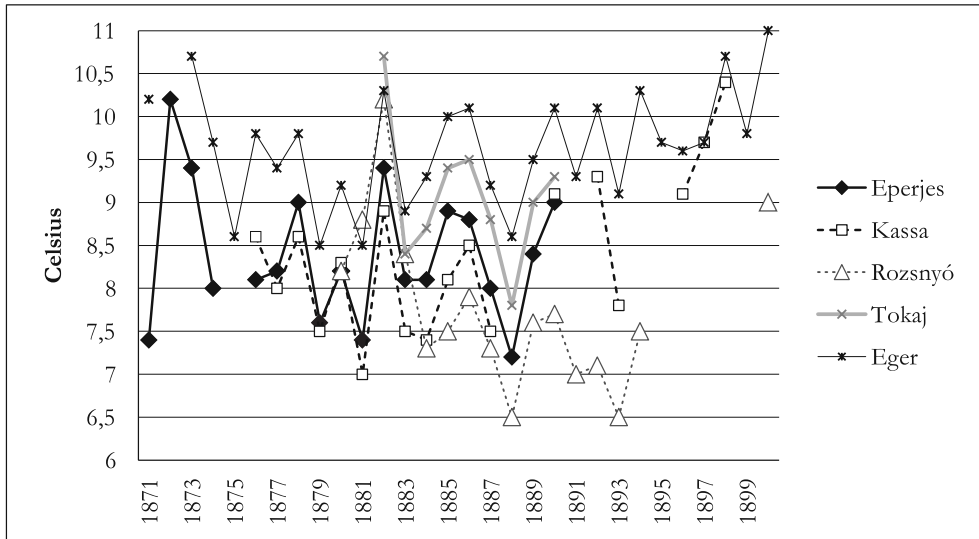


Figure 1. Annual average temperature of settlements in eastern and northeastern Hungary, 1871–1900.

Source: Meteorológiai Évkönyvek

We are best able to draw conclusions about the temperature conditions during the thirty-year period under examination on the basis of the data concerning Eperjes and Eger, which are supplemented by the partial data concerning the other towns. Between 1871 and 1900, several major declines in the average annual temperature were observed: a significant cooling was felt compared to the previous year or years in 1875, 1879, 1881, 1883, 1888, and 1893. The year 1875 is special because from that year on there was not any significant increase in the temperature until 1882. In other words, the period between 1875 and 1881 was the coldest for the entire time period. A similar cooling came only in 1888, but this was not followed by further cooler years. On the contrary, a slow warming began. The warmest years in the northern region were 1872, 1873, 1882, 1898, and 1900.

Although we do not have long-term data series for the settlements we studied, we can use Budapest's temperature data dating back to 1780 to examine the extent to which the cooling in the last decades of the nineteenth century was exceptional over a longer period of time (Fig. 2).

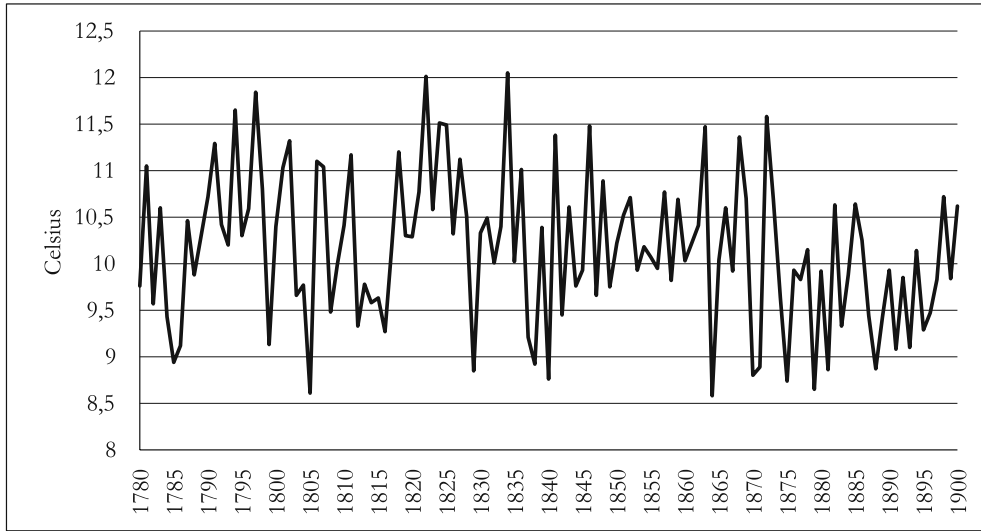


Figure 2. Budapest's annual average temperature, 1780–1900. Source: varaljamet.eoldal.hu

On the diagram showing the long-term temperature conditions in Budapest, the cooling experienced in our period, which began in 1875 after the warm years of the early 1870s, can be clearly seen. With the exception of 1882, 1885, and 1892, the average annual temperature in this period was around or below 9.7 °C, which differed significantly from the previous decades' average temperature, which was above 10 °C (Fig. 3).

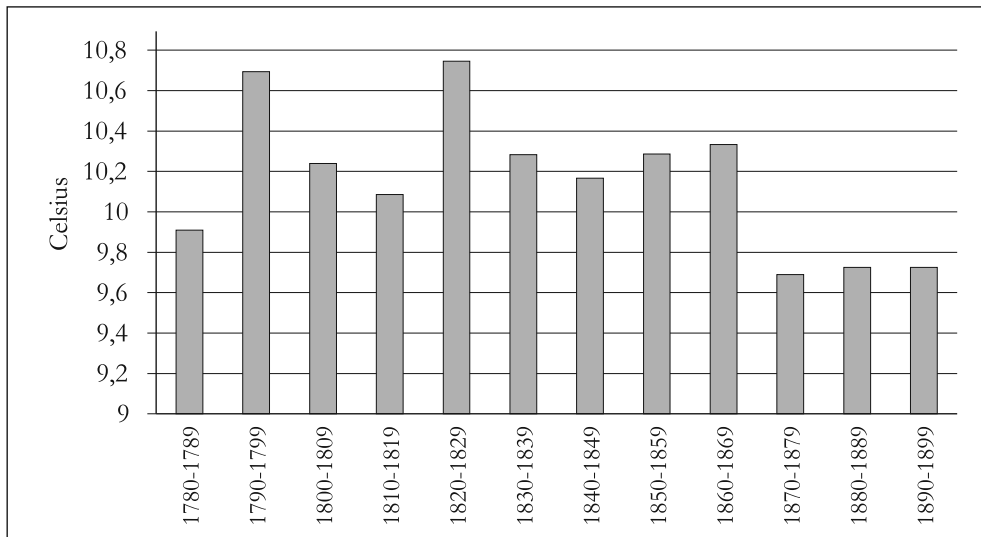


Figure 3. Budapest's average temperature by decades. Source: varaljamet.eoldal.hu

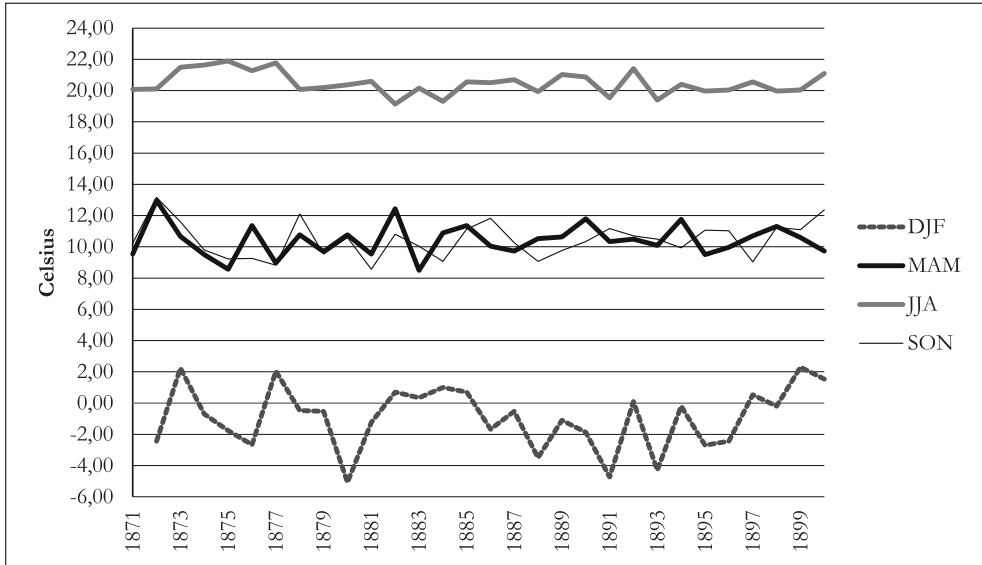


Figure 4. Budapest's annual average temperature by seasons. Source: Meteorológiai Évkönyvek

If we examine the temperature data by seasons, we see that this cooling occurred mainly in the summer and winter (Figs. 4 and 5). The temperature diagram for Budapest and Eger shows that during the period in question, the average temperature in the summer months (June, July, and August) decreased

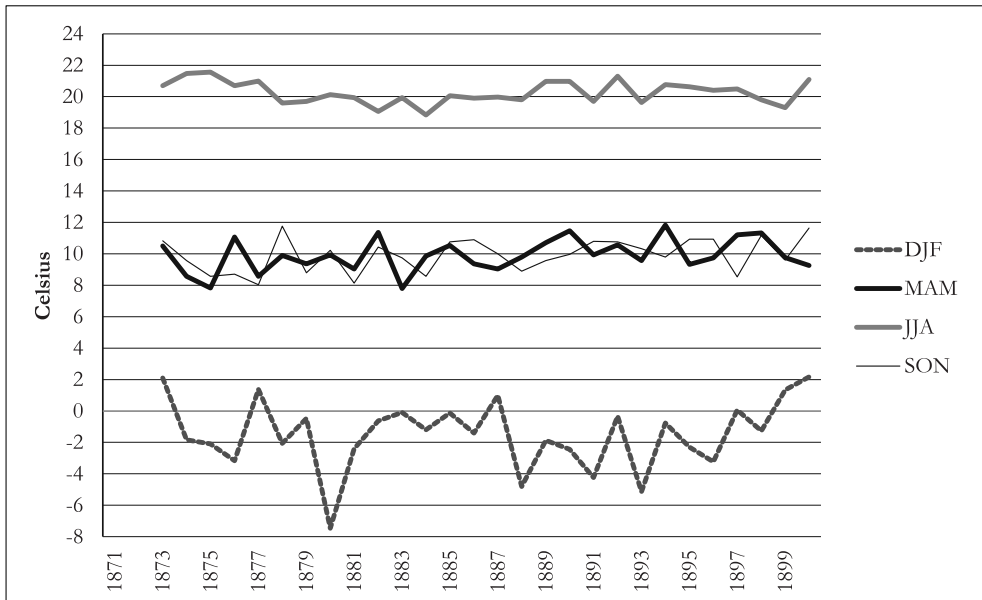


Figure 5. Eger's annual average temperature by seasons. Source: Meteorológiai Évkönyvek

by about 2 degrees after 1877. The average temperatures in the spring (March, April, and May) and autumn (September, October, and November) started to decrease after the remarkably high average temperature of 1872, and then, in the following years of the century, both were between 8 and 12 Celsius (with the exception of the spring of 1876 and 1882 and the autumn of 1878). During the period in question, the autumn months were also cooler, as the temperature went above 10 Celsius only once, in 1878. The average for the spring months was similar, except for 1876 and 1882.

Precipitation between 1871 and 1900

After analyzing the temperature conditions, we now turn to an examination of the amount of precipitation. In the figure showing the annual precipitation in the northern and upland towns, we observe a significant difference in the rhythm of the falling precipitation (Fig. 6). The changing geographical environment of each settlement was correlated with large differences in the yearly amount of precipitation. Therefore, in contrast to the temperature data, it is difficult to draw general conclusions concerning the period in question on the basis of the precipitation data. This task is further complicated by the fact that the data sets for the settlements are rather incomplete; with the exception of the partial data for Eger and Eperjes from the years before 1877, we do not have information on the precipitation conditions in the other settlements.

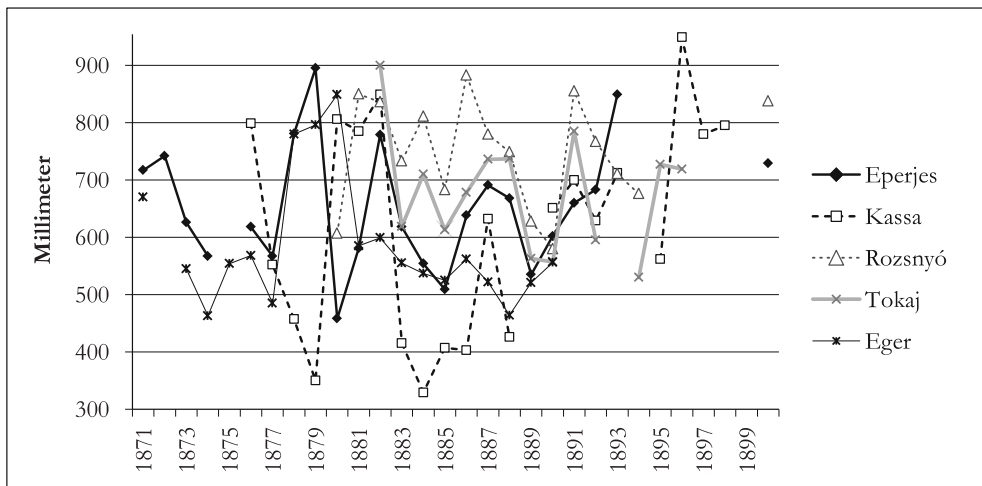


Figure 6. Annual average precipitation in settlements in eastern and northeastern Hungary.
Source: Magyar Statisztikai Évkönyvek

Based on these data series, we can say that for most of the 1870s, drier conditions prevailed in the northern region year after year, and only in 1878 did rainfall begin to increase. We learned from the analysis of the temperature data that temperatures were significantly higher in the early 1870s than after 1875; and from our fragmentary data, it appears that this warmer weather may have been coupled with a period of low rainfall, though the amount of rainfall was not so low as to cause a drought, at least not in this area. Within the period in question, there were four more years in which there were significant decreases in the amount of precipitation: in 1880, 1883, 1885, and 1889. However, these decreases were only temporary and were not followed by a more prolonged drop in precipitation.

It is worth noting that the different geographical conditions of the settlements may have led to significant differences in our data. The datasets concerning Eperjes and Eger are good examples of this: while in 1880 the annual rainfall peaked in Eger, in Eperjes the precipitation dropped drastically in the same year to a level that was close to a drought. The wetter years in the second half of the 1880s did not affect the county seat of Heves either; so the precipitation seems to have been concentrated in the upland area. However, the differences observed in the data series from Eperjes and Kassa (seat of the former Abaúj County) can be explained less by geographical conditions than by erroneous data recording. This is because the two settlements are located only 35–40 km apart in the valley of the Hernád River, and there is no geological formation between them that would explain such a discrepancy in the data. That is why the data from Kassa should be handled with extreme caution.

Although there are considerable differences in the data sets from the settlements studied, the wettest years in all cases¹² occurred between 1878 and 1882.

As we did in the case of temperature, we can use the data concerning Budapest to see whether the precipitation between 1875 and 1882 was outstandingly above average from a long-term perspective (Fig. 7). In the diagram, the period in question clearly stands out from the other years with an average precipitation above 600 mm per year. There was no other period over the long run with such high precipitation values for every single year.

12 1886 was considered the wettest year in Rozsnyó (today Rožňava, Slovakia), but since we do not have data from the late 1870s, it is possible that precipitation in the missing years exceeded precipitation in 1886.

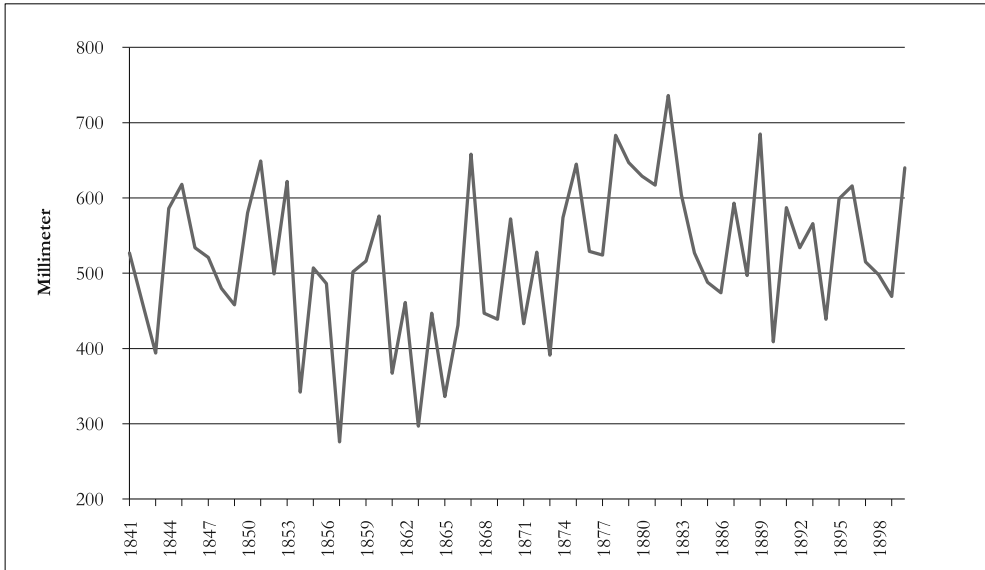


Figure 7. Budapest's annual average temperature, 1841–1900. Source: viraljarnet.eoldal.hu

The Impact of Weather Anomalies on Agriculture

As made clear in the discussion above, the 1870s proved extraordinary from a climatic point of view for two reasons. On the one hand, on average, more precipitation fell each year than in the individual years of the decade before and the decade after, and in some years the levels of precipitation were outstandingly high. This high average rainfall was a result of the rainy summer and unusually wet autumn months. On the other hand, in addition to the extraordinary rainfall, the decade was cooler on average than the previous decade and the subsequent decade. Although extremely high or extremely low rainfall can cause a lot of damage to agriculture, unsuitable temperatures can have an even direr effect on crop yields. Due to the cold springs, farmers could expect fewer crops, which were further damaged by the cool and rainy summers and autumns. The crop was either unripe or rotten. Thus, over the course of the decade, there may have been several major and minor crises in agriculture.

In this section, we examine the results of harvests of grains (winter wheat, winter rye and meslin¹³), maize, and potatoes, which are the agricultural products which have the greatest impact on daily livelihoods. In the case of the northern

¹³ Meslin is a mixture of equal parts of wheat and rye that is sown and harvested together.

counties, potatoes were not simply an additional source of food. They were often the only option in higher settlements with cooler climates. And maize was often used as an important supplement when wheat and rye yields were unfavorable. In order to bring our quantitative data to life, we used many expressive narrative sources which offer impressions of the experiences people endured because of the poor harvests brought about by unfavorable weather.

Although the Hungarian Statistical Yearbooks provide data concerning various crops from the 1868 harvest onwards, due to the different methods of data collection, we were only able to use the series from 1877 onwards. In order to make the data easily interpretable, the development of each crop is shown in a separate figure. On the graph of wheat yields (Fig. 8), we see that there was a significant decline in three years (1879, 1883, and 1889), with the most severe decline coming in 1879, when the yield per hectare decreased by half or one third compared to the previous year. This low point can clearly be attributed to the extremely rainy and cold weather of the second half of 1878 and the beginning of 1879. Although there was already significantly more rain in 1878 than there had been in the previous years, this is not yet reflected in the average yield in 1878 because the excess rainfall only came in the autumn months. By this time, however, the wheat had been harvested. After 1879, we see a different degree of rise, after which the wheat crop stagnated in 1881–1882 and then fell again in 1883. This decline is presumably due to the lower rainfall in 1883. The period between 1883 and 1887 was a time of stagnation again, and then the yield

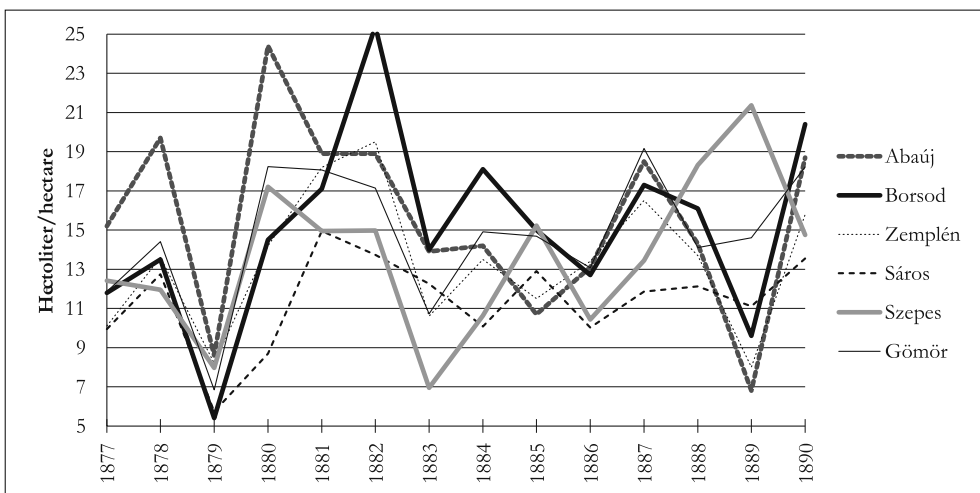


Figure 8. Annual wheat crop by counties, 1877–90. Source: Magyar Statisztikai Évkönyvek

average began to drop slightly at first and dramatically after 1888. The low point of 1889 is similar to that of 1879, though it was not as dramatic a drop.

In the case of rye, we see a pattern similar to the case of wheat, despite the fact that rye is better able to withstand cooler and wetter climates (Fig. 9). 1878 was a relatively good year for this crop, but the rainy weather that began towards the end of July was simply too much for the rye as well. Thus, in 1879, like wheat, the rye crop dropped by half or two thirds. However, 1883 cannot be considered such a bad year for rye, and in Szepes County, the average yield even increased. While in the case of wheat, the second low point came in 1883, in the case of rye it occurred somewhat later, in 1885–86, and it was not as severe. The weather in 1888 and especially in 1889, however, significantly reduced rye production, much as it reduced production of wheat.

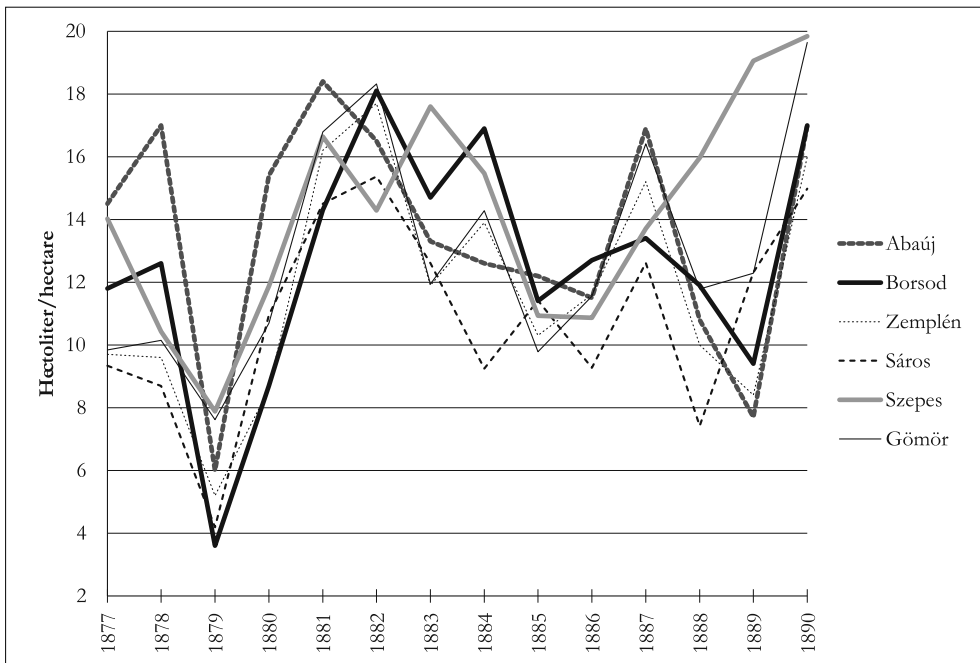


Figure 9. Annual rye crop by counties, 1877–1890. Source: Magyar Statisztikai Évkönyvek

Since it is a one-to-one mixture of wheat and rye, meslin unsurprisingly followed the trend described for wheat and rye (Fig. 10). In other words, in the case of meslin, 1879, 1883, and 1889 were also considered the worst, but the years between 1883 and 1889 were also generally considered bad. On the other hand, the harvest in 1882 ended with a relatively favorable result in several counties.



Figure 10. Annual meslin crop by counties, 1877–1890.

Source: Magyar Statisztikai Évkönyvek

Turning to the potato and maize yields, the graphs clearly illustrate that these two crops were much more sensitive to weather changes than cereals (Figs. 11 and 12). However, it was not simply temperature and precipitation conditions that had a perceptible effect on the average yield per hectare, but also geographical differences, as we can see that the yields in the different counties show a very different picture. Nevertheless, the figures do indicate that there were common points, for instance the worst years. As shown in the figure below, in addition to 1879, which was also a low point for potatoes, in 1882, 1884, 1888, and 1890 the weather was not favorable for potatoes either. However, while in the last years the potato yield developed well in some of the counties (e.g. Abaúj and Borsod), in 1879, the statistics recorded an extremely low average yield in all the counties in question. In other words, from a practical point of view, this meant that, due to the generally poor harvest, it was not possible to compensate for the shortfall by importing from the neighboring counties. If we look at the average yield of the two counties, Borsod and Zemplén, which are the focus of our study, in Zemplén, where the climate was usually colder and therefore potatoes were the dominant food source, the average yield remained below 70 hectoliters/hectare for most of the period in question. This amount/quantity not only lagged behind the average yields in Borsod, it also lagged behind the yields in all the counties in the north. Moreover, not only were the yields low, but the size of the area cultivated also decreased significantly over the years: while

in 1877, potatoes were grown on just over 22,000 Viennese acres,¹⁴ in 1890 the area on which they were grown came to only 11,720 Viennese acres. The biggest decline occurred in 1880, when potatoes were planted on only 8,400 acres, in sharp contrast with the previous year, when the area on which they were planted came to 15,000 Viennese acres. In Borsod, where potatoes were not a dominant crop,¹⁵ compared to the data from Zemplén, the potato crop developed relatively well from 1882: it produced a yield of over 100 hectoliters/hectare until 1889.

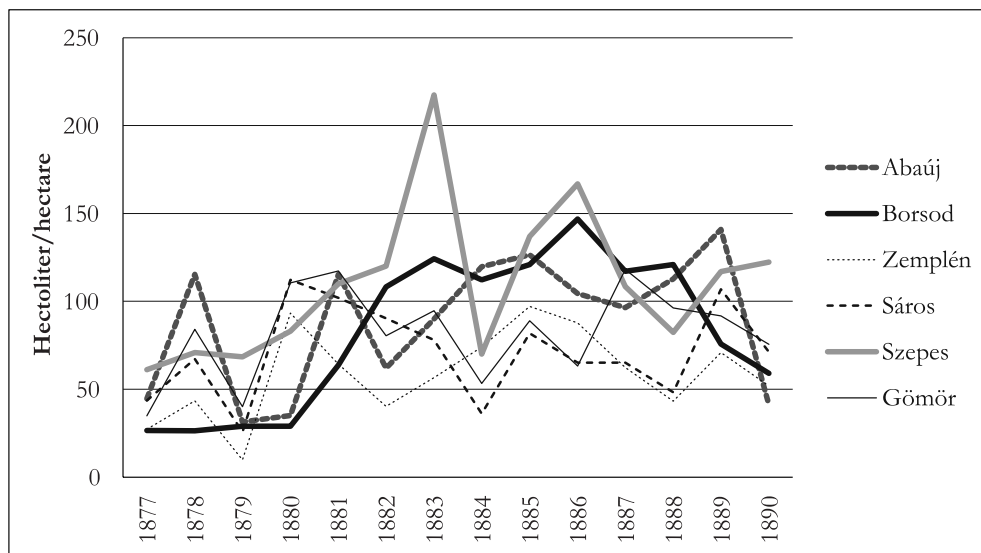


Figure 11. Annual potato crop by counties, 1877–1890.

Source: Magyar Statisztikai Évkönyvek

In the case of maize, which prefers warmer temperatures, our diagram offers a relatively more uniform picture.¹⁶ With the exception of the remarkably high value in Abaúj, a more significant decline can be observed which began as early as 1878 and continued in 1879. Despite the fact that 1882 proved a very good year for cereals, this cannot be said for maize, as the average yield started to decrease again this year, and in 1883 it reached another low point. The next unfavorable year came in 1890, when the average yield fell in all counties except Borsod, which was the southernmost.

14 One Viennese acre is 5,755 square meters.

15 Between 1877 and 1890, the size of the sown areas varied between 2,300 and 3,000 hectares.

16 From Szepes County, there were maize data for only three years in the Statistical Yearbooks, so we did not include them in our analysis.

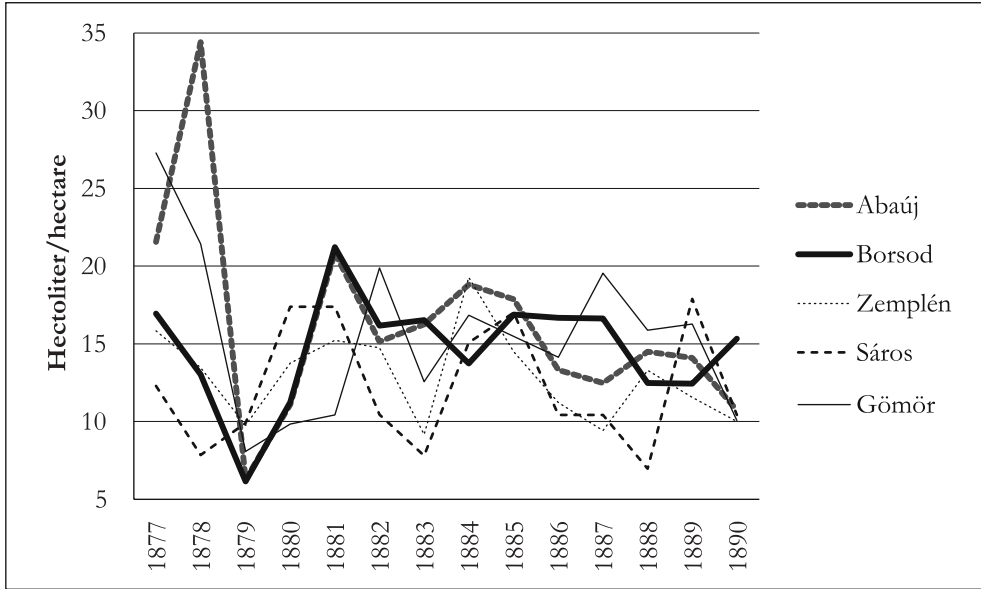


Figure 12. Annual maize crop by counties, 1877–1890.
Source: Magyar Statisztikai Évkönyvek

Of the northern counties, only in the case of Sáros we can compare the average grain, potato, and maize yields with the precipitation values (Figs. 13 and 14). The figure clearly shows the strong correlation between precipitation and average yield: in the period with high precipitation (above 600 mm/year), grain yields declined, such as after 1879, 1882, and 1887, whereas in moderately rainy

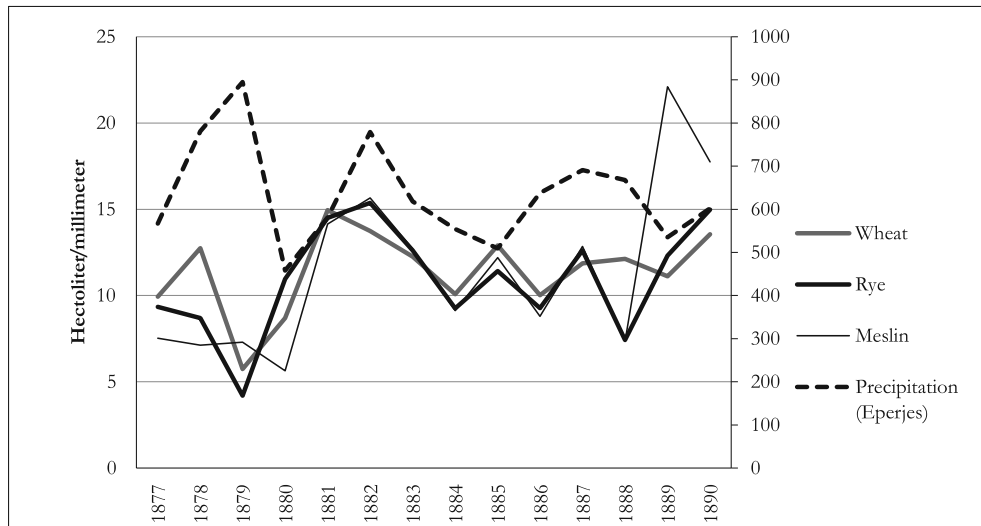


Figure 13. Annual cereal crops in Szepes County in relation to the annual average precipitation in Eperjes. Sources: Meteorológiai Évkönyv, Magyar Statisztikai Évkönyvek

years, grain yields rose. Although each cereal responds differently to precipitation, there was not too much difference in yield. Similarly, in the case of potatoes, a close relationship can be observed between yields and changes in precipitation: too much rain clearly resulted in a drastic decline in yield, while in drier years the average yield improved somewhat. As for maize, the correlation can also be seen, though it is less spectacular way: declining rainfall led to higher crop yields.

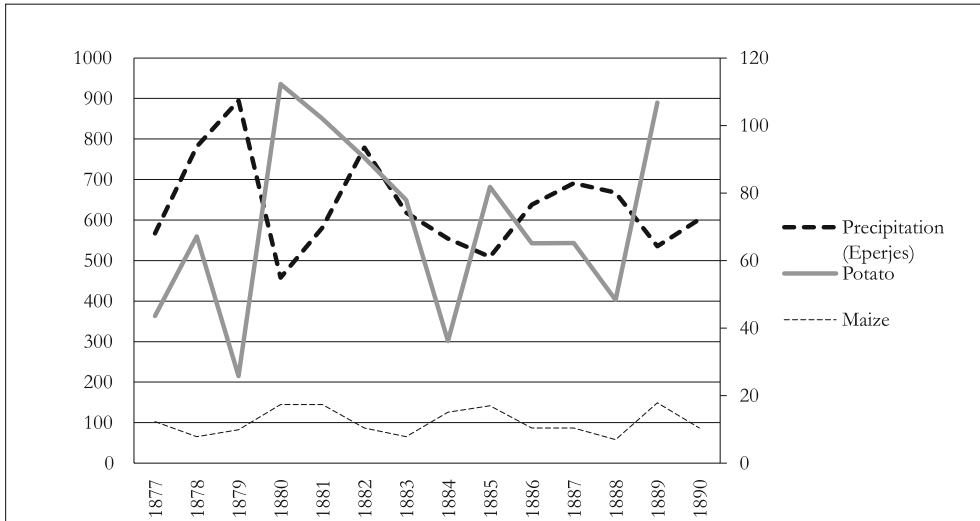


Figure 14. Annual potato and maize crops in Szepes County in relation to the annual average precipitation in Eperjes. Sources: Meteorológiai Évkönyv, Magyar Statisztikai Évkönyvek

Subsistence Crisis and Its County-level Management

Although our data show that 1879 was the worst year for the crops we are studying, the harvest results of 1878 also lagged behind results from the previous years. Our qualitative sources show that this was due to the unfavorable weather typical of the whole of 1878. The year began with a huge amount of snow in January, followed by a rainy and cool spring. Continuous rainfall made it impossible to start spring work in the fields and the vineyards.

With the arrival of summer, the situation did not improve; due to the low average temperature and the amount of rain, the crop showed an increasingly depressing picture as harvest time neared. Articles in which locals expressed their frustrations were published in organs of the press, including for instance the following description:

The weather is still desperate, it doesn't want to clear up, and the rain, if not every day, falls every other day. Grape rot is common on all the hillsides, and if the weather does not get warmer or windy soon, our hope for a rich harvest will be dashed. Good, high-quality wine can no longer be expected as very warm weather has not arrived and the soil is so full of moisture that its absorption can only be somewhat balanced by extremely windy, dry, warm days. The weather not only affects us winegrowers, but also the grain producers; in the counties of Abaúj, Zemplén, Ung, and Gömör, but also in the upper parts of our [Borsod] county, the grain is still out in the field, and the blackened and even greening bundles offer a sad sight.¹⁷

As our graphs show, the 1878 harvest was not overly plentiful, and although rainy weather continued throughout the autumnal months, at least the grape harvest turned out relatively well due to the higher temperatures in September and October. Plenty of wine was also reported from Sopron and Budaörs, although the quality was uneven.¹⁸ The reports submitted by the *alispán* of the county indicate that many grapes were harvested in Borsod as well, but where it was not possible to finish the harvest in time (and this was usually the case for better quality grapes), the grapes burst and rot due to the high quantity of rain. As a result, the quality fell short of expectations and the price of wine fell sharply.¹⁹

Excessive rainfall caused serious problems from other perspectives as well, in addition to disappointing yields. Due to frequent floods and inland water caused by high groundwater levels, a significant part of the arable land was covered with either water or a thick layer of mud. This made it difficult to plow and sow the lands in the autumn for the following year. Thus, the farmers had to begin the next year (1879) with harvests which were far more modest than they had hoped for large swathes of land that went unsown.

The climate of 1879 put people's tolerance to the test. Although the winter was not too harsh, it was all the wetter, so when spring arrived and the huge amount of winter snow started to melt, this caused severe flooding across the country. Floods of several small and large rivers were reported from the area on which our research focuses, but most of the problems were caused by the flooding of the Tisza River, which affected both counties. The river broke the surrounding embankment between Zemplénagárd and Leányvár on December

17 *Borsod. Miskolczi Értesítő*, August 29, 1878, 3.

18 Réthly, *Időjárási események*, vol. 2, 548.

19 MNL BAZML, IV. 809. b. 868/1881.

27, 1878, flooding the surrounding arable lands.²⁰ Although the embankment had been repaired, the *szolgabíró* of the Bodrogköz District reported on the July 4 that one fourth of Bodrogköz was still covered with water. As he noted in his report, the constant rains completely destroyed the few autumn sowings that the flood had spared and thus also the spring crop. Furthermore, after pastures had been broken up and turned into arable land in the previous dry years, now, when the remaining pastures were under water, people were driving their cattle to other counties to graze or simply selling them at cheap prices.²¹ The *szolgabíró* of the Szerencs District also highlighted in his report that places which were normally waterless in the middle of summer were also covered with water due to the high levels of rain.²²

By July, it had become increasingly certain that the year's harvest would be well below even the yields of 1878. Heavy rains and severe frosts had destroyed not only the cereals but also the potatoes and the maize, which were the staple food of the poor. The situation near harvest time was summarized by the *szolgabíró* of the Szinna District in July as follows:

This year in my district, because of the heavy and continuous rainfall, the field crops are showing a worrying picture. Wheat and rye are poorer than average, harvesting is very slow due to the continuous rainfall, barley is practically missing, oats are mediocre, maize, beans are very deficient, potatoes, which are indispensable to the Highlanders, have already rotted. This is compounded by the depressing circumstance that citizens who moved to the lowlands for the harvest are returning with half the income they earn in other years [...]. Fodder crops, if they are successfully harvested, can be said to be pretty good this year. I note that we had quite high hopes for spring crops, in particular, at the end of last month, but they have been severely damaged by the continuous rainfalls since the 5 of this month [July].²³

In early September, after the start of the harvest, he briefly reported that “the result can be said to be the worst possible” and that the proliferation of wild boars and bears was causing considerable damage to the already shoddy crop and among the cattle.²⁴ Cereals produced so few seeds that they were considered

20 MNL BAZML IV. 2402. b. 2/2020/1879.

21 Ibid.

22 Ibid.

23 Ibid.

24 Ibid.

not only insufficient for sale and food, but also as seeds. It was feared that great parts of both counties would soon face famine.

Finally, we must also talk briefly about the development of fruit crops, especially grapes, which were a major source of income in Zemplén County. As noted earlier, in 1878, despite the rainy autumn, there was a relatively large amount of wine, although the quality of the wine was not very good, and this led to a significant reduction in its price per barrel. In 1879, however, the vineyard owners' prospects deteriorated further after hailstorms in late spring and summer severely battered not only the orchards but also the vineyards.²⁵ In addition, in the settlements of Tokaj-Hegyalja (Mezőzombor, Mád, and Tarcál), a leafroller moth called *Tortix pilleriana* appeared, and the worms of this moth caused enormous damage in the vineyards.²⁶ Presumably, the locals managed to curb the spread of the insect, because in the subsequent reports submitted by the *szolgabíró*s, it was noted that traces of neither the *tortrix pilleriana* nor the *phylloxera* appeared in the vineyards.²⁷ Unfortunately, the situation was much worse for the other fruits, as in 1879 and 1882 the crop failed due to frost and premature fruit loss.²⁸

Heavy rainfalls and floods contributed indirectly to general impoverishment as well, since people could not get to the fairs and markets due because of the damaged roads and bridges, so they had to do without the incomes they usually made from selling their goods. In addition, repairs to the roads were made only slowly, as due to the high water levels, it was difficult to remove the gravel needed for paving from the rivers.²⁹ It is thus hardly surprising that the *szolgabíró* have reported stagnation in tax collections in all the districts.

Penury in Zemplén County

It did not take long for the first signs of crisis to appear. In September, the *alispán* of Zemplén County informed the Minister of Interior about the worrying situation:

25 MNL BAZML IV. 2402. b. 107/1880.

26 MNL BAZML IV. 2402. b. 6559/1879.

27 MNL BAZML IV. 2402. b. 127/8758/1880; 9340/1881; 2216/1882.

28 MNL BAZML IV. 2402. b. 189/6559/1879; 162/9479/1882.

29 MNL BAZML IV. 803. b. 185/1879.

Your Honourable, the Hungarian Royal Ministry of Interior!

From the reports of some of our *szolgabírók* and the public statements based on the experiences of committee members gathered at this general assembly from different parts of the county, we have sadly made sure that most of the county's people will struggle with poverty and hunger as a result of current year's general infertility.—And the middle and smaller landowners, in addition to their already shaken credit, have found themselves in such a dire situation that they are on the verge of death without the help of a cheap state loan to be lend ed as soon as possible.³⁰

The *alispán* ordered reports on the annual yields for each parish covering the possessions and the supplies of foodstuffs and seeds of the landowners. In addition, a so-called “poverty committee” was set up to compile the incoming data and take the necessary measures. In order to remedy the situation, the Minister of Finance was asked to suspend the collection of state taxes among the already struggling population for a year, beginning on October 1, 1879,³¹ and the Minister of Transport and Public Works was instructed to provide a source of income for the needy through public works.³² In response to the request, the Minister of Interior was willing to grant the requested government loan, but not for the number of people requested by the county. The financial support was limited to people of two categories: the destitute who were able to work and the destitute who were not able to work or could not support themselves on their own. Furthermore, seeds were also given to those who were unable to obtain them even through private credit. The Minister of Interior asked the county leadership to review the range of people who needed support based on the conditions mentioned above. Until the exact data was available, however, he sent 8,000 forints as financial aid, “so that where the risk of starvation really threatens, the necessary aid can be provided from this amount.”³³

Despite the fact that the Minister of Finance was asked in November to suspend the collection of state taxes, reports from the county said there was no response to the request, and tax collectors continued to seize the last food items of those in need with the utmost rigor. Given the gravity of the situation, the Zemplén County General Assembly decided to take immediate action. Instead

30 MNL BAZML IV. 803. b. 434/1879.

31 After the moratorium expired, they asked to pay the one-year tax in interest-free instalments. MNL BAZML IV. 2402. a. 188/1879.

32 MNL BAZML IV. 803. b. 434/1879; MNL BAZML IV. 2402. a. 188/1879.

33 MNL BAZML IV. 2402. a. 321/1879.

of sending petitions (*felirat*) to the Minister, which was the normal way of lodging a complaint or request, the Assembly requested the immediate suspension of tax collection by telegram:

Because of the famine, our assembly asks to stop tax enforcement against farmers in all our districts through telegraphs; otherwise there will be distress in districts where it otherwise would not have been. Tax enforcement has a very bad effect in times of need. More explanation in representations. We are asking for taking actions through telegrams because there will be auctions tomorrow.³⁴

The general county assembly decided on the following measures. First, it was resolved to purchase maize to feed the destitute who were incapable of working. It was estimated that the supply of maize to feed roughly 5,000 people in need, though the concession was made that “their number will be much higher,” counting one liter per person per day, would require 9,100 hectoliters of maize in total at a cost of 91,000 forints (10 forints per liter). The Minister of Interior was therefore asked to issue the necessary amount in the form of state aid.³⁵

Steps were also taken to provide help for the destitute who were able to work by offering public employment opportunities. The number of people belonging to this category was put at 7,891 in Zemplén County. For each person, 120 working days were calculated with a wage of 40 kreuzers per day, which comes to a total cost of 384,000 forints.³⁶ The county assembly listed by district the public works in the county “the construction of which was in the best interests of the public” and then submitted the planned works and the estimates of costs to the Ministry of Public Works and Transport for approval.³⁷ The minister may have found the costs of the planned public works too high, because he asked the county to select only those work projects which were essential to the public interests and then resubmit the proposal to the Ministry. Until authorization was given, he sent 50,000 forints to start the approved works.³⁸

Fortunately, with the help of the sources, we can also get an idea of how the aid process took place. In each district, a district relief committee was set

34 MNL BAZML IV. 2402. a. 321/1879.

35 Ibid.

36 MNL BAZML IV. 2402. a. 9522/1879.

37 MNL BAZML IV. 2402. a. 321/1879.

38 MNL BAZML IV. 2402. a. 9522/1879.

up to distribute food, which was procured by a subcommittee of the Poverty Committee (Central Subcommittee). The minutes of a meeting of the General Assembly offer the following description of this committee:

The District Relief Committee, composed of two, possibly three trusted, intelligent individuals living in the district and the *szolgabíró*, is led by the *szolgabíró*, who takes over the food sent by the Central Subcommittee and executes the distribution in agreement with the Committee members, and in due time he submits to the county *alispán* a certificate of the use of the food or financial aid that have been sent. In addition, he is required to report weekly to the *alispán* on the condition of those in need.³⁹

The allocation and implementation of public works was organized in a similar way to relief management. First, the individuals responsible for oversight wanted to ensure that only county residents were involved in public works. It was the task of the *szolgabíró*s to prove this, and they gave a certificate (ballet) to the individual who applied for employment. The needy were divided into two groups. The first group included strong men who would be given a daily wage of 40 kreuzers, while the second group included weaker men and women, who would only be given a daily wage of 30 kreuzers. Workers could claim their wages in cash or half in cash and half in crop. In addition to wages, workers also received food for the duration of the work. This was coordinated by the *szolgabíró*s through contractors.⁴⁰

Relief, however, came slowly, and many people decided to look elsewhere for their livelihoods. Some headed south towards the Great Plain, while others went to north and sometimes even as far as England or America. As the *szolgabíró* of Nagymihály wrote in November 1879,

In my district, this year's poor harvest and the fact that state aid has not arrived yet are forcing the poorest people to migrate to America and England. I am aware that it is the working men, young and old, who leave their homes in hordes to emigrate, among them countless men of military age and off-duty soldiers. They make their way through Kassa to Eperjes, and there are agents in the latter town who give advice to those who want to emigrate.⁴¹

39 MNL BAZML IV. 2402. a. 321/1879.

40 MNL BAZML IV. 2402. a. 9522/1879.

41 MNL BAZML IV. 2405. b. 9958/1879.

As the *szolgabíró*'s report shows, the authorities were aware of the possible consequences of emigration even before it took on a mass character, but they did not know what they could do to slow it. On what grounds could they hold people back, and how could they restrict an individual's personal freedom if he or she wanted to leave? In addition to legal issues, moral questions also had to be taken into consideration. Etele Matolay, the *alispán* of Zemplén County, also addresses this problem in a letter to the Minister of Interior:

Another question, however, is whether it is possible or, in such a time of need, advisable to act with rigor in such a case if the person is not liable to military service when we are not even able to give the jobseeker a job at home. [...] Then when they have to deal with poverty at home: I would consider it an unjustified restriction of personal freedom to prevent them from emigrating.⁴²

When emigration began to take place on a larger scale, the authorities did not even know where people were going, and this also hampered official efforts to slow it. It was rumored that people were being taken to dig the Panama Canal, but they did not know exactly where they would end up or what kind of work they would be given or whether, for that matter, they would be paid properly, given care in the case of illness, or be transported back to their homeland.⁴³

Although the abovementioned measures helped improve the conditions under which the destitute lived their everyday lives somewhat, the climate still did not improve, and 1880 ended with poor harvests (making it the third year in a row to end with a disappointing harvests). Seeing the increasingly dire impoverishment of the population, the *alispán* sent another petition to the Minister of Finance:

Considering that this year's harvest was far less substantial than what was hoped for, and considering that most of those involved in agriculture have been burdened with considerable debts as a result of the spring crisis and repayment for these debts is due this year, and taxes of the last two years will also be payable this year, please be so kind as to extend the deadline for repayment of the state loan by one year and to modify the payment dates to October 1, 1881, 1882, and 1883. On October 1 of the current year, interest shall be payable only on the due date.⁴⁴

42 MNL BAZML IV. 2405. b. 10717/1879.

43 Ibid.

44 MNL BAZML IV. 2402. a. 127/1880.

Despite all hopes, the following year did not bring the long-awaited abundant yield. A heavy downpour came with hail in July, affecting almost all the districts in Zemplén County. It hit autumn and spring crops so hard that the *szolgabíró*s saw little chance of the grains developing by harvest time.⁴⁵ The district reports indicate that, in general, few grains were produced,⁴⁶ and mice, who had multiplied in the highlands, caused significant damage to autumn grain.⁴⁷ In his semi-annual report, the *alispán* ranked the 1881 harvest as one of the worst,⁴⁸ and he noted that it had caused further impoverishment and an increase in emigration.

The year 1882 brought mixed results. Both the data and the narrative sources show that rainfall was abundant again, causing flooding along several rivers. Fortunately, the heavy rains came mostly in late summer, and by that time, the “truly beautiful crop” had been harvested in many places, but there were areas (e.g. in the middle of the county) where rains did great damage to the crops that had already been harvested. At the same time, the wet weather was beneficial to root and fodder crops and also to pastures and meadows, which had become dry in the long droughts during the first half of the summer.⁴⁹ The diverse geographical conditions of Zemplén are well illustrated by the fact that, while in some areas the harvest was abundant, in other districts, such as the Homonna and Szinna districts to the north, a situation of destitution or near-destitution developed. The *szolgabíró* of the Szinna district, fearing a crisis as dire as the crisis faced in 1880, requested the cessation of tax collection.⁵⁰ The sources, however, suggest that the *szolgabíró*'s fears may have been an overreaction, as there was no cause for distress.

Given the abundant crop, tax collection began with renewed vigor, and efforts were made to recover debts accumulated in the previous years. Several *szolgabíró*s indicated that tax collection was progressing well, so there was no need to use bailiffs to collect arrears. It seems, then that the harvest of 1882 was abundant enough in several places to help the population begin to recover from the trials they had suffered in the previous years.

45 MNL BAZML IV. 2402. b. 7135/1881.

46 MNL BAZML IV. 2402. b. 7135/1881, 9286/1881, 9340/1881.

47 MNL BAZML IV. 2402. b. 9340/1881.

48 MNL BAZML IV. 2402. b. 5/2534/1882.

49 MNL BAZML IV. 2402. b. 162/9479/1882.

50 Ibid.

Penury in Borsod County

Although the first official report on impoverishment in Borsod County was written in December 1879⁵¹ (months after the first official report on Zemplén), it can be assumed that the first signs of the crisis appeared earlier. At the beginning of November, the weekly journal *Borsod. Miskolczi Értesítő* reported on the unfavorable weather and poor harvests in the county,⁵² and soon after this, it wrote of needy job-seekers from the highlands: “There are already signs of acute need in the highlands, for every day we see the highlanders marching through the county with nothing to eat, migrating to the lower part of the country in groups, looking for work; [...]”⁵³ Presumably, by November, the leadership of the county was confronted with the extent of impoverishment, which found clear form in the sight of people coming from the highlands, and the people of Borsod also had to suffer increasingly dire penury. This is indicated by the fact that in November the General Assembly of Borsod County asked the Minister of Finance to suspend tax collection “given the impoverishment.”⁵⁴

One month later, Bertalan Bay, the *alispán* of Borsod, reported to the Ministry of Interior on the situation in the county as it follows:

On the basis of the official reports I have received, I have stated that in this county there are generally alarming phenomena concerning the livelihoods of the lower classes; that in the town of Miskolc the number of the poor is very high, and the extreme cold, which arrived with unusual suddenness, aggravates the situation, so that the town authority is taking measures on a case-by-case basis to provide aid for the needy.

I also noted with regret that in the lower part of the district of Miskolc the working class has no income, and the small amount of food they have purchased is almost completely exhausted, and in particular that the town of Mező-Csát is facing a crisis; finally, in the upper section of the Szentpéter district, especially in Alacska, and in the upper section of the Eger district, in Tibold Darócz and Kács, several families depend on the mercy of the better-off. In both parts of

51 MNL BAZML IV. 803. b. 577/1879.

52 *Borsod. Miskolczi Értesítő*, November 6, 1879.

53 *Borsod. Miskolczi Értesítő*, November 20, 1879.

54 MNL BAZML IV. 803. b. 420/1879; MNL BAZML IV. 803. b. 569/1879.

the Szentpéter district, however, it was indicated that official aid measures would have to be taken soon.

Given these unfavorable circumstances, it is to be feared that the distress at the beginning of next year will be so great in many places that, in order to alleviate it and to secure the financial survival of some, it is necessary to resort to state aid. For this reason, I have the honor to request the respectable Hungarian Royal Ministry to lend a certain amount—at least one thousand forints—as state aid as soon as possible.⁵⁵

Given that according to the *alispán* the most state aid would be needed at the beginning of the following year, we can conclude that the situation in Borsod was less serious than in Zemplén, where the county *alispán* applied for state aid in the autumn. This seems to be supported by the annual report of the Borsod *alispán*, dated February 1880, according to which

conditions are generally depressing, and the poorer class, especially because of the prolonged harsh winter, suffers from a sensitive shortage of already depleted foods and firewood in particular. However, with contributions by wealthier benefactors and using municipal funds in some places, the absolute need for state aid has not yet arisen to a greater extent—families struggling in need were only reported in the upper parts of the Miskolc and Eger districts, for whose relief I sent the amount corresponding to the need indicated [...].

At that time, only 300 forints had to be allocated from the 1,000 forints that had been previously sent by the Minister of Interior. At the end of the report, he summarizes the previous year as follows:

But it should also be emphasized that despite the generally unfavorable conditions last year and the extremely severe winter, the likes of which has not been experienced for decades, there has been no phenomenon in the county that would prove the depletion of people's resources and means of subsistence. Even the poorest class, exposed in many ways to the most cramped way of life and the suffering and misery of life, bears its fate with silent surrender, and while people hope that difficult conditions will take a turn for the better, they calmly tolerate their circumstances, try to earn an income, and hope that their fates will improve in time.⁵⁶

55 MNL BAZML IV. 803. b. 577/1879.

56 MNL BAZML IV. 803. b. 1/1880.

Impoverishment hit Borsod in the early 1880s. The *szolgabíró* of the Sajószentpéter district reported that a hungry person was transported to the hospital in Miskolc from Sajószentpéter, and a starving sick family was aided with funds from the town's treasury. However, he added that the people, considering their livelihoods, were not in a position to be seriously worried, or state aid would have to be required.⁵⁷ Not long after, however, he made the following report: "As a result of the fruitless harvest of the current year, the population of my district, with the decline of transport and manual labor, is already suffering a heavy burden of subsistence. In general, I can point out that not only manual day laborers, but also some of the landowners, are struggling with their livelihoods."⁵⁸

In Miskolc, the seat of Borsod County, the situation deteriorated considerably with the arrival of the extremely cold winter, but fortunately it did not turn into a crisis thanks to the quick measures taken by the town authorities. Having already created a list of the needy in the town in a forward-looking manner, they were able to alleviate poverty more easily and quickly with the distribution of food, firewood, and money as the need arose.⁵⁹ As a result, in January 1880, the mayor of Miskolc, Kálmán Soltész Nagy, submitted a reassuring report to the county deputy:

Based on the reports made to me and on my own experience, I officially declare that the poverty of the poor in the town of Miskolc does not appear to be of such magnitude at this time that it would require legal or state measures.

It is undeniable that in the winter, the poverty of the population is greater than it has been in other years; however, the authorities, in accordance with the order of the town council, shall provide those who are incapable of working with the most essential foods and save them from starvation.⁶⁰

Considering the deprivation suffered by the population and conditions close to famine, it could be feared that public safety would deteriorate. In 1879, the Borsod *alispán* asked the Ministry of Interior for eight more cavalries and eight

57 MNL BAZML IV. 809. b. 488/1880.

58 MNL BAZML IV. 809. b. 519/1880.

59 MNL BAZML IV. 803. b. 1/1880.

60 MNL BAZML IV. 809. b. 107/1880.

infantry gendarmes, in addition to the existing ones, due to an increasing number of cases of violence.⁶¹

There were similar fears of an increase in acts of violence in Zemplén, but according to the semi-annual report of the *alispán* in 1880, “public safety, considering the given impoverishment and need, cannot be called worrying.”⁶²

As in Zemplén, the provision of public works for the poorest was discussed in Borsod County. It would have been especially helpful for the needy in and around Miskolc if the riverbed regulation planned after the great flood in Miskolc in August 1878 had finally been given the green light from the Ministry. As Kálmán Soltész Nagy, the mayor of Miskolc, wrote in his report, “If the city had already approved the regulatory plan, it could not only help the poor by giving them work, but could also save the significant amount of money it has to spend on relief for the poor relief.”⁶³ He then asked the *alispán* to try to get the Ministry of Public Works and Transport to approve the draft regulation as soon as possible “so that the work can begin to provide the poor of our town with a source of income at the beginning of spring.”⁶⁴

Fortunately, the improving weather also alleviated the misery. As the Borsod County *alispán* wrote, “In the area of the town of Miskólcz, with the onset of milder days, the shortage begins to end, so much so that by the 15 of the current month [March], the supply of foodstuffs will be ceased. Residents in need of public aid can get work in the vineyards and gardens, and the need for further aid, thanks to providence, will disappear.”⁶⁵

After the unfavorable harvests of the previous years, people rightly hoped that as the weather improved, the harvest would finally provide, if not abundant, at least a sufficient yield. However, the spring frosts dashed some of these hopes. In a report on the state of the crops in April 1880, Kálmán Soltész Nagy wrote,

I am convinced after questioning several farming and viticulture individuals that wheat sowing is generally good, while rye sowing, especially the rye which was sown last, under the cold and heavy snow, is almost completely lost. The buds of the fruit trees are almost completely lost as a result of the extraordinary frost, which recurred at the beginning of spring, and there is no prospect of fruit production

61 MNL BAZML IV. 803. b. 418/1879.

62 MNL BAZML IV. 2402. a. 6/1880.

63 MNL BAZML IV. 809. b. 463/1880.

64 Ibid.

65 MNL BAZML IV. 809. b. 901/1880.

at all. The buds on the vines are usually blackened, so they are infertile; however, the quality of the lower buds is still impossible to determine at this time.⁶⁶

Nevertheless, the county managed to avoid the worst, and in July, the county *alispán* reported reassuringly to the Minister of Interior that

Anyway—thanks be to providence! Famine has not devastated our county in a large and scary way. The sympathy and compassion of individuals, municipalities, and our authorities have alleviated the problem everywhere. And now, during the summer, we no longer have a reason to talk about poverty. Works assuring subsistence are underway everywhere, and there is hope that the year will not be one of the worst from the perspective of the harvests.⁶⁷

The yields of the next years were similar in Borsod and Zemplén. The floods of 1881 caused considerable damage in both counties (as they did in other parts of the country), but the harvest ended with a mediocre yield.⁶⁸ A year later, in the spring of 1882, the *alispán* of Borsod saw the agricultural situation of the county more optimistically. But from mid-July through August, that is, during the harvest, many crops suffered due to torrential rains,⁶⁹ and their quality fell short of expectations. But in several districts, they were still “good mediocre,” “completely satisfactory,” or, as the *szolgabíró* of the Eger district wrote, “The fruit in the whole district is definitely good. In some places, it has exceeded the farmers’ hopes.”⁷⁰ Thus, the harvest of 1882, which can generally be said to have been plentiful and of good quality, brought the crisis in Borsod to an end, as it did in the neighboring Zemplén County.

Conclusions

The aim of our research was to examine the impact of the weather anomalies of the 1870–80s on agriculture in order to shed light on the decisive roles of weather conditions in the deepening of the agricultural crisis which took place in Europe in the last third of the nineteenth century. In the course of our research,

66 MNL BAZML IV. 809. b. 1246/1880.

67 MNL BAZML IV. 809. b. 2226/1880.

68 MNL BAZML IV. 809. b. 1/1882.

69 MNL BAZML IV. 809. b. 344/1882.

70 MNL BAZML IV. 809. b. 2638/1882.

by examining the climate and yield data of two Hungarian counties, Borsod and Zemplén, we observed a series of years of poor yields, as well as a catastrophic harvest in 1879, which led to a period of distress which lasted until 1882. During this period, the agricultural population, while avoiding the worst (as there was no famines), suffered material losses to a degree that led to mass impoverishment in the long run.

Our research does not show a clear link between unfavorable weather and the agricultural crisis, but we nonetheless maintain our contention that impoverishment caused by a series of bad harvests certainly exacerbated the inflow of foreign grain. Moreover, efforts to cope with the crisis were hampered by the fact that many farmers had been ruined and masses of people, including many farmers, emigrated. There are still many questions to be answered. Although we have only superficially examined the relationship between impoverishment and emigration, which took on massive proportions in 1879, it is very likely that the difficult economic situation in Hungary, which was a consequence of the unfavorable weather, gave a greater impetus to emigration. At this point, our research suggests a clear parallel between events and experiences in Hungary and the European experience, which included an ever larger wave of emigration in several countries beginning in the early 1880s.⁷¹ Our results also show similarities with the duration of impoverishment in Europe as well, as the worst period in Hungary was also between 1879 and 1882, from which the relatively good yields of 1882 were the way out.⁷²

Our research also revealed that even in the case of two neighboring counties, Borsod and Zemplén, needs were quite different, although we did not discern any significant differences in the ways in which these needs were addressed. Borsod was less sensitive to hardship, which was presumably the consequence of differences in farming (size and quality of cultivated land, varieties and proportions of cultivated crops, etc.) due to geographical differences. Our findings certainly make clear that if we wish to determine the extent to which we can speak of a national agricultural crisis in 1879–80, further studies at the regional level are needed.

71 Lamb, *Climate, History and the Modern World*, 234.

72 Ibid., 275; Perry, *British Farming*, 54–60.

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CONTENTS

<i>Weather Anomalies and Their Economic Consequences</i>	ÉVA BODOVICS	179
<i>Evaluation of the Floodplain Farming</i>	SÁNDOR RÓZSA	213
<i>Environmental Impacts of Medieval Uses of Natural Resources</i>	BEATRIX F. ROMHÁNYI, ZSOLT PINKE, JÓZSEF LASZLOVSZKY	241
<i>Millennial Record of Earthquakes</i>	MIKLÓS KÁZMÉR, ERZSÉBET GYŐRI	284
<i>Dendrochronology and Environmental History: The Difficulties of Interpretation</i>	ANDRÁS GRYNÆUS	302
<i>Transformations of Metal Supply during the Bronze Age</i>	VIKTÓRIA KISS	315
<i>Distribution of Stone Raw Materials in the Late Iron Age</i>	ZOLTÁN CZAJLIK	331

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