

Viktor KOTSUR*
Oksana KOSTENKO**
Volodymyr SIROPOL***

THE UNIVERSITIES OF THE XIXTH CENTURY AND THE SPREAD OF AGRICULTURAL EDUCATION IN EUROPE

- Abstract -

The article deals with agriculture sciences establishment in the Western European countries and its influence on the development of other sciences. After analyzing the scope of scholarly articles, we found out that the second part of the XIX century was a critical period in agriculture sciences establishment. During this period, numerous scholarly articles were published, focusing on the theoretical aspect of agricultural education. Germany, Austria and France were the countries that played a crucial role in the development of agriculture as a science. However, this development was not entirely sustainable till the XX-th century.

Keywords: agriculture; science; agronomy; researchers; education; Europe; higher education institutions.

Introduction

After having declared its political independence, our society felt the urge to make certain changes in every sphere of life. The first urgent tasks were fundamental reforms in the national education system, which would correspond to the European requirements. Nowadays, taking into account the development of certain scientific fields and the education system of Ukraine, we identified a

* Honorary Professor at the Izmail State University of Humanities. Pereyaslav-Khmelnysky Hryhoriy Skovoroda State Pedagogical University, Ukraine (n.kozur@ukr.net), ORCID: 0000-0003-4968-4813, Researcher ID: R-1709-2018.

** Pereyaslav-Khmelnysky Hryhoriy Skovoroda State Pedagogical University, Ukraine (sabinyanochka@ukr.net), ORCID: 0000-0003-0831-9158, Researcher ID: [AAL-9707-2020](#).

***Pereyaslav-Khmelnysky Hryhoriy Skovoroda State Pedagogical University, Ukraine (woozik1980@gmail.com), ORCID: 0000-0001-6069-2609, Researcher ID: U-8091-2018.

research gap in the subtle transformations in the education system of Ukraine, which were coming about from the second part of the XIX century till the beginning of the XX century. During that period, Ukrainian scientists gained valuable agricultural experience and reached outstanding scientific achievements. However, for an extended period, these achievements have remained undiscussed and unacknowledged¹.

Agronomy is a respectful field of agricultural science, although first scholarly articles were written in the second part of the XIX century, and the establishment of the agricultural scientific disciplines took place in the second part of the XIX century – the beginning of the XX century. The significance of agricultural science is estimated by the level of its value for people. The development of agricultural science has been strongly related to human needs.

The history of this field of science has not only theoretical but also practical value because numerous agricultural issues occur time and again. Only after analyzing the history of education development, researchers can improve the modern education system of Ukraine and suggest its further development. Moreover, applying systematic and complex approaches to research of agricultural education in Ukraine as well as in Europe, scientists can predict the future development of agriculture².

Research Analyses

At the end of the XIX century, numerous scholarly articles were devoted to defining the development of agricultural science in Europe. The first scholarly works were “Higher Agricultural Education in Russia and Abroad”³ by I. I. Meshchersky and “Review of Agricultural Establishments in England, France, Belgium, the Netherlands, Germany, and Italy”⁴ by V. V. Veshnyakov. These articles highlight the historical aspect of the establishment of agriculture as a university

¹ Kostenko, O. (2017). Istorychni peredumovy stanovlennia silskohospodarskoi nauky osvity v krainakh Yevropy pershoi polovyny XIX st. – pochatku XX st. [Historical Aspects of Agricultural Sciences Establishment in European Countries (in the first part of the XIX century – beginning of the XX century)]. *Izmail State Humanities University Scientific Bulletin. Historical Sciences Series.* (37). P. 214-218.

² Ibid.

³ Meshchersky, I. (1893). *Vyishee selskohozyaystvennoe obrazovanie v Rossii i za granitsey.* [Higher agricultural education in Russia and abroad]. St. Petersburg. P. 6-11.

⁴ Veshnyakov, V. (1866). *Obzor selskohozyaystvennyih uchrezhdeniy v Anglii, Frantsii, Belgii, Gollandii, Germanii i Italii.* [Overview of agricultural institutions in England, France, Belgium, Holland, Germany and Italy]. St. Petersburg. 787 p.

subject in European university curriculums. The articles by the aforementioned Russian researchers have been of significant importance until now.

The article aims to define the development of agricultural science in the Western European countries, to highlight its characteristics and its influence on science development.

Statement of the basic material

The shift of the Western European countries to capitalism was quite a continuous process while it had lasted for decades or even centuries. Furthermore, agriculture evolved and gradually became a part of capitalism. In the first part of the XIX century, there was a necessity to enhance the effectiveness of agriculture as a branch of science and apply for new technological advances. The cultural and economic prosperity of European countries fostered the research of agriculture as a science.

The development of the agricultural sciences and education in the first part of the XIX century immediately influenced technological progress. As Jean-Baptiste Boussingault and Justus Liebig had revealed how fertilizers enhance the natural fertility of soil, and the growth of plants, the production of artificial fertilizers increased significantly. At the end of the XIX century, it was scientifically proved that the physical-chemical processes in soil could affect soil fertility. Moreover, researchers who had elaborated the theories of humus and mineral nourishment of the plants made agronomists pay attention to the issues of soil fertility, soil enrichment with fertilizers, and enhancement of the growth of plants⁵.

Since such scientific advancements in agriculture, there occurred the need to spread and implement the scientific findings. The most efficient way to reach that goal was to establish specialized educational institutions.

It is worth mentioning that Germany was the first European country to establish agricultural education despite continuous confrontations of two mainstreams of agriculture schools; that is, one agriculture school focused more on the theoretical university education, while another school focused on providing practical knowledge of agricultural sciences.

⁵ Kostenko, O. (2017). Istorychni peredumovy stanovlennia silskohospodarskoi nauky osvity v krainakh Yevropy pershoi polovyny XIX st. – pochatku XX st. [Historical Aspects of Agricultural Sciences Establishment in European Countries (in the first part of the XIX century – beginning of the XX century)]. *Izmail State Humanities University Scientific Bulletin, Historical Sciences Series*. (37). P. 215.

The development of agricultural education in Germany consisted of two stages. The first stage began in the first part of the XVIII century when there was an urge to free German farmers from slavery. In that period, the course in agricultural science was implemented in the curriculums of German economic schools⁶. The first course on agriculture was taught in 1727 when the King of Prussia Frederick William I created the department of economics at the University of Halle⁷. The topics on agriculture were incorporated in the lectures on economics.

During the XVIII century, similar departments were established at all German universities. Consequently, in 1727 the department of economics was founded at the universities in Frankfurt an der Oder, then – in other German cities: Rinteln and Göttingen. Later almost all German universities opened the department of economics. In 1777 Louis IX of Hesse-Darmstadt, the Landgrave of Hesse-Darmstadt, opened the Specialized Economic University of Giessen. At this university, the following courses were taught: chemistry, mineralogy, physics, botany, mining and construction work, veterinary medicine, bookkeeping, and agriculture. In general, agriculture studies were part of the curriculum of numerous German universities⁸.

Even before closing the departments of cameralistics, the development of agriculture studies was of significant importance. In 1782 Albrecht Daniel Thaer, an outstanding German agronomist, wrote in his scholarly article “English Agriculture” that there should be a specialized university for teaching agriculture studies. In his famous work *The Principles of Rational Agriculture*, he stated: “agriculture must therefore borrow from all these sciences some principles, used for the foundation of its own science, and, even if these sciences are not a significant part of its teaching, agriculture nevertheless must have all of them at its disposal”⁹. For that purpose, he believed that universities should co-operate with all branches of agriculture. Therefore, future agronomists could have skills and knowledge in the production processes.

⁶ Ibid. P. 216.

⁷ Zaykevych, A. (1893). *Agronomiya, kak nauka voobsche i universitetskaya v chastnosti*. [Agronomy as a General Science and as a University Science]. *Proceedings of the Second Kiev Regional Agricultural Congress*. Editor: S.M. Bohdanov. Kyiv: Publishing House P. Barsky. P. 26.

⁸ Shkolyi selskohozyaystvennyie. (1903) [Agricultural Schools]. *Encyclopedic Dictionary* / Editors: F.A. Brokhaus, I.A. Efron. St. Petersburg. Volume XXXIX a, (78). P. 626-633.

⁹ Zaykevych, A. (1893). *Agronomiya, kak nauka voobsche i universitetskaya v chastnosti*. [Agronomy as a General Science and as a University Science]. *Proceedings of the Second Kiev Regional Agricultural Congress*. Editor: S.M. Bohdanov. Kyiv: Publishing House P. Barsky. P. 28.

Not only Albrecht Daniel Thaer had made a significant contribution to the development of agricultural sciences at German universities, but he also focused on the elaboration and further implementation of his agriculture theory and cofounded the first agriculture university in Zille (the Kingdom of Hannover). However, this university existed for a somewhat short period: from 1790 till 1804. The main reason for its failure was teaching agriculture sciences without any focus on the profitable part of agriculture. After analyzing the theoretical framework, we can state that the main agriculture courses were taught effectively at the universities; however, other sciences were regarded as additional and not quite relevant.

Next year, Carl August von Hardenberg, a Prussian minister, offered Albrecht Daniel Thaer to move to Prussia, where he was promised to cofound a school in a mansion, which was close to Berlin. After collecting all the donations from farmers, Thaer opened an agriculture school in Möglin for family farmers¹⁰.

The mansion was regarded as a comprehensive school of agricultural education. Students of this school were required to participate in all agricultural activities as the school was located in a suburb, which was perfect for any agriculture work. Therefore, the first agriculture academy in Europe was founded more on practical aspects rather than on theoretical ones. However, according to Professor Golz, who taught “History of German Agriculture”, this agriculture academy in Möglin also taught some theoretical aspects of agriculture and was suitable for conducting scientific experiments. Later on, this academy was focusing more on the agricultural theory because the academy was close to Berlin, a scientific hub. More importantly, after a three-year teaching period, in 1808 Thaer became a professor at the University of Berlin, where he was teaching till 1819: in winter semesters, he taught at the University of Berlin; in summer semesters, he taught at the Möglin Academy¹¹.

The Prussian government highly valued the scientific contribution made by Albrecht Thaer. As a result of his work, Prof. Thaer was rewarded with a title of privy councilor, the Möglin School became The Royal Agricultural Academy, and professors of The Royal Agricultural Academy were state-funded. The Prussian King Friedrich Wilhelm III clearly stated in his decree of 1 July 1805 that specialized agricultural institutions should be created and fully supplied with necessary equipment; moreover, studying agronomy should be interrelated with

¹⁰ Lokot, T. (1912). *Selskohozyaystvennyie institutyi i universitetskaya agronomiya*. [Agricultural Institutes and University Agronomy]. *Reports and minutes of the general meetings of the Kiev Agronomic Society*. Kyiv: Publishing House T.H. Mainandlera. P. 2-8.

¹¹ *Ibid.* P. 6.

agricultural activities. Although the King fully supported the agricultural education, he issued his decree a bit late because, by that time, the majority of the departments of agriculture studies had become a part of the departments of physics and mathematics of the Faculty of Philosophy.

When in 1819 Albrecht Thaer died, his son Albrecht Philipp Thaer became a head of the school. In 1837 one of the three state-funding programs for agriculture studies was in the Möglin School. However, according to S. M. Kholodetsky, who visited the Möglin School in 1844, this institution was going through a crisis because teaching methods required upgrading¹². Consequently, after celebrating his 50th birthday, Albrecht Philipp Thaer decided to close the school in 1861. He explained his decision stating that the requirements for agricultural education were inappropriate for such institutions as the Möglin Academy. However, the Ministry of Agriculture financially supported this academy; according to the reports, the Ministry paid 920 rubles to the Möglin Academy.

For a long period, the Möglin Academy was the only agricultural institution in Prussia. Therefore, the first specialized agricultural institution in Europe was in Prussia. In 1818 Mathieu de Dombasle, a French agronomist, opened the second agricultural school in Rauville (Meurthe, France). Agricultural schools in Möglin and Rauville fostered rapid development of agriculture independently from universities. The majority of higher education institutions founded in Germany and France were independent.

In Germany, in the 1840s, agriculture sciences were evolving somewhat gradually. After the Möglin Academy, the next agricultural academies with a practical approach were German academies in Hohenheim and Idstein (1818), in Scheißeheim, in Elden (1835), and in Regenwald (1842)¹³.

When in Prussia a specialized agricultural committee was set up on 29 June 1844, the first legislation on agricultural education development was adopted. According to this legislation, new agricultural academies were opened in Proskau (1847); in Poppelsdorf (1847); in Vehend (1851), and Waldau (1858)¹⁴.

¹² Khodetsky, S. (1844). Ocherki sovremennogo sostoyaniya uchebnyih zavedeniy po sel'skomu hoz'yaystvu v Germanii. [Review of Educational Institutions of Agriculture in Germany]. *Ministry of State Property Journal*. (XIII). p.II. P. 308-314.

¹³ Lokot, T. (1912). Selskohozyaystvennyie institutyi i universitetskaya agronomiya. [Agricultural Institutes and University Agronomy]. *Reports and minutes of the general meetings of the Kiev Agronomic Society*. Kyiv: Publishing House T.H. Mainandlera. P. 3.

¹⁴ Meshchersky, I. (1893). *Vysshiee selskohozyaystvennoe obrazovanie v Rossii i za granitsej*. [Higher agricultural education in Russia and abroad]. St. Petersburg. P. 9.

The majority of academies were entirely independent agricultural intuitions. Some of these academies adopted a practical approach of agricultural education, taking into account students' skills. One of the most famous academies of that time was the Hohenheim Academy, founded by Prof. Schwarz.

Despite the aforementioned practical approach of teaching, for the first time, agricultural academies started cooperation with universities by hiring university teachers, applying pedagogical methods, and using university auditoriums. These changes led to the amalgamation of agricultural academies and universities. Consequently, agricultural education adopted a slightly more practical approach rather than a theoretical one: academies became independent and private agricultural schools. Teaching agricultural sciences was not only at agricultural academies but also at specialized technical and secondary schools in Europe. Consequently, the course called "Agriculture" was taught at various European universities, polytechnical institutes, and economic schools¹⁵.

The next stage of agricultural education development in Prussia was the foundation of specialized institutions subordinated to universities. In 1835, at the University of Greifswald, the new agricultural academy was opened in the mansion of Elden. The foundation of one of the oldest agricultural academies – the Elden Academy – emphasized that secondary education played a significant role in agricultural education development. The Elden Academy was founded in 1827 at the University of Greifswald. Professor Schulz was invited to arrange the studying process at the academy¹⁶.

The key principle of such academies was effective cooperation with universities. As a result, students who graduated from the Elden Academy could become not only agronomists but also civil servants. As it was mentioned in numerous scholarly articles, this academy had more agricultural courses than any other academy in Germany. It is also worth mentioning that the Jena Institute seemed to be highly popular and, for a long period, remained one of the most visited institutes in Germany.

Another example can be the Poppelsdorf Academy, which was founded at the University of Bonn. In the beginning, this academy belonged to the University of Bonn; however, later it functioned independently from the university. Moreover,

¹⁵ Paulson, F. (1904). *Germanskije universitetyi*. [German University]. St. Petersburg. 413 p.

¹⁶ Veshnyakov, V. (1866). *Obzor selskohozyaystvennyih uchrezhdeniy v Anglii, Frantsii, Belgii, Gollandii, Germanii i Italii*. [Overview of agricultural institutions in England, France, Belgium, Holland, Germany and Italy]. St. Petersburg.

various courses in agriculture studies were taught effectively at the University of Berlin and at the University of Halle.

Justus Freiherr von Liebig, an outstanding German researcher, harshly criticized the independent agricultural institutions. In his works *Letters on Chemistry*, *Influence of Sciences on Prosperity of Population*, *Familiar Letters on Chemistry and Its Relation to Commerce, Physiology and Agriculture* (1863), Justus von Liebig protested strongly against the independence of the agricultural academies: "Open agricultural academies like the Möglin Academy have more disadvantages than advantages. For example, at these academies natural sciences were not taught, although these sciences made remarkable progress. Such academic disciplines as chemistry, physics, botanicas were not taught at the academies; therefore, agricultural education is more comprehensive when agricultural academies cooperate with universities"¹⁷.

Furthermore, Justus von Liebig was against agricultural education, which included practical aspects and stated that theoretical and practical parts of studying should not interrelate. After Liebig had criticized the autonomy of the agricultural academies, the agricultural education transformed: agricultural schools and universities were amalgamated. After Liebig's speech about new sciences at the opening of the Bavarian Academy of Sciences, the amalgamation of the agricultural schools and universities was a fundamental reform at that time. Consequently, the academies in Möglin, Waldau, Elden, Proskau, Taranda were closed; and new institutes at the universities were established.

For example, when the Prussian Agricultural Academy was opened in Waldau, an agricultural community of Saxony appealed to the government to implement agricultural courses at the University of Halle. Consequently, at the University of Halle, the Department of Agriculture was opened, the head of which was Prof. Julius Kühn in 1863¹⁸. All in all, in 1862 agricultural sciences began to be taught at the University of Halle¹⁹.

¹⁷ Zaykevych, A. (1893). *Agromiya, kak nauka voobsche i universitetskaya v chastnosti* [Agronomy as a General Science and as a University Science]. *Proceedings of the Second Kiev Regional Agricultural Congress*. Editor: S.M. Bohdanov. Kyiv: Publishing House P. Barsky. P. 54.

¹⁸ Bohdanov, S. (1895). *Illyustrirovannyiy selskohozyaystvennyiy slovar*. [Agriculture Dictionary (with pictures)]. *Encyclopedia of Agriculture*. Kyiv, 1446 p.

¹⁹ Zaykevych, A. (1893). *Agromiya, kak nauka voobsche i universitetskaya v chastnosti* [Agronomy as a General Science and as a University Science]. *Proceedings of the Second Kiev Regional Agricultural Congress*. Editor: S.M. Bohdanov. Kyiv: Publishing House P. Barsky. P. 60.

While analyzing the 25-year scientific contribution of the Department of Agriculture at the University of Halle, A. E. Zaykevych wrote: “The popularity of the agricultural studies at the University of Halle was rising”²⁰. The Department of Agriculture was extended: a few laboratories and Ph.D. programs were opened at the university. Existing only for nine years, the University of Halle became the most popular university among all agricultural institutions in Germany²¹.

The example of the University of Halle was followed by various German agricultural institutions: the University of Leipzig (1869), the University of Giessen (1871), the University of Göttingen (1872), the University of Kiel (1873), the University of Königsberg (1876), the University of Breslau (1881)²². This shift in agricultural education led to that agriculture as a science became independent from other sciences at the universities. The significance of this science in XIX fostered the interest in agriculture, sustained its independence, and provided the basis for the further progress. Therefore, the theoretical approach of teaching became slightly more dominant over a practical one.

It is worth mentioning that there was no mansion at the University of Halle. There were numerous educational auditoriums and open spaces; for example, research rooms, botanic gardens of agricultural plants, a zoo of livestock and farm animals, laboratories of agricultural physiology, various collections of samples, etc. Prof. Thaer considered the Möglin Academy more as a research facility rather than an educational institution. However, the majority of agricultural institutions at the German universities were poorly supplied with equipment so that professors who worked at those departments were somewhat frustrated with such conditions. For example, there were numerous letters written by professors who were demanding more equipment for laboratories. For example, such professors as Brislovsky and Rümker, an outstanding specialist in the theory of selection in Germany, stated the condition of agricultural departments at the universities was quite poor. Nevertheless, the development of agricultural sciences continued in other European countries.

In the 1850s, the peak of the development of agricultural sciences was in Austria. Agricultural studies were taught at the University of Altenburg and at Vienna University of Technology. Moreover, agricultural studies were popular at the

²⁰ Ibid.

²¹ Bohdanov, S.M. Selskohozyaystvennyiy institut pri universitete v Galle. [The Agriculture University of Halle]. *Ministry of Education Magazine*. (266). III. P. 29.

²² Lokot, T. (1912). Selskohozyaystvennyie institutyi i universitetskaya agronomiya. [Agricultural Institutes and University Agronomy]. *Reports and minutes of the general meetings of the Kiev Agronomic Society*. Kyiv: Publishing House T.H. Mainandlera. P. 7.

universities in such Austrian cities as Linz, Graz, Klagenfurt, and in other European cities: Prague, Ofen, Brno, and Krakow²³.

As it was mentioned before, France was the first European country that attempted to introduce agricultural education. In 1818, Mathieu de Dombasle provided a project of a farm in Lorraine. In 1822, he opened the famous farm in Roville: the first educational institution in France. In Grignon, Mathieu de Dombasle founded the agricultural college, which was in the mansion of King Karl X²⁴.

On discussing agricultural education in France, the national committee passed the law on agricultural education in France on 3 October 1848. Consequently, three different levels of the agricultural education were implemented. Unfortunately, the National Agricultural University of Versailles existed only for three years: from 1849 till 1852. Even though no students graduated from the university, this university contributed to the development of agricultural sciences in France and the improvement of teaching methods. For example, only this agricultural university offered two-year public courses and three-year exchange programs for three most diligent students to gain a pedagogical experience.

In Belgium, agricultural education began in 1832 when the College of Veterinary Medicine and Farming was set up by private individuals in Kurgeme. Since 1849 the Belgium government implemented educational reforms to improve agricultural education. This issue was discussed in both chambers of the Parliament; due to importance of this issue, the Parliament increased financial support of agricultural education. For a considerable amount of time, the Turton College was regarded as a higher educational agricultural institution, and, only in 1860, the Belgium government decided to establish another agricultural institution of a higher education in Gembloux. Interestingly, at the Agricultural College of Gembloux, from 1863 till 1864, there were only 75 students, 32 of them were foreigners: three exchange students from Russia and eleven students from Poland²⁵.

In the Netherlands, there was no institution of agricultural education till the end of the XIX century. At the Universities of Leiden, Utrecht, and Groningen, the courses on agriculture were taught by professors of botanicas and chemistry.

²³ Veshnyakov, V. (1866). *Obzor selskohozyaystvennyih uchrezhdeniy v Anglii, Frantsii, Belgii, Gollandii, Germanii i Italii*. [Overview of agricultural institutions in England, France, Belgium, Holland, Germany and Italy]. St. Petersburg.

²⁴ Meshchersky, I.I. (1893). *Vyisshee selskohozyaystvennoe obrazovanie v Rossii i za granitsej*. [Higher agricultural education in Russia and abroad]. St. Petersburg. P. 8.

²⁵ Veshnyakov, V. (1866). *Obzor selskohozyaystvennyih uchrezhdeniy v Anglii, Frantsii, Belgii, Gollandii, Germanii i Italii*. [Overview of agricultural institutions in England, France, Belgium, Holland, Germany and Italy]. St. Petersburg. P. 312.

In Italy, in the middle of XIX, there were five educational institutions of agriculture, some of them were subordinated to universities. In 1862, the Ministry of Agriculture controlled such agricultural institutions as the Farming and Forest School of Turin, the Farming Institute of Kashin (near Florence), the Farming and Veterinary Medicine School of Pisa, the Farming Institute of Parma, the Department of Agronomy at the technical institutes of Turin, Milan, and Florence. Moreover, the Ministry of Public Education introduced agricultural courses at the universities of Turin, Neapolis, Bologna, Modena, Perugia, Palermo, Messina, Catania, Ferrara, Urbino, Macherata, and Cameroon.

Agriculture courses were taught at the universities for the students from the Engineering Department. However, when a new law on the national education was adopted in the 1860s, the courses on agriculture were excluded from the curriculums (except for the University of Turin)²⁶.

In Great Britain, agricultural education was developing differently in all kingdoms. In England, there was only one higher education institution of agriculture, which was located in Cirencester. In Scotland, there was no agricultural institution; however, there were agricultural courses at the University of Edinburgh and other higher educational institutions. In Ireland, there were numerous secondary schools of agriculture in the middle of the XIX century.

In the second part of XIX century till the beginning of the XX century, there was a discrepancy in opinions concerning the teaching methods, although the practical approach of teaching agricultural sciences was dominant. For example, the National Agriculture Institute of Paris, secondary agriculture schools in Vienna and Berlin had no agriculture fields, but instead of agriculture fields there were research facilities at those universities. During the courses, students had only excursions to agriculture fields so that they could gain some practical agricultural skills²⁷.

It is worth mentioning that scientific discoveries by researchers of all departments of agriculture belonged to the National Research Foundation. For example, according to the statements by O. Sokolosky, there were agricultural research facilities at the universities in the 1920s; those research facilities fostered

²⁶ Fausek, V. (1897). *Nekotoryie nauchno-prikladnyie uchrezhdeniya Italyanskogo ministerstva zemledeliya*. [Scientific Facilities of Ministry of Agriculture in Italy]. St. Petersburg. P. 34.

²⁷ Viner, V. (1912). *Organizatsiya opyitnyih uchrezhdeniy v Germanii, Avstro-Vengrii, Shveytsarii i v tsarstve Polskom*. [Organization of Educational Institutions in Germany, Austria-Hungary, Switzerland, and in Poland]. St. Petersburg. P. 18.

the development of agricultural sciences in England. England was divided into twelve agricultural regions; each of them had an agriculture school²⁸.

In the XVIII century, the western part of Ukraine belonged to the Austro-Hungarian Empire. Consequently, the government of the Empire had control over the education system of the western part of Ukraine from 1774 till 1790. The Ministry of Education of the Austria-Hungary passed various laws on school education and formed an effective system of education in the second part of the XVIII century till the beginning of the XIX century. Local universities facilitated the foundation of agricultural education and establishment of the first scientific facilities²⁹. In Lviv and Peremyshl, there were universities with four faculties: the faculty of philosophy, the faculty of law, the faculty of medicine, and the faculty of theology. The University of Lviv was the first university of classical education on the territory of Ukraine. It was founded at the Jesuit Collegium in 1661. Before 1862, the official language that was used at the university was German, but since 1862 Polish was a dominant language at the university. Like all European universities, the University of Lviv had a botanic garden. At the end of the XIX century, there were a few agricultural schools at the University of Lviv³⁰. Among all the universities established in the XIX century on the territory of Ukraine, which were under the control of the Austria-Hungary, there was a famous institution of higher education founded in 1875: the University of Chernivtsi, the official language of which was German. The university consisted of three faculties: the faculty of theology, the faculty of philosophy, and the faculty of law. The university had three faculties till 1919-1920. According to the information in the encyclopedias published at the beginning of the XX century, at the university there were a botanic garden and a chemistry laboratory³¹. In the XIX century, universities on the territory of Ukraine which was under the control of the Russian Empire had no collaboration with universities in Western Ukraine. The Russian system of education was similar to the German system of education; consequently, reforms in German universities

²⁸ Sokolovsky O. *Z podorozhuvannia do Anhlil (naukovi zvity)*. [Travelling to England (scientific reports)]. P. 109-119.

²⁹ Kostenko, O. (2017). Istorychni peredumovy stanovlennia silskohospodarskoi nauky osvity v krainakh Yevropy pershoi polovyny XIX st. – pochatku XX st. [Historical Aspects of Agricultural Sciences Establishment in European Countries (in the first part of the XIX century – beginning of the XX century)]. *Izmail State Humanities University Scientific Bulletin. Historical Sciences Series*. (37). P. 218.

³⁰ Lvov [Lviv]. *Encyclopedic Dictionary* (1903). Editors: F.A. Brokhaus, I.A. Efron. St. Petersburg. Volume XVIII. (35). P. 134-135.

³¹ Chernovets. [Chernovets]. *Encyclopedic Dictionary* (1903). Editors: F.A. Brokhaus, I.A. Efron. St. Petersburg. Volume XXXVIIIa. (76). P. 608-609.

concerning the agricultural education had an impact on the development of agricultural education in the Russian Empire and foundation of the departments of agriculture at Russian universities.

After analyzing higher agricultural education in Europe, we can draw a conclusion that the first country where agriculture was acknowledged as a science was Germany. In Germany, state agricultural education was of crucial importance. Furthermore, German universities were remarkably successful because of the high professionalism of teaching staff. For example, due to the scientific achievements made by Prof. Thaer, the Möglin Academy became a famous institution of agricultural education; the Hohenheim Academy became famous due to Prof. Schwarz, Prof. Wereklin, and Prof. Pabstu; the Elden Academy became famous due to Prof. Schulz; the Poppelsdorf Academy, due to Prof. Garstein; the University of Halle, due to Prof. Julius Kühn³². All of them were famous German scientists and agronomists in the XIX century. Basing on the scientific work by the German researchers, Ukrainian professors elaborated on curriculums for agriculture schools in Ukraine. One of the outstanding Ukrainian professors was S. M. Khodetsky, who made a significant scientific contribution in the field of agriculture at the Imperial University named after St. Volodymyr³³.

Conclusion

After analyzing agricultural education in European countries, we can conclude that the foundation of agricultural education in Europe was a continuous process that lasted during the XIX century. The development of agricultural education depended on the economic demands of a country. In the middle of the XIX century, the issue of establishing agricultural education raised in the majority of European countries. In the second part of the XIX century, the theoretical approach of teaching agricultural sciences was dominant at European universities. Furthermore, at European universities, there were the departments or even institutes of agriculture sciences. Due to the research work at those universities and high scientific demand, numerous departments of agriculture sciences were opened at the European universities. Although there were two different ways of the agricultural education development, till the beginning of the XX century, there was no agreement among

³² Stebut, I.A. (1889). *Selskohozyaystvennoe znanie i selskohozyaystvennoe obrazovanie*. [Agricultural Knowledge and Education]. Moscow. P. 169.

³³ Lokot, T.V. (1912). *Selskohozyaystvennyie instituty i universitetskaya agronomiya*. [Agricultural Institutes and University Agronomy]. *Reports and minutes of the general meetings of the Kiev Agronomic Society*. Kyiv: Publishing House T.H. Mainandlera. P. 2-8.

researchers on the most efficient way of the development of agricultural sciences in European countries.

Bibliography

Bogdanov, S. (1895). *Illyustrirovannyiy sel'skohozyaystvennyiy slovar. Entsiklopediya sel'skogo hozyaystva*. Kiev. 1446 p.

Bogdanov, S. *Sel'skohozyaystvennyiy institut pri universitete v Galle. Zhurnal Ministerstva narodnogo prosvescheniya*. Ch. 266, noyabr, otd. III. P. 1-34.

Chernovets. Entsiklopedicheskiy slovar (1903). Sost. F.A. Brokgauz, I.A. Efron. Sankt-Peterburg. T. XXXVIII a. Kn. 76. P. 608-609.

Fausek, V. (1897). *Nekotoryie nauchno-prikladnyie uchrezhdeniya Italiyanskogo ministerstva zemledeliya*. Sankt-Peterburg. 34 p.

Hodetskiy, S. (1844). *Ocherki sovremennogo sostoyaniya uchebnyih zavedeniy po sel'skomu hozyaystvu v Germanii. Zhurnal Ministerstva gosudarstvennyih imuschestv*. No. XIII. R.II. P. 308-314.

Kostenko, O. (2017). *Istorychni peredumovy stanovlennia sil'skohospodarskoi nauky osvity v krainakh Yevropy pershoi polovyny XIX st. – pochatku XX st. Naukovyi visnyk Izmail'skoho derzhavnogo humanitarnoho universytetu. Seriya "Istorychni nauky"*. Vyp. 37. P. 214-218.

Lokot, T. (1912). *Sel'skohozyaystvennyie instituty i universitetskaya agronomiya. Doklady i protokoly obschih sobranij Kievskogo agronomicheskogo obschestva*. Kiev: Tip. T.G. Meynandera. P. 2-8.

L'vov. Entsiklopedicheskiy slovar (1903). Sost. F.A. Brokgauz, I.A. Efron. Sankt-Peterburg. T. XVIII. Kn. 35. P. 134-135.

Mescherskiy, I. (1893). *Vyisshie sel'skohozyaystvennoe obrazovanie v Rossii i za granitsej*. Sankt-Peterburg. P. 6-11.

Paulsen, Fr. (1904). *Germanskije universitety*. 413 p.

Poliakov, M. & Savchuk, V. (2004). *Universytety Ukrainy za chasiv Rosiiskoi imperii. Klasychni universytet: evoliutsiia, suchasnyi stan, perspektyvy*. Kyiv: Heneza. P. 109-123.

Shkoly sel'skohozyaystvennyie. Entsiklopedicheskiy slovar (1903). Sost. F.A. Brokgauz, I.A. Efron. Sankt-Peterburg. T. XXXIX a. Kn. 78. P. 626-633.

Sokolovskiy O. (b.m., b.r.). *Z podorozhuvannia do Anhlii (naukovi zvity)*. P.109-119.

Stebut, I. (1889). *Selskohozyaystvennoe znanie i selskohozyaystvennoe obrazovanie*. Moskva. 169 p.

Veshnyakov, V. (1866). *Obzor selskohozyaystvennyih uchrezhdeniy v Anglii, Frantsii, Belgii, Gollandii, Germanii i Italii*. Sankt-Peterburg. 787 p.

Viner, V. (1912). *Organizatsiya opyitnyih uchrezhdeniy v Germanii, Avstro-Vengrii, Shveysarii i v tsarstve Polskom*. Sankt-Peterburg. 32 p.

Zaykevich, A. (1893). *Agronomiya, kak nauka voobsche i universitetskaya v chastnosti. Trudyi Vtorogo Kievskogo oblastnogo selskohozyaystvennogo s'ezda*. Sost. pod red. S.M. Bogdanov. Kiev: Tip. P. Barskogo. P.15-73.