

SECTION XXXII. HISTOIRE, ARCHÉOLOGIE ET CULTUROLOGIE

DOI 10.36074/logos-08.07.2022.110

APPLICATION OF FRENCH AGRICULTURAL EXPERIENCE IN UKRAINE IN THE SECOND HALF OF THE 19TH CENTURY

Batiuk Alla
researcher

National Historical and Cultural Preserve "Hetman's capital"

UKRAINE

Over the centuries, humanity has overcome the difficult path to a stable food situation in the world. However, Russia's full-scale war against Ukraine, which began on February 24, 2022, put the world in front of another food crisis. Ukraine is an important exporter of everyday consumer products: sunflower oil, fats and cereals, will not be able to fully produce and export them. However, the crisis threatens not only those countries that depend on Ukrainian exports, but also those whose economies are suffering as a result of military aggression. In this article we will consider the influence of the achievements of French agronomists of the second half of the 19th century on the formation of a powerful agricultural industry in Ukraine.

The first Ukrainian agronomist who began to introduce innovative methods of land cultivation and agricultural production was Petro Kochubey (1825-1892) – a chemist, public figure, collector and philanthropist (Fig. 1). Kochubey – an ancient Ukrainian family, whose representatives from the late 17th to early 20th century held important government positions in the governments of Cossack Ukraine and the Russian Empire.

During 1845-1846, Petro Kochubey studied in Paris (France), where he deepened his knowledge of chemistry and physics. The Parisian professors Theophile-Jules Pelouze (1810-1867), Jean-Baptiste Andre Dumas (1800-1884) and Henri Victor Regnault (1807-1878) introduced him not only to the latest achievements in chemistry and physics, but with practical results of application of these sciences in agriculture and agronomy [1]. Petro Kochubey was able to personally visit the research farm of the French agrochemist Jean-Baptiste Bussengo (1801-1887) in the Pechelbronn estate in France (now Merkwiller-Pechelbronn). In a short time, this station achieved high results in research, the main of which was the testing of nitrogen fertilizers, which greatly interested Petr Kochubey [2]. French agronomy needed accelerated development, because during the 16th–18th centuries famine on the scale of the entire country occurred 40 times [3].

After returning from his studies to his homeland, Petro Kochubey continued to accumulate knowledge in chemistry and agronomy. The experience of French researchers identified several main factors of successful farming: increasing soil fertility through fertilization and creating an effective crop rotation system, minimizing manual labor and improving certain varieties of plants through breeding methods. Petro Kochubey decided to implement these principles in Ukraine.



Fig. 1. Petro Kochubei (1825-1892). Bas-relief medallion by Parmen Zabello, late 19th - early 20th century. Collection of the National Preserve "Hetman's Capital" (Baturyn, Chernihiv Region, Ukraine)

He conducted agricultural research in the family estate in the village of Zgurivka, Prylutsky District, Poltava Province (now it is the village of Zgurivka, Brovar district, Kyiv region). At the beginning of the 1850s, he managed to correctly determine the mineralogical and chemical composition of Zguriv soils, in order to implement a set of measures for their improvement (draining, fertilizing, planting forest strips) [4].

In 1872, Petro Kochubey founded the first agricultural research farm in Ukraine on the prepared territory. The institution's method of operation was the training of qualified agronomists and the practical application of new agronomic knowledge in a specific region. To meet the technical needs of the institution, a number of economic buildings were built: school premises, a dormitory for the farm manager, watchman, cook and students, a barn for storing agricultural tools, vehicles and seed material, stables for cattle and mill [5].

A distinctive feature of Petro Kochubey's educational and research farm was the multi-field farming system, similar to the French one. Crop rotation on the experimental field was 12-field and consisted of the following set of crops: 1) rapeseed; 2) winter wheat; 3) fodder beets; 4) spring crops with grass seeding; 5-9) herbs; 10) millet; 11) winter rye; 12) oats. In order to enrich the soil with nitrogen, in autumn thanks to the introduction of organic matter in the amount of approximately 120 t/ha, perennial grasses - alfalfa and safflower, which easily tolerate drought were sown [6].

Petro Kochubey used the newest and most effective technical means of agricultural engineering in Ukraine and Europe in his farm: Eckert plows, Sakka

planters, «Peredovitsa» machines and others. He was served as an example by French farms, which since 1835 began to replace manual labor by designing and using in agriculture steam engines, front-drive plows, Grange and Roville plows [7].

The educational and research institution of Petro Kochubey performed the function of a regional selection station. The development of monetary relations and industry contributed to the search for productive varieties of agricultural plants, the seeds of which brought significant profits. The first breeding and seed companies, which were engaged in breeding, reproduction and sale of seed varieties, began to emerge from the end of the 18th century in England ("Sutton"), France ("Vilmorin") and are still functioning today. The results of their work were also used by Petro Kochubey. He purchased seeds of the best varieties in small batches and professionally propagated them not only for his own needs, but also for the entire region. The Kochubey's farm produced elite varietal seeds on its own selection and research field. Thanks to Peter Kochubey's farming, full-fledged seed production of a large number of grain and fodder crops began in Ukraine. High harvests brought significant profits to the owner, which in 1885–1886 reached 2,374 rubles/ha [8].

To spread his agronomic experience, Petro Kochubey presented the results of his research at agricultural and industrial exhibitions in Kyiv, Kharkiv and Poltava. Samples of his seeds of winter and spring grain crops were awarded a silver medal of the Poltava Society of Agriculture [9]. Petro Kochubey's case regarding the development of agriculture was successfully continued by his son Vasyl Kochubey (1868-1940).

Conclusions. Petro Kochubey started the first full-fledged agronomic scientific center in Ukraine, based on progressive European experience, mainly French, and constantly deepening his own knowledge. Thanks to this, he managed to: improve the quality and structure of soils, reduce manual labor to a minimum through the use of the latest technical means, create productive varieties of agricultural crops using breeding methods. Petro Kochubey, using the results of research by French researchers Théophile-Jules Pelouze, Jean-Baptiste Andre Dumas and Henri Victor Regnault, developed ways of successful agricultural production and created a powerful foundation of Ukrainian agricultural science.

References:

- [1] Kochubey A. (1890). *Family chronicle. Notes of Arkady Vasilyevich Kochubey. 1790-1873.* (p. 306). St. Petersburg: Printing house of the Panteleev brothers. [Russian]
- [2] Lyle L., McCallam D. (2008). *Histoires de la Terre: Earth Sciences and French Culture 1740-1940.* (p. 110). Rodopi. [French]
- [3] Kyrylov Yu. (2014). *The "Zhytnytsia Europa" brand: myth or reality.* *Economy of the agricultural industry*, (3), 102. [Ukrainian]
- [4] Kochubey P. (1892). *An outline of the activities of P.A. Kochubey from Forestry of Poltava Province.* (p. 14-15). Kyiv: Type. S. V. Kulzhenko. [Russian]
- [5] Ziborova I. (2016). P.A. Kochubey and Zgurivka educational and research farms of Prylutsky District, Poltava Province. *Herald of Agrarian History: Collection of Scientific Papers*, (15), 165. [Ukrainian]
- [6] Minutes of the meeting of the Poltava Agricultural Society on January 11, 1887. *Journals of the Poltava Agricultural Society*, (1), 10. [Russian]
- [7] Vergunov V. (2014). Agrarian studies in life and creative recession P.A. Kochubey (until the 150th century, the creation of the Poltava association of the agricultural state). *Bulletin of agricultural history: collection of scientific works*, (8-9), 260. [Ukrainian]
- [8] Vergunov V. (2014). Agrarian studies in life and creative recession P.A. Kochubey (until the 150th century, the creation of the Poltava association of the agricultural state). *Bulletin of agricultural history: collection of scientific works*, (8-9), 261. [Ukrainian]
- [9] Minutes of the meeting of the Poltava Agricultural Society on January 11, 1887. *Journals of the Poltava Agricultural Society*, (1), 10. [Russian]