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Crops of moors in *M.O.Tiuleniev's* scientific educational heritage

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The purpose. To open creative reachings in drying ameliorations in Ukraine and Byelorussia of M.O. Tiulenev — protruding scientist, member-correspondent AS of UkSSR. **Methods**. By method of historical-scientific analysis with engaging before inaccessible archival deeds and materials they restored life and victories of M.O. Tiulenev in development of domestic reclamative science. **Results**. It is determined that owing to M.O. Tiulenev's development and practical recommendations, first of all in 20 – 30 of the past century, the organizational becoming of system of scientific provision of drainage ameliorations in UkSSR took place, as well as its saving during German occupation in 1941 – 1943, and ascending gradient in 50 – 60 of XXth century. Protruding role is proved of M.O. Tiulenev in foundation of Kazorovitskyi research and development melioration station (1922), Sagaydatska irrigation experimental station (1922), Sulske paludal field (1930), and restoring activity of Rudnia-Radovelska paludal experimental station (1923) and Panfilo-Yagotin paludal experimental base (1935), and also becoming of activity of Minsk paludal experimental station (1911). Through Northern local reclamative architecture he was involved in foundation of Ukrainian scientific research institute of agricultural reclamation in Kharkiv (1929). They opened his contribution to creation of the first nation-wide procedure of experiment work on reclaimed soils (1932), and also in preparation of specialists for amelioration in Kyiv hydroreclamative institute (1930 – 1947), Kyiv agricultural institute (1923 – 1941, 1956 – 1961), and also the top skills in Ukrainian scientific research institute of hydraulic engineering and amelioration (1938 – 1968). Not casually for made in the name of the future and especially in questions of the theory, methodology and practice of amelioration, and also preparation of branch specialists the Verhovna Rada of Ukraine (decision 2654-VIII, 12/18/2018) has made a decision on celebrating the 130th anniversary from the date of M.O. Tiulenev's birth in 2019 at the state level. **Conclusions**. With M.O. Tiulenev's name we link reachings in methodology and practice of amelioration science in Ukraine, in particular — authorship of the first procedure of experiment work, theory and practice of heading of crop of moors.

Key words: *Mykola Oleksandrovych Tiuleniev, drainage ameliorations, Ukrainian research institute of hydraulic engineering and amelioration, Rudnia-Radovelska paludal experimental station, Panfilska paludal experimental station, Institute of plant physiology and agrochemistry of AS of UkSSR, crop of moors.*

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Statement of purpose. Mykola Oleksandrovych Tyuleniev was born in April 5, 1889 in the village Hannivka of Verkhnyodniprovsky district of Ekaterinoslav province (now the Petrivs'ky district of the Kirovograd region) in the family of a servant [1, p. 18]. In 1907 he graduated from Poltava Commercial School named after Bayer O.O. During 1907-1911 studied at the agricultural department of the Kiev Polytechnic Institute of Emperor Alexander II (now - National Technical University of Ukraine "Kyiv Polytechnic Institute named after Igor Sikorsky"). His specialization is "cultural technician" or "agronomist-reclamator" [2, p. 5].

From 1911 to 1912 - a trainee of the Main Directorate of Agriculture and Land Management of the Department of Agriculture, as well as a specialist-agrochemist of the Minsk Swamp Experimental Station (now - Republic of Belarus) [3, p. 65]. He was involved in the selection of the location for station near the Pukhovichi station in the Mirkhovich's P.N. estate near Minsk. An expedition was conducted on the selection of wetlands of the province, on the basis of which for the first time in the Russian Empire analyzed them on a scientific basis on agrochemical and physical properties and origin [4].

In 1912 he was a student of courses on cultivation of bogs at the Riga Polytechnic Institute, and after graduation, as a best graduate, briefly trained in Sweden, Denmark and Germany, and studied the work of model farms in the Baltic region, Finland, and some provinces of the Russian Empire. After returning in the same year he was a specialist at the agricultural sector of the Department of Agriculture, as well as in 1915 - a lecturer on the cultivation of bogs and grassland science at the St. Petersburg Agricultural Museum and editor's assistant of the magazine "Zemlerobets" (Farmer).

His first article "Several words about the cultivation of bogs in the Baltic region" symbolically went to the "Bog Science. The Bulletin of Culture and the study of bogs and grassland science" in the # 1 of 1913, which since 1912 began to publish by the Minsk bog Station, edited by Flerov O.F. The article was prepared on the basis of materials for an inspection visit to the Estland, Livland, and Kurland provinces "... in relation to the cultivation of bogs" [5, p. 97]. He argues that the Baltic region is a pioneer in the cultivation of bogs in Russia on the example of two farms: 1. in the estate of Baron Claude "Engelhardshof" in 49 versts from Riga on a moss bog, drained in 1894 and used for grazing, and 2. the estate " Tyuringegof "in 6 versts from Riga on the cultivation of meadow since 1892.

During 1915-1917 he was a specialist on the cultivation of bogs of the Volodymyro-Ryazan Agricultural Management and State Property Department of the Vladimir province. The next two years he is a senior specialist on the cultivation of bogs of the Department of Agriculture of the Vladimir province (now - the Russian Federation).

During 1919-1921 he was a senior specialist on the cultivation of bogs of the Kyiv Provincial Land Department and assistant director of the company "Peat" (Proskuriv city). In 1921-1922 he worked as a senior inspector on the technical part of the Ukrtorf Company (Kyiv) [1, p. 18]. On May 8, 1922, he was appointed head of the scientific and technical department of Ukrmeliozem, and from January 29, 1923, he became a senior specialist in experimental and reclamation work of the same department.

Since 1921, he cooperats with the Agricultural Scientific Committee of Ukraine (now - the National Academy of Agrarian Sciences of Ukraine), initially as a staff member of the fodder section department, and from 1922 to 1927 he is a freelance worker of the reclamation section [6]. He establishes, on its behalf, the Central Research and Development Reclamation Station in the Kazorovichi and Sahaidak Irrigation Research Station. From April 26, 1923 to 1932, he headed the Rudnya-Radovlya swamp experimental station, opened in 1913 by Volyn provincial zemstvo [7]. He is developing its new research program, which was approved by Agricultural Scientific Committee of Ukraine (further-ASCU) and by the People's Commissariat for Agriculture (further-PCA) of the Ukrainian SSR. According to it, experiments were conducted to study the process of decomposition of peat, as well as studying various grass mixtures of meadow and pasture use of cereals, fodder beets, legumes, potatoes, crucifers, flax, hemp, sereadela, sudanka, onion, pumpkin, cabbage, tomatoes, cucumbers and medicinal plants. Their results were published, starting in 1926, in the seven issues of the "Works"of station, with extended annotations in German. He was the first who scientifically substantiates the necessity of carrying out special economic researches on the cultivation of bogs. He initiats and heads the Organizing Committee for conducting the first All-Union Congress on the cultivation of bogs at the station in September 24-26, 1927. He worked part-time as a Senior Specialist on Experimental and Reclamation culture of the Northern Land-Reclamation Agency of the PCA of the Ukrainian SSR and as a teacher of the cultivation of bogs and grassland science of the Kiev Agricultural Institute (now National University of Bioresources and Nature management of Ukraine, NUBN). By order of the Northern edge Amelioration organization in 1927, he developed six schemes for the production of research and demonstration sites on the cultivation of bogs on the land of meleotrests, collective farms and individual peasants of Volyn, Chernihiv, as well as the northern part of the Kiev and Poltava provinces. In addition, a special "instruction" of their bookmarks and a special "form" on how to calculate the received data from 21 positions. In accordance with the decision of the Council of People's Commissars of the Ukrainian SSR (further CPC) dated 23.12.1929 –he joined to appearance of the Ukrainian Research Institute of Agricultural Land Reclamation in Kharkiv (now - Institute of Water Problems and Land Reclamation of NAAS). During 1930-1934 he was an active member of the Higher Scientific and Technical Council of the PCA of the Ukrainian SSR on melioration of swamp massifs. From 1932 to the beginning of the German-Soviet War, he was a senior researcher and scientific leader of the swamp

research network of the Ukrainian Research Institute of Agricultural Melioration. In 1934 he organized the Sulsk research wetland (Romny district, Sumy region) [2, p. 27].

At the meeting of the Specialized Academic Council at the Moscow Hydrometeorological Institute named after Williams V.R., in September 21, 1940, he defended his thesis for a Doctor of Agricultural Sciences on the theme "Growing of sugar beet on drained peat soils of the Ukrainian SSR" [2, p. 69].

Since 1930 he began to work part-time as a professor, and from 1941 he became a dean of the agro-amelioration faculty of the Kiev Hydrometeorological Institute (now - the National University of Water Management and Nature Management in the city of Rivne). During 1941-1943, he conducted field research at the Supiya swamp Research Station (now - Panfilsk research station NSC "Institute of Agriculture of the NAAS") (Yagotyn district, Kyiv region). After the liberation of Kiev from the German invaders in 1943-1947, he headed the Department of Agriculture of the KHMI. Starting from 1944 and until 1948, he is the part-time head of the draining department of the Ukrainian Scientific Research Institute of agricultural land reclamation. During 1946-1948, on request of "Ukrsellektroproject" and "Ukrhydromelioproject" he developed cultural and technical measures for the basins of the Ros, Uzh, Sluch, Senyuki, Psel and Marefi rivers. Together with Yangol A.M. justifies the need for a two-way regulation of the water regime of drained soils, and in co-authorship with Rudich S.I.develop the design of having five plowshares aeration mole-drainage machine (5 MDM-2) that was able to lay down drainage at a depth of 0.75-0.8 m through 10.15 and 20 m and leave the 5-6 km of ready drains in 8 hours, which was widely used by all District Tractor Station (RTS) and Meadow-Reclamation Station (MRS) USSR.

In 1948 he was elected a Corresponding Member of the Academy of Sciences of the USSR on the direction of "agricultural sciences" [2, p. 1]. In the same year, on the invitation of Academician Dushechkin O.G. he became a Senior Researcher of the Institute of Plant Physiology and Agrochemistry of the Academy of Sciences of the UkrSSR (now the Institute of Plant Physiology and Genetics of the National Academy of Sciences of Ukraine), where he worked until 1955. On behalf of the Academy, he headed special expeditions in the Snigurovsky district of the Mykolaiv region (1951) and Dymir district of the Kiev region (1952-1956). On November 26, 1955, by the decision of the Supreme Certifying Commission (further-SCC) under the Ministry of Higher Education of the USSR he was awarded the Academic rank of Professor in the specialty "Agromelioration" [8].

He is among those members of the Bureau of the Agricultural Department of the Academy of Sciences of the USSR, who at the meeting of July 10, 1954, supports the decision of the Ministry of Agriculture of USSR to organize in its structure the Ukrainian Academy of Agricultural Sciences with the obligatory transfer of existing research institutions of the Academy of Sciences of the USSR to the newly established institution [9].

From 1955 to 1956 he headed the laboratory of forage production in the livestock sector of the Presidium of the Academy of Sciences of the USSR. In 1956 he returned to work at the Ukrainian Scientific Research Institute of hydrotechnics and land reclamation as head of the department of development of flood lands, which he ruled until 1961. The Scientific and Technical Society of Agriculture and Forestry, the Ministry of Agriculture put forward Tyuleniev's M.O. candidature "... Corresponding Member of the Academy of Sciences of the USSR ..." to additional list of candidates for election as Active Members of the the All-Union Academy of Agricultural Sciences (AUAAS) 1956 [10]. However, it did not happen.

In addition, during 1956-1961 he worked part-time as a professor at the Department of Agricultural Melioration and Forage Production of the Ukrainian Academy of Agricultural Sciences.

Due to the deterioration of his health in 1961, he first moved to the post as senior research fellow, and since 1964 he worked as a scientific advisor of the Department of flood lands development of the UkrSRI of hydrotechnics and land reclamation. Among the UkrSRI's of hydrotechnics and land reclamation achievements on swamp reclamation Tyulenev M.O. calls, first of all: 1. The substantiation and practical application of copper fertilizers for obtaining high yields of grain crops at the rate of "... 5 kg of copper per hectare in two receptions for the rotation of 7-8 crop rotation, which corresponds to 5 c / ha pyrite caviar or 25 kg copper sulfate (CuSO4); 2. The development of the accelerated method of inoculation in the first half of August in the Forest-steppe zone and in September - in the western regions with the simultaneous "... sowing of cereal-bean grass mixtures ... with the dominance of pink clover"; 3. The invention that the most effective way of cultivating drained peat soils is "... a plow with a rotation of the stratum at 180^0 to a depth of

... 20-25 cm (well-decomposed) and" ... at a depth of 30-35 cm ... "(poor- decomposed) in August [11, p. 29-30].

After the Plenum of the Central Committee of the CPSU in May 1966, in the country began work on large-scale land reclamation. Under such circumstances, useful both theoretical and practical Tyuleniev's M.O. achievements were in demand for the first time in the state. One of his students, Gimbrazhevsky V.R., recalled that the greatest demand was for the development of optimization of the water-air regime, culture of technology, primary cultivation and crop structure. This scientist found that, if «... drainage is not supplemented by a system of agro-amelioration and agrotechnical measures, then the productivity of drained lands not only does not increase, but, on the contrary, sharply decreases ...» [12, p. 15].

Tyulenev M.O. died in December 3, 1969. He buried in Kiev at Baykove Cemetery. The creative heritage of the "Ukrainian Weber" (the so-called scientist in the professional environment, comparing the classic of the cultivation of bogs with the German professor Carl Albert Weber (1856-1931) is 218 scientific works published during the period 1911-1964. [13]. A significant number of publications remained in manuscripts of over 200 printing sheets. Some of them during the life of the scientist have become classic in relation to the cultivation of bogs and today is used for monitoring research in Ukraine and Belarus and Russia.

Conclusions

Tyulenev M.O. was the first in the country, in contrast to a foreign scientists, who found ways and put into production technical crops, first of all, sugar beet on drained peat soils with a yield of 1000 c / ha. His developed technology of its cultivation was introduced in the Ukrainian SSR, the BSSR and the RSFSR. Even better results have been achieved on meadow grass cultivation, which has considerably expanded the production of livestock products in Polissya and the Forest-steppe of Ukraine. And there were - the first method of research on peat soils (1932-1934) for the whole country, rational crop rotation, fertilization and soil tillage systems and others, and, most importantly, the theory and practice of introducing a cultivation of bogs for the needs of the peatland fund of Ukraine. He created the Ukrainian school of agromeliorators, which included: Kubyshkin P.P., Yangol A.M., Kovalevich M.K., Semionov S.K., Proskura S.S., Lapa I.Z., Khotko G.I., Proskura M.S., Bakulin A.V., Shelestov Y.V., Gimberzhevsky V.R., academician of AUAAS and AS BSSR Skorpanov S.G., Shevchenko M.N. and others. Tyuleniev's M.O. results of systematic studies, which were held at the Rudnia-Radovel Swamp Experimental Station during 1923-1932, are the basis of the state program for the development of swamp reclamation of the Ukrainian SSR.

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