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NIKOLAI N. KOLESNIK – THE LEADER OF ZOOTECHNY GENETIZATION IN UKRAINE

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In the context of historical events which are connected to the development of the domestic and world genetics during the twentieth century, they are presented biographical data covering scientific career of a well-known Ukrainian geneticist N. N. Kolesnik. t is considered his contribution to both the general and private genetics of farm animals, the focus is on the scale of his ideas, their perception by his contemporaries and scientist's disciples on the difficult path of genetization of zootechny and the significance of these ideas for the further development and implementation of genomic selection methods.

Key words: ***history of genetics, gene theory, breeding, genetization of zootechny.***

Acquaintance with N. N. Kolesnik's life shows that his career spans three periods in the development of national genetics: 1) the middle of 20s- the beginning of 30s; 2) repressions against scholars of classical direction in the development of genetics 1936-1954; 3) regeneration and intensive development of synthetic genetics 1960 -1990 (noting that in the scientific literature every period of history of genetics is quite well described, further it is considered specific personality).

N. N. Kolesnik was born in the village Olshana of Kharkov region in 1904 in a peasant family.

Choice of future zootechnical specialty was logical for N. Kolesnik. After finishing high school he entered Kharkov Zootechnical Institute and successfully graduated from it in 1925. Working as a zootechnitian in tribal service of Odessa region, he concluded that in order to further enhance his knowledge in the field of livestock breeding it was necessary to better familiarize himself with the

possibilities of use genetic knowledge in animal breeding. He entered the Department of Genetics of the St. Petersburg University and successfully graduated from it in 1929.

This period of N. Kolesnik's life passed under the staggering events for geneticists: it was written and approved the chromosome theory of heredity, N. I. Vavilov formulated his famous law of homologous series and set the centers of origin of cultivated plants, they were also developed works by S. S. Chetverikov about evolutionary-genetic processes in populations, A. S. Serebrovsky developed a new direction, which was called genogeography.

Scientific and organizational leaders of rapidly developing genetics were N. I.Vavilov, Yu. A. Filipchenko, N. K. Koltsov and A. S. Serebrovsky and a whole galaxy of creatively active youth of the Department of Genetics of St. Petersburg University.

Among the pre-war graduates and staff of the Department there were a lot of brilliant people: F. G. Dobrzhansky, A. A. Prokofieva- Bel'govskaya, N. N. Medvedev, Yu. Ya. Kerkis, N. N. Kolesnik, M. L. Bel'govskyi, M. E. Lobashev, Yu. L. Goroschenko, T. K. Lepin, Ya. Ya. Lus, A. I. Zuitin, I. A. Rapoport, F. A. Smirnov, R. L. Berg. Working under the guidance of Yu. A. Filipchenko and later -f N. I. Vavilov, Nikolai Kolesnik differed by successful organization and conduction of field research for studying the gene pool of domestic animals. These studies were initiated by N. N. Kolesnik in the late 20s. One of the goals of the expedition was to elucidate the role of natural selection in the formation of breeds of domestic mammals. It is important to bear in mind that under the conditions of revolutionary radicalism of 20s-30s the fate of geneticists were made dependent on progress in the practice of agricultural production. They were required new approaches to solving these problems. As shows the dynamics of N. Kolesnik's scientific growth, he successfully solved these problems. It cannot be said that this difficult period in Nicholai Kolesnik's life was cloudless. Among geneticists and breeders often arose contradictions. The main reasons for that was the difference in the understanding of the mechanism of the effect of habitats on the implementation

of the genetic potential of highly productive animals. Assessing A. S. Serebrovskyi's great contribution into the theory and practice of animal husbandry, it mustn't be forgotten that being an academician of Academy of Agricultural Sciences Serebrovskyi (temporarily leading department of animal husbandry), like most geneticists of classical direction, was wrongly convinced that there was no influence of the external environment on heredity. I believe that this fundamental error is formed, probably from the fact that genetics experimenters of those years, working primarily with a microscope and laboratory lines of Drosophila or plant tissue cultures in a fairly stable laboratory conditions, did not record any visible genetic changes. Anthropogenic pollution of the habitat was at that time very small. Geneticists of classical direction with all the vitality and individual courage defended their erroneous views.

At the same time, breeders with daily practice of both positive and negative factors of influence of feeding and maintenance of the animal on the implementation of its hereditary genuinely could not understand the reasons for intransigence of geneticists- Mendelists. This contradiction became so acute that further contributed to the development of the tragic events for genetics in 1930s-1950's. Unfortunately, in those years, neither supporters of the chromosomal theory nor breeders understood that not acquired characters are inherited, but genetically determined rate of the body's reaction to the newly created environmental conditions. And this methodological error for almost 40 years constrained the union of two areas of genetics into synthetic genetic theory.

Long-term study of cattle breeds in the Asian part of the Soviet Union (as well as in Mongolia) led to the conclusion that the gene pool of the test animals was influenced by factors of their environment (Kolesnik, 1948). In 1930, N. N. Kolesnik was elected to be a leader of the Turkmen livestock expedition of the AS of the USSR. A year later, he headed a livestock expedition in Kyrgyzstan, later - headed teams of Mongolian and Dagestan expeditions of the Department of evolution and the origin of domestic animals of the Institute of Genetics of AS of the USSR.

N. N. Kolesnik's firm understanding of the unity of interaction "genotype-environment" was the key to his future research and teaching success. Thus, in 1936, for a series of scientific publications on the results of the above mentioned expeditions Presidium of the USSR awarded N. N. Kolesnik a degree of a Candidate of Biological Sciences, and 10 years later in 1946 he successfully defended his doctoral thesis on the topic - "The Origin, Evolution and Eco-Geographical Differentiation of Domestic Animals in Asia ". From 1944 to 1947 N. N. Kolesnik's main job was All-Union Institute of Animal Husbandry (AUIAB).

Period of educational and social activities.

From 1946 to 1950 he worked at the Tajik branch of the Academy of Sciences of the USSR, headed the Department of Zoology and Parasitology, and the Department of Sheep Breeding. At the same time he taught a course of farm animal breeding and the course of Darwinism in the Tajik Agricultural Institute. In 1949 N. N. Kolesnik was awarded the title of professor. From 1950 to 1952 he headed the Department of Farm Animal Breeding in the Ryazan Agricultural Institute.

It is important to bear in mind that in spite of a difficult period of 1948-1953, the beginning of the latent period of the formation of synthetic genetics in the USSR, Ukraine starts gradually "pull back" its national staff. Thus, in 1952 N. N. Kolesnik returned to Ukraine. In the contest he was elected to the post of the head of the Department of Animal Husbandry of the Kiev Institute of Agriculture, and with the formation in 1954 of Ukrainian Agricultural Academy, he headed the Department of Special Livestock Breeding.

The Sixties in Ukraine were characterized by beginning of the revival and intensive development of synthetic genetics. It was in the early stages of revival of genetics teaching 1960-1964 that Nikolai Kolesnik became the Dean of Zootechnical Faculty.

Since 1965 he headed the Department of Genetics and became the head of the methodological commission of zoological faculty of UAA.

In the history of genetics in Ukraine, 1967 was the most significant

Extremely important organizational events in 1967 were: 1) the creation of Genetics Sector at Ukrainian Academy of Sciences, which included three scientific departments - Plant Genetics (the Head - V. P. Zosimovich), Animal Genetics (the Head - N. N. Kolesnik) and re-based at the department of Plant Genetics Department of Experimental Mutagenesis. 2) the formation of the Ukrainian Society of Geneticists and Breeders (USGB), organizers of which were V. P. Zosimovich, I. N. Poliakov and P. K. Shkvarnikov. This resulted in a better co-ordination of scientific research institutions, comprehensive implementation of the important work involving scientists of different professions, better use of the results of scientific research in breeding and training processes. In 1967 N. N. Kolesnik was actively involved in the organization and holding of the Constituent Congress of the Ukrainian Society of Geneticists and Breeders named after N. I. Vavilov, where he made a presentation "The main achievements of genetics and animal breeding in the USSR." At this congress N. N. Kolesnik was elected to be the Vice-President of the Company and became a member of its Presidium and the Council.

In addition to intensive scientific and pedagogical activities Nikolai Kolesnik was actively involved in public life, in the activities of the Ukrainian Society of Geneticists and Breeders named after N. I. Vavilov, was a member of the editorial board of "Cytology and Genetics" journal. Under the leadership of N. N. Kolesnik they defended their theses more than 40 of his students. His works on the study of the origin, formation of breeds and breeding of domestic animals, with the involvement of archaeological data are still important today. He was the first to define and justify the type of Turan-Mongol cattle, which includes Kazakh, Kyrgyz, Siberian, Mongolian, Manchurian and Yakut breeds. Based on archaeological data, developing N. I. Vavilov's doctrine of centers of origin of cultivated forms of plants and animals, Nicholas Kolesnik established centers of domestication of different cattle groups. Crucial scientific and methodological contribution to the genetics of quantitative traits is the development of methods for evaluating the rank attribute on complex gene balances (1939-1985). It was this

methodical approach which by more than 40 years ahead the introduction of the method of OTL-marker selection.

N. N. Kolesnik - Doctor of Biological Sciences, Professor, Honored Worker of Science of Ukraine, and corresponding member was a recognized authority in the field of genetics and breeding of animals, he was respected and loved by students, colleagues, and everyone who had a chance to communicate with him. He was a worthy successor to the scientific direction of his teachers Yu. A. Filipchenko and N. I. Vavilov and his school.

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