

VIII. NOTABLE SCIENTISTS

LIFE AND SCIENTIFIC CONTRIBUTIONS OF GENETICIST DONCHO KOSTOV

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Abstract: Prof. Dr. Doncho Kostov (1897 - 1949) - member of the Bulgarian Academy of Sciences was one of most respectful researchers in biological and agricultural sciences in Bulgaria during the first half of the 20th century. His studies brought significant scientific contributions in genetics, cytology, mutation genesis, inter species hybridization etc. D. Kostov published his scientific works in prestigious international journals as Nature, Heredity, Genetics, Science, Proc. Nat. Acad. Sc. - USA, Comptes rendus Acad. Sc. - USSR. He established fruitful collaborations with prominent scientists: James Kendall, Nickolay Vavilov, Herman Muller and others. His publications on genetics of Nicotiana hybrids are the most profound ones until now. He was also a strong opponent to some persons in power at that time - disclaiming the chromosome theory and he never made compromise with his scientific and human conscience. Scientific authority and contributions of Prof. Doncho Kostov remain internationally recognized and continue to serve as a foundation of contemporary plant genetics and breeding.



There is little information about the family tree of the most famous Bulgarian geneticist - Doncho Kostov, as his great-grandparents probably migrated from Macedonia in the 17th century. He was born on January 6, 1897 in the village of Lokorsko, located at the foot of the Stara Planina Mountains.

As the seventh child of Kosta and Stoila Stoyanov, he grew up in the patriarchal atmosphere of a country family with Christian virtues, whose livelihood was agriculture and cattle breeding. However, his grandfather Stoil was a priest and chairman of the Revolutionary Committee established by Vasil Levski in the village. In 1908, Doncho Kostov attended the Second Sofia Primary School, and from 1911 - the Third Sofia High School. At that time, he also attended the lectures of Professor Porfiry Bakhmetiev - a highly erudite physicist and a good speaker who attracted many listeners. Doncho Kostov's classmates were Vulko Chervenkov, Sava Ganovski, Vlado Chernozemski and other famous personalities.

From September 1916, he was a cadet at the Military School as an artilleryman and participated in the First World War. During the academic year 1919 - 1920, he was a student at the Faculty of Physics and Mathematics of Sofia University, and in 1920 - 1921 - at the Faculty of History and Philology of the same university. From February 1921 he enrolled in agronomy in the city of Halle - Germany, where he appeared as a diligent, hardworking, accurate and

very inquisitive student. Then he became acquainted with the research on stimulations of Prof. Metodi Popov. On March 31, 1924, Doncho Kostov successfully defended his doctorate in natural sciences in Germany, after which he was appointed as an agronomist trainee at the Experimental Station "Example Farm" near Ruse. There he studied grafting in agricultural crops, as well as the impact of some vitamins on chickens and rabbits.

From August 1926 till July 1929, Doncho Kostov had a Rockefeller scholarship at Harvard University and the Buzzi Institute under Professor Edward East, where he discovered the phenomenon of "self-sterility" and worked on induced immunity in plants. Professor Jonathan Wright - the most prominent scientist in forest genetics in the USA in the 20th century - shared the following about him: "I was impressed by the scientific intuition of Dr. Doncho Kostov, with whom I worked side by side in the laboratory" [2].

After his return to Bulgaria, Doncho Kostov was perceived by some colleagues as a strong competitor and out of envy they tried to disavow him. In a competition for the head of the agricultural department at the State Agricultural Station - Sofia, the reviewers gave a positive opinion about him, but despite this, the Minister of Agriculture during this period did not appoint him [1].

In 1932 Doncho Kostov left for the Soviet Union, where he worked until 1939, initially in Leningrad under the world-famous scientist - Academician Nikolai Vavilov as a senior geneticist and professor (1934), and from May 1935 - at the Academy of Sciences - Moscow. In 1938 he applied for an associate professorship at the Faculty of Agronomy and Forestry of Sofia University, but

instead of him Gencho Genchev was appointed. At the end of September 1939, Doncho Kostov returned to Bulgaria, where he was appointed director of the Central Agricultural Testing Institute. In July 1941, he organized a scientific expedition with the participation of biologist Boris Stefanov, geologist Vasil Arnaudov and agronomist Panayot Mazhdrakov in the Southern Rhodopes and White Sea Thrace with the aim of creating a seed collection of agricultural crops to enrich the plant genetic fund of Bulgaria. He was subsequently elected as a private associate professor (1942-1943), a full associate professor (1943-1945), a professor of general biology at the Faculty of Medicine (1944-1946), a professor of Darwinism, genetics and selection at the Faculty of Agronomy (1946-1949) [4]. He was awarded as member of the Bulgarian Academy of Sciences in 1946 [3] and a member of the Yugoslav Academy of Sciences and Arts in 1948.

It should be noted that in order to use the authority of Doncho Kostov, the Prime Minister Ivan Bagryanov included him in the government as Minister of Agriculture and State Property (01.06.1944 - 12.06.1944), but he refused to take the position. This was influenced by Prof. Boris Stefanov, an undisputed authority, from whom he asked and received the following advice: "Doncho, refuse this position to keep your head". This warning subsequently saved the life of Prof. Doncho Kostov, since the ministers of this government were sentenced in 1945 to death or imprisonment.

Doncho Kostov's scientific contributions can be summarized in the following areas [1]:

- Remote hybridization - interspecies, inter-genus.
- Chromosome structure - spiral structure, discoid structure.
- Plant immunity - disease resistance, acquired immunity.
- Mutagenesis.
- Haploidy - androgenic haploids.
- Influence of viruses and bacteria on heredity.
- Carcinogenesis - abnormalities in the chromosome apparatus.
- Vegetative hybridization and transplantation.

– Evolution and phylogenesis.

These contributions are due to Doncho Kostov's polyvalent knowledge in biology and agrarian sciences. He has a significant contribution in opposing Trofim Denisovich Lysenko both in the Soviet Union and in our country. Doncho Kostov is a co-founder of the Union of Scientists in Bulgaria. In addition, his international activity is significant, contributing to Bulgaria's contacts with international organizations such as FAO, UNESCO, the Peace Movement, etc. His scientific authority, contacts with prominent scientists and public figures around the world and his good knowledge of foreign languages contribute to the establishment of Bulgarian science. However, at the Biological Conference in April 1949, he was subjected to unwarranted criticism without the possibility of defence, as he was seriously sick during this period. Acad. Doncho Kostov was unselfish and did not even own his own home until the end of his life. About him, Acad. Boris Stefanov notes: "Doncho Kostov was humane and impeccably honest as a public official and activist, sincere and honourable as a friend and patient as a leader... He departed from life without any stain that could darken his remarkable personality and the bright memory of him." For generations, Acad. Doncho Kostov remains an example of a researcher, devoted to science and uncompromising in defending scientific truth.

References:

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