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# NIKOLAJ VAVILOV

## la storia e l'eredità

*nell'80° anniversario dalla sua morte nel carcere  
sovietico di Saratov*

a cura di

**Oswaldo Failla e Anna Sandrucci**

## CON IL PATROCINIO DI



ASSOCIAZIONE MILANESE LAUREATI IN  
SCIENZE AGRARIE E IN SCIENZE FORESTALI



ORDINE  
DEI DOTTORI AGRONOMI  
E DEI DOTTORI FORESTALI  
DI MILANO



Province di Milano, Lodi, Monza e Brianza, Pavia

Ministero della Giustizia

## CON IL CONTRIBUTO DI



Carlo Soave (1941 - 2019)

*Il volume è dedicato alla memoria di Carlo Soave, Professore ordinario di Fisiologia vegetale dell'Università degli Studi di Milano, appassionato studioso e divulgatore delle origini e del significato dell'agricoltura. Con l'Associazione Agri-Cultura, è stato promotore e artefice della grande raccolta di materiali vegetali per l'esposizione «E l'uomo creò le sue piante» ora in parte esposti presso il Museo di Storia dell'Agricoltura.*

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# NIKOLAI VAVILOV: THE SCIENTIST WHO WANTED TO FEED THE WHOLE WORLD AND DIED OF HUNGER

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## Summary

In this paper, the stages of life and research activity of Nikolai Ivanovich Vavilov – the famous Soviet-period scientist, and the organizer of a many scientific directions - are provided. His life history is discussed in the context of the global social changes that had shaken the Soviet Union in the first half of the XX century. N.I. Vavilov has a significant position among other scientists in many fields of biological and agronomic disciplines, who discovered and collected an unexpectedly broad diversity of species, accessions, and varieties of cultivated plants and their wild relatives. The collected resources were successfully utilized for the Soviet economy. He developed the theory of the Centres of Domestication of Cultivated Plants and the Law of Variability, recognized worldwide, and published many scientific articles and books. But because of the slander of his opponents, he was arrested and died in prison in 1943. The rehabilitation took place in 1955 - the scientist was completely acquitted. The paper considers the many-sided Vavilov's activity, in which he took a personal part.

## Riassunto

### **Nikolaj Vavilov: lo scienziato che voleva nutrire il mondo intero e morì di fame**

In questo contributo vengono descritte le fasi della vita e dell'attività di ricerca di Nikolaj Ivanovich Vavilov, il famoso scienziato del periodo sovietico, organizzatore di numerose iniziative scientifiche. La storia della sua vita viene discussa nel contesto dei cambiamenti sociali globali che avevano scosso l'Unione Sovietica nella prima metà del XX secolo. N.I. Vavilov occupa una posizione significativa tra gli altri scienziati in molti campi delle discipline biologiche e agronomiche, poiché ha scoperto e raccolto una biodiversità inaspettatamente ampia di specie, forme e varietà di piante coltivate e dei loro parenti selvatici. Le risorse genetiche raccolte furono utilizzate con successo per l'economia sovietica. Vavilov sviluppò la teoria dei Centri di Domesticazione delle Piante Coltivate e leggi della Variabilità, riconosciute in tutto il mondo, inoltre ha pubblicato numerosi articoli e libri scientifici. Ma a causa della calunnia dei suoi avversari, fu arrestato e morì in prigione nel 1943. La riabilitazione ebbe luogo nel 1955: lo scienziato fu completamente assolto. L'articolo prende in considerazione la poliedrica attività di Vavilov, alla quale egli prese parte personalmente.

*I really believe deeply in science, the purpose and life is in it. And I don't feel sorry for giving my life for even the smallest thing in science...*

*N. Vavilov*

### **BIOGRAPHICAL NOTES**

The Academician Nikolai Ivanovich Vavilov was an evolutionary biologist, breeder and geneticist, botanist and plant breeder, and geographer. The main goal of Vavilov's works was to increase the productivity of cultivated plants and in this way to reduce the threat of food shortages. N. Vavilov developed a theory about the initial breeding material for the selection, the law of homological series in hereditary variability, the theory of centers of origin and morphogenesis of cultivated plants, and the concept of a species as a system of genotypes.



*Figure 1 - N. Vavilov in the orangery of the Institute of Genetics of the USSR. 1939*

#### *The years of education*

1906: N. Vavilov graduates from high school and enters the Petrovske Academy of Agricultural Sciences

1910: He presents his graduation thesis on snails

In 1911: He is assigned to conduct classes with students of the Higher Golitsyn Agricultural Courses. He introduces the elements of genetics for the first time during his lectures and makes the classes so interesting that he captivates young people.

1911: He works at the Bureau of Applied Botany and at the Bureau of Mycology and Phytopathology

In 1912, the director of the Golitsyn courses D.N. Pryanishnikov invites N. Vavilov to give a speech at a wide audience. Not without emotion, N. Vavilov delivers a speech entitled

“Genetics and its relation to agrochemistry,” which was published as a separate brochure afterword. In this speech he convincingly shows the practical importance of the genetics. Without genetics, breeding and selection were still imperfect; hybridization and artificial selection were applied largely blindly, without justification by the laws of heredity and variability.

In 1913, he is sent abroad in the business trip to get acquainted with the latest achievements of world science. First of all, N. Vavilov went to London to the well-known English geneticist W. Bateson. In the “Mecca and Medina of the genetic world,” as he later called the Bateson Institute, a spirit of intense intellectual exploration reigned (Loskutov, 1999, Korlyakov, 2012).



Figure 2 - N. Vavilov. 1918. *Plants immunity to infectious diseases*. Works Petrovsky Agric. Acad. 1-4. 240 pp.

### *The beginning of the carrier*

The scientist's first expedition was organized in the Caucasus, after finishing the second year of the University. Nikolai Vavilov brought from this trip about 160 herbarium sheets with the plant samples (Korlyakov, 2012).

In 1913, an expedition to Persia (Iran).

In the mid-1920s, the scientist visited the Khiva oasis of Uzbekistan with an expedition.

In 1926-27 he organized research in Algeria, Ethiopia, Morocco, Syria, and Palestine. Nikolai Vavilov studied the flora of Greece, and the south of France, and traveled to Spain and Portugal. The walking routes of Vavilov and his group amounted to 2 thousand kilometers, and the collected material consisted of thousands of samples.

In 1924, the professor visited Nuristan, a province of Afghanistan, close to Europeans at that time. The expeditions to the Mediterranean basin, Africa and India incredibly enriched the seed collection. In the late 1920s and early 1930s, the scientists visited Japan, China and South America. After the expeditions, his second most important work on the centers of origin of cultivated plants was published, for which he was awarded the Vladimir Lenin Prize.

In total, the scientist visited 50 countries around the World.

N. Vavilov has worked in laboratories in Great Britain, France, and Germany.



*Figure 3 - Delegation of Soviet geneticists at the V International Genetics Congress. Berlin, 1927. Left to right: S. S. Chetverikov, A. S. Serebrovskiy, G. D. Karpechenko, N. I. Vavilov*

#### *Vavilov's expeditions*

In order to study the plant resources of the planet, Nikolai Vavilov organized scientific expeditions, in which he himself took part. In the 1920-1930s. He conducted about 180 scientific expeditions on the territory of the Soviet Union (officially the Union of Soviet Socialist Republics, USSR) and more than 50 to foreign countries (Goncharov, 2012)

During the expeditions with the participation of Vavilov, geographic centers (cradles) of origin of cultivated plants (known as "Vavilov centers") were defined, and new species of wild and cultivated potatoes resistant to diseases were discovered.



*Figure 4 - N. Vavilov in expeditions in Abyssinia, March, 1927*

The seeds collected during expeditions subsequently became the basis for many high-yielding varieties and hybrids in crop production. Vavilov collected thousands of plants in 64 countries (Smith, 2021). More than 60 thousand rare specimens of plants were brought to the USSR, included in the unique collection of food crops of the VIR (Institute of Plant Industry), preserved by the institute's staff even during the siege of Leningrad (Recent name Sankt-Petersburg) (Loskutov, 1999; Korlyakov, 2012).

### *The seed collection of N. Vavilov*

The seed collection of N. Vavilov still preserved, is available in Sankt -Petersburg, in the facility, now called the Vavilov Institute of Plant Industry. Today the Institute houses an estimated 325,250 collections stored in metal containers in large shelving units (Smith, 2021).



*Figure 5 - The seed collection of N. Vavilov's Institute of VIR*

*(credit: [http://ic.pics.livejournal.com/cheslavkon/15146441/919462/919462\\_900.jpg](http://ic.pics.livejournal.com/cheslavkon/15146441/919462/919462_900.jpg))*

### *Vavilov personality*

*“Time is short, and there is much to do. One must hurry”* - these words, often repeated by N. Vavilov, can serve as the motto of his entire life, permeated with tireless creative fire and enthusiasm. According to the testimony of his closest employees who communicated with Nikolai Ivanovich for a long time, he had an absolutely phenomenal capacity for work. His working day, scheduled, as he put it, by “half an hour,” usually lasted 16-18 hours a day (Loskutov, 1999).

The incredible pace of Nikolai Ivanovich's work captivated his employees, but usually, they could not withstand such stress. For him, this was the norm of life! And despite this pace of life, Nikolai Ivanovich managed to follow not only scientific, but also cultural news and was a friendly person, always ready to help with advice or support.

He was legendary for his energy, sleeping only four or five hours each night. He possessed a prodigious memory. He could recite long passages of Pushkin from memory. On top of everything else, he was a polyglot. He learned 15 languages; he spoke Russian, English, German, Latin, French, Spanish, Farsi, and Turkic (Smith, 2021).



Figure 6 - N. Vavilov together with his colleagues, Saratov, 1920

### CONTRIBUTION TO SCIENCE

On Vavilov's initiative, a network of experimental breeding stations was created on the territory of the Soviet Union (USSR) for research in various soil and climatic conditions. Under his leadership and with the participation of VIR, a unique collection of cultivated plants was created. The institute stores varietal samples of wheat, rye, barley, rice and other crops obtained by domestic breeders.

Among his works are "Centers of the Origin of Cultivated Plants" (1926), "Selection as a Science" (1934), "The Doctrine of Plant Immunity to Infectious Diseases" (1935), "The Doctrine of the Origin of Cultivated Plants after Darwin" (1940), etc. (Korlyakov, 2012)

N. Vavilov was the editor of "Proceedings on Applied Botany, Genetics and Breeding" (1921-1940), and the first three editions of the "Guide to Approbation of Agricultural Crops" (1928-1933).

Thanks to N.I. Vavilov in Russia in the early 20s of the 20<sup>th</sup> century there was a flourishing of practical and theoretical biology. Unfortunately, it later became a victim of ideological struggle and was practically banned.

The real opportunity to supply the country with new promising plant varieties and solve the problem of providing the population with food has been pushed into the distant future (Korlyakov, 2012).

#### *The main achievements of N. Vavilov*

By 1940, the assortment of plant samples collected by Vavilov and his colleagues was the largest in the World and consisted of 250 thousand items, of which 36 thousand were wheat, 10 thousand were corn, 23 thousand were fodder plants, etc. On this basis, many varieties of agricultural crops have been bred and continue to be created also now (Korlyakov, 2012).

The idea of creating a gene bank of the planet's vegetation in Russia became the main idea of his life, as well as the task of eliminating hunger and solving the food problem in general.

An agronomist by education also turned into a major geographer-traveler and popularizer of his scientific ideas.





Николай Вавилов  
и Уильям Бэтсон.  
Москва. 1925 г.



Figure 7 - left - N. I. Vavilov and W. Bateson. Moscow. 1925

Figure 8 - right - N. Vavilov in the exhibition dedicated to 100-year anniversary of N. Pzhevalskii in the Geographic Society of the Soviet Union. 1939

The organizational activities of N.I. Vavilov is also of great importance for Soviet genetics. He created a department of genetics at the Institute of Plant Industry (VIR) (Loskutov, 1999). In 1930, he headed the country's first academic institution on genetics - a laboratory, which three years later became the Institute of Genetics of the USSR Academy of Sciences. In this institution, N.I. Vavilov brought together young talented researchers, representatives of the Leningrad School of genetics. Well-known foreign scientists were also invited here to work (among them, the future Nobel Prize laureate from the USA G. Möller).

In 1934, the Institute of Genetics was moved to Moscow, but N.I. Vavilov continued to direct it until 1940. Nowadays, the Institute of General Genetics of the Russian Academy of Sciences, like the All-Russian Institute of Plant Industry (VIR), is named after his name (Loskutov, 1999).

#### *Box - N. Vavilov, a leader biologist of the Soviet Union*

- Director of the Institute of Plant Industry (1930-1940)
- President of the Academy of the Agricultural Sciences (1929-1935)
- Director of the Institute of Genetics of the Academy of Sciences (1930-1940)
- President of the Geographical Society of the Soviet Union (1931-1940)
- Academician of the Academy of Science of the Soviet Union (1922 and 1929)
- Honorable President of the Congress of Genetics
- N. Vavilov was elected as a member of the English Royal Society and the Scottish Academy of Sciences.
- His scientific achievements were recognized with gold medals and awards from academies of many foreign countries.
- He was elected as President and Vice-president of many international scientific congresses.

## Н.И. Вавилов – лидер биологии в СССР



Figure 9 - N. Vavilov, the leader of the Soviet Union's biology

### THE NEW COUNTRY OF THE SOVIET UNION AND THE SCIENCE

Initially, the Soviet government tried to win over all categories of the population, including scientists. On November 9, 1917, the All-Russian Central Executive Committee discussed and approved the Decree of the Council of People's Commissars of the Russian Federation on the State Commission for Public Education, which provided for the creation of a Scientific Department. The norms and values of the scientific community were changing: science was increasingly subject to party-state control, and many branches of knowledge were being ideologized and politicized. According to the Soviet government, science should ensure "socialist construction and implement communist party's plans."

In the 20s the policy of the new government towards the figures of pre-revolutionary Russia is changing dramatically; they are being "squeezed out" in all branches of science in most of the country's largest universities. At the same time, a course was taken to create a qualitatively new (Soviet) intelligentsia.

Since 1924, an active process of formation of new scientific societies has been going on in the USSR in the light of the official ideology - Marxism. Thus, at the Communist Academy in Moscow, societies of materialists, materialist doctors, militant-materialist-dialectics, Marxist statisticians, Marxists-governors, etc. were organized. Natural science issues also occupied a significant place in the Institute of the Red Professorship, where in 1924 a natural department arose, which then became an independent Institute of the Red Professorship of Philosophy and Natural Science, along with three other institutes.

On April 20, 1926, the Council of People's Commissars of the USSR adopted a resolution "On the formation of a Commission to promote the work of the USSR Academy of Sciences." The system of the USSR Academy of Sciences has established 37 scientific and scientific-auxiliary institutions. The Communist Academy was expanding and was ready to replace the Academy of Sciences. Under it, two more scientific societies were created - Marxist historians and Marxist statisticians, as well as its own publishing house. These societies conduct active propaganda in the country.

Marxist-Leninist phraseology is a decisive argument in discussions among scientists. The scientific 'intelligentsia', who remained in the country due to a number of circumstances, adapting to the totalitarian system, faced a choice - to remain outside the profession and be independent, or to submit to the authorities and receive a decent payment for their work. This was a difficult choice, which was made easier for some scientists by the fact

that state leaders primarily demanded ideological and political support, rather than real practical results of scientific activity.

In Soviet Russia, pressure on the creative ‘intelligentsia’ is increasing. The campaign to “squeeze” pre-revolutionary professors is going on in all branches of science and in almost most of the country’s largest universities. At the meeting of Org. Bureau of the Central Committee of the All-Union Communist Party of Bolsheviks on December 10, 1928, E. Yaroslavsky accused the scientist A.G. Doyarenko of being religious, having caught him singing in church. Signals about the anti-Soviet professors of Timiryazev Academy also came from some students, ideological communists.

The “Cultural Revolution”, which began in the USSR in 1929, changed the relationship between authorities and scientists. Until this time, officials had not interfered in biological discussions, using the competition of scientists to pursue their policies. The first large wave of scientific discussions, colored in political tones, was observed in 1929-1932. Botany under socialism is no longer the science of plants, but the science of how plants, the entire plant world, can be remade and rebuilt in the interests of socialism to create a near-classless society. Any scientific theory must be assessed, first of all, as a possible way to revolutionize plants and animals for our agriculture.

In March, several meetings of the Society of Marxist Biologists took place in Moscow. In addition, the Central Party’s magazine ‘Bolshevik’ published an article by E. Kolman, in which he argued that in the USSR, saboteurs were operating in biology, disrupting the construction of socialism. The author condemned first of all geneticists for eugenic “mistakes”, then zoologists and botanists for opposing the creation of giant state farms, as well as ichthyologists for belittling the productive capacity of ponds and rivers, etc. (after emigrating, Kolman admits that he was mistaken, but you cannot bring back repressed scientists).

Opponents of classical genetics focused their attention on N.I. Vavilov and his works. The first denunciation against N.I Vavilov dates back to this time in the OGPU (United State Political Administration under the Council of People's Commissars of the USSR, Former name of KGB).

The question of the arrest of N.I. Vavilov rose already in the early 30s. OGPU employees, under state orders, fabricate the first testimony against him from several repressed biologists. N. Vavilov was accused of sabotage and counter-revolutionary activities.



*Figure 10 - Seed gene bank with the photo of N. Vavilov*

Vavilov was well suited for the role of the head of a conspiracy of counterrevolutionaries and saboteurs due to his social origin (the son of a merchant), frequent trips abroad (spy),

active speeches in defense of repressed colleagues (an obvious enemy) and due to a number of other reasons.

But the repressions of the 30s N. Vavilov was not affected, since the authority of the scientist, as a recognized leader of agricultural science in the country and the world, was still very high (Reznik, 2017).

### NIKOLAI VAVILOV - VICTIM OF REPRESSION

In the mid-1930s Nikolai Vavilov became involved in discussions on problems of genetics and breeding. The Soviet agronomist and biologist Trofim Lysenko and a number of other representatives of 'Agrobiology' denied the laws of heredity. Lysenko and his supporters promised a rapid restoration of agriculture through the "education" of plants; this approach found support among the country's leaders. The authorities demanded practical methods for increasing yields, assigning a secondary role to the scientific component (Popovskii, 1990, Korlyakov, 2012).

In 1935, the work of the Academy of Agricultural Science of the Soviet Union under the leadership of N. Vavilov was recognized as unsatisfactory, and he was relieved of his post as the President of the Academy. Subsequently, the authorities canceled the International Genetic Congress, which was planned to be held in Moscow in 1937. None of the Soviet geneticists (including N. Vavilov) received permission to participate in the VII International Congress in London and Edinburgh (1939).

On June 14, 1939, in the central Soviet press, genetics was called contradictory to Marxist dialectics and declared a pseudoscience, and N. Vavilov and his followers were called "saboteurs in science".

Why did Stalin crush Soviet agricultural science, handing over the great scientist Nikolai Vavilov and other pioneers of domestic genetics to the cynical opportunistic demagogue Trofim Lysenko? The immediate cause of the defeat was the desire of the "best friend of the Soviet collective farmers" to find scapegoats to cover up his own failures: Stalin's catastrophic collectivization led to mass famine in the USSR in the early 1930s (Popovskii, 1990).

The case against N. Vavilov was opened back in 1920. It is believed that materials against N. Vavilov began to be deliberately fabricated in 1931 precisely on the basis of publications in the press and denunciations.

N. Vavilov became one of the last victims of the campaign to suppress classical genetics in the Soviet Union - the so-called Lysenkoism, named after Trofim Lysenko. He was a scientific opponent of Vavilov, and his loud promises were fully in line with the spirit of the times, be it winter cultivation of peas, vernalization ('yarovization'), or the creation of new varieties of grain in 2.5 years (Popovskii, 1990). In the beginning of 30th N. Vavilov supported the young agronomist Trofim Lysenko on vernalization of the winter cereals. In 1934 N. Vavilov provided a recommendation of Lysenko to be elected as a deputy-member of the Academy of Agricultural Sciences (Korlyakov, 2012). Lysenko promised to the Soviet leaders to increase rapidly the yield of cereal crops. In 1935 in the Congress of the Collective farms he announced about presence of saboteurs in science.

#### *Lysenkoism - followers to Lysenko's theory (from: Zakharov-Gezekhus, 2004)*

The polemics between scientists dealing with problems of theoretical biology and genetics and the followers of Lysenko's doctrines, known as "the Soviet creative Darwinism" or "Michurin's teachings" (in fact, I. V. Michurin, who died in 1935, had very little to do with it) sparked in the mid-1930s. One of the main theses of Lysenko's teachings was the denial of genes and chromosomes as units and instruments of heredity. On the opposite, he

considered heredity to be intrinsic to any particle of the living matter. The second thesis consisted in the inheriting of acquired traits. Yet another cornerstone was vegetative hybridization: Lysenko stated that grafting changed the plant's heredity and the resulting "vegetative hybrids" were no different from regular hybrids. Thus, Lysenko's teachings were, in essence, a compilation of ideas that existed in biology in the 19th century (Zakharov, 2000).

By the time Lysenko became a member of VASKHNIL (ВАСХНИЛ, a Russian acronym for the V. L. Lenin All-Soviet Agricultural Academy), Lysenko's followers were speaking of genetics ("mendelism-morganism") as a metaphysical, idealistic capitalist science. The attempts of prominent scientists to appeal to facts proved fruitless: "lysenkoists" referred to their own achievements in agriculture and drifted toward ideological and political accusations. The final discussion ended with a "disclosure": "We will not speak with morganists; we will continue disclosing them as representatives of a harmful and ideologically foreign school, introduced from the alien abroad, scientifically false in its essence." (VASKHNIL session stenographic report, 1948).

Not only ideas were repressed, but their carriers, too. In 1940, Academician N. I. Vavilov and his closest colleagues were arrested. Vavilov was sentenced to execution; the sentence was later changed to a 20-year imprisonment.

In 1948, relying on Stalin's personal support, Lysenko organized the so-called August Session of VASKHNIL, "On the state of affairs in the biological science," which resulted in the dismissal of the majority of geneticists and other biologists sharing their views. Teaching genetics was canceled, textbooks were seized from libraries and destroyed. By mid 1950s, there were no genetics and geneticists in the USSR to be salvaged; after the August Session, there was nothing to be saved; one could only speak of the revival of genetics in the country (Zakharov, 2000).

### *Repression in the science*

A.S. Bondarenko was originated from a worker-peasant family, who graduated from the Institute of Red Professors in 1930. He, being the vice president of the Agricultural Academy of Science, writes denunciation about N.I. Vavilov. The same complaints were made as to the Academy of Sciences: ignoring the tasks of socialist construction, lack of preparation of the proletarian scientific specialist. Data on the Vavilov Institute is given - "the contamination of scientific staff: 59 nobles, former large landowners, 25 hereditary honorary citizens, 5 sons of merchants and manufacturers and 12 children of priests are working at the institute... The director of the institute, Academician Vavilov, who is busy with a number of other works, spends most of his time outside the institute and practically does not manage the institute organizationally."

At this time, a large-scale "purge" of students of "non-proletarian" origin began, "unable to become real red specialists of the newly reconstructed state" (Reznik, 2017)

Attitudes towards genetics changed radically in the 1930s, and it became the object of critical attacks. 1933 became a turning point in the fate of the Institute for Plant Industry (VIR). A "cleaning" is taking place within its walls. Many leading specialists of the institute were arrested on charges of belonging to the fictitious Labor Peasant Party (TKP): professors Pisarev, Talanov, Kuleshov, Maksimov, etc. Nikolai Vavilov's employees were arrested. The energy field of his like-minded people, which has always been around the scientist, disappears. Probably not only around him...

By 1939, many breeders, geneticists, and agronomists were arrested, and their place was taken by the Lysenkoites (followers to Lysenko). The most experienced employees of Academy of Agricultural Sciences (VASKhNIL) and breeding stations became victims of mass

repressions. Vavilov's friends and associates died as enemies of the people - academician N.P. Gorbunov, one of the founders of VASKhNIL and VIR, president of VASKhNIL A.I. Muralov, vice-presidents N.M. Tulaikov, G.K. Meister and many other figures (Zakharov, 2000).

### *Nikolai Vavilov - Victim of repression and arrest*

The impetus for repression was a memo by Isaac Present, Lysenko's closest associate, written in 1939. In it, in particular, it was reported that "Vavilov and the Vavilovites have finally 'lost their belts', and one cannot conclude that they will try to use the International Genetic Congress to strengthen their positions and situation". In his statement, the Present frightened that "the possibility of a kind of political demonstration "in defense of science" against its "oppression" in the Soviet country cannot be ruled out." (Vavilov, 2008)

As historian Yakov Rokityansky pointed out, Present's letter, initiated by Lysenko, closed the way for Vavilov and his colleagues to the Edinburgh Congress, where the presidency remained unoccupied (Zakharov, 2000; Reznik, 2017).

Vavilov's investigative file contains documents that reveal the nature of the scenario for the arrest. On July 18, 1940, the People's Commissar of Agriculture of the USSR Ivan Benediktov signed an order for Vavilov's business trip to Western Ukraine to collect cultivated plants. Immediately after the academician's departure from Leningrad, on July 22, the People's Commissar of Internal Affairs of the USSR, Lavrentiy Beria, sent a letter to the Chairman of the Council of People's Commissars, Vyacheslav Molotov, with a request to issue a sanction for the arrest of the scientist. Joseph Stalin's signature is not on the file.

N. Vavilov was arrested on August 6, 1940, after complex preparations that included a business trip to Western Ukraine, which was ceded to the USSR under the Molotov-Ribbentrop Pact. The arrest took place in the field, with virtually no witnesses. All this indicated that a complex secret scenario had been developed for Vavilov's arrest. Only ordinary people in the 1930s were arrested during night visits to their apartments. Famous people, as well as generals and marshals, were arrested according to individually developed scenarios in order to create an element of surprise, prevent publicity and the possibility of resistance - states historian Medvedev (Loskutov, 1999).

### *Nikolai Vavilov - a prisoner*

The arrest of Academician Vavilov was not advertised so much because of his worldwide fame, but because of his popularity within the country. Thousands of scientists, agronomists, and experimental station workers personally knew Vavilov, experienced the charm of his personality, were charged with his energy, and were guided by his ideas. The transformation of Academician Vavilov into an enemy of the people sowed confusion in the heads and souls, paralyzed the work of the entire scientific branch, and dealt a new blow to the practice of agriculture. The lesser evil was to keep people in the dark longer, not to explain anything: let them be perplexed and gradually get used to it.

The NKVD machine practically killed, but the gun was pointed by a person who seemed to be from another department. The person is purely civil, respectable, and internationally known. Academician and winner of numerous Stalin Prizes Trofim Denisovich Lysenko (1898-1976) is mentioned many times on the pages of investigative file No. 1500 (Popovskii, 1990).

### *The investigative file No. 1500 for the prisoner of Nikolai Vavilov*

The investigation into Vavilov's multi-volume "Case No. 1500" lasted 11 months. During this time, he was called in for interrogation about 400 times, the total interrogation time was 1,700 hours. During the investigative work, torture was regularly used against Vavilov. The whole case, as historians later proved, turned out to be completely falsified, all the documents involved in the case were fabricated.

On July 9, the scientist was sentenced to death via shot.

In connection with the evacuation that began after the war, Vavilov was transported to Saratov, where from October 29, 1941 he was kept in prison No. 1.

Nikolai Vavilov sent L. Beria several petitions for pardon, where he indicated that "the accusation is based on fables, false facts and slander".

As a result, the death sentence was replaced by 20 years in the camps.

In the Saratov prison, Vavilov did not receive enough food. N.I., who died of exhaustion in a Saratov prison on January 26, 1943 (Loskutov, 1999).

Vavilov was buried at the Resurrection Cemetery in Saratov. The exact burial place has not been finally established, and the monument to N.I. Vavilov was erected not on his grave, but near the entrance to the cemetery.

The authorities obviously sincerely did not understand the significance of Nikolai Vavilov's work. His manuscripts and field materials were mercilessly destroyed.

Based on only one act of seizure, Lieutenant GB Koshelev decided to "Destroy as having no value:

1. Draft materials of N. I. VAVILOV on foreign trips to Abyssinia, the USA, England, Japan and other countries. There are 92 folders in total.
2. Notebooks and notepads with various notes - 90 pieces ..."

In total, this inventory contains 26 items.

The archive, library and belongings of the scientist remaining in the apartment were sent to a landfill.

### *Rehabilitation*

On August 20, 1955, the Military Collegium of the Supreme Court of the USSR overturned the court verdict and dismissed the case against Nikolai Vavilov for lack of corpus delicti (Korlyakov, 2012). The scientist was completely acquitted and reinstated in the list of academicians of the Academy of Sciences of the Soviet Union.

### *Memory*

By the decision of the Presidium of the USSR Academy of Sciences on July 8, 1966, a commission was created at the Department of General Biology to preserve and develop the scientific heritage of Academician N. I. Vavilov.

A prize (1965) and a gold medal (1968) named after N.I. Vavilov were established, which were awarded for the best scientific works and discoveries in the field of botany, genetics, breeding, and ecology.

Since 1997, the Russian Academy of Science awarded the gold medal named after N. I. Vavilov (for outstanding work in the field of genetics, breeding, and plant growing).

Memorial museum rooms have been established at Vavilov University, the All-Russian Institute of Plant Genetic Resources, and the Institute of General Genetics, all named after Nikolai Vavilov.

Monuments and memorial plaques were installed in Saratov, Moscow, etc.

Since 1982, the international scientific and practical conference “Vavilov Readings” has been held in Saratov, dedicated to the scientist’s birthday.

The year 1987, when the 100th anniversary of the scientist’s birth was celebrated, was declared by UNESCO as the “Year of Vavilov.”

A village in the Derbent region of Dagestan, streets in Saratov, Togliatti, Krasnodar, Chernovtsy (Ukraine), a number of plants, an asteroid (2862 Vavilov, was discovered in 1977), a crater on the far side of the Moon, etc. are named after him.

Today, named after N.I. Vavilov named also 19 taxa of cultivated plants and their wild relatives, a glacier in the Pamirs, a small Planet, higher educational institutions, research institutes of the Russian Academy of Sciences and the Russian Academy of Agricultural Sciences, streets of a number of cities in Russia and the CIS countries, a ship and an airbus.



Figure 11 - Post mark of the USSR (1977) dedicated to N. Vavilov’s 90<sup>th</sup> years of anniversary

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