

## 100th Birth Anniversary of Academician N. I. Vavilov

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*The USSR Academy of Sciences and the Lenin All-Union Academy of Agricultural Sciences organised in Moscow on November 24, 1987 a scientific symposium as well as a formal ceremony to commemorate the centenary of the birth of N. I. Vavilov. The symposium and ceremony were attended by over 2000 Soviet geneticists and plant breeders in addition to a few invited guests from outside. I had the privilege of being invited to attend the ceremony and address the symposium on Genetic Conservation : from Microbes to Man.*

The opening speeches were delivered by Academician Yu.A. Ovchinnikov, Vice-President of the USSR Academy of Sciences and Academician A. A. Nikonov, President of the Lenin All-Union Academy of Agricultural Sciences. N. I. Vavilov was the first President of the Lenin All-Union Academy of Agricultural Sciences. In addition to 8 lectures, a movie film on Vavilov's life and work were shown. Special commemorative medals were also awarded to a few scientists. Vavilov's son was among the participants.

To me it was a historic moment. The manner of eclipse of Vavilov and the emergence of Lysenko as the proponent of "new" genetic principles is one of the most sordid events of our time. I was, therefore, happy that the record was set right by both Academicians Ovchinnikov and Nikonov. Academician Nikonov summarised the life history of Vavilov and I give below some extracts from his fascinating lecture.

Nikolai Ivanovick Vavilov was born in Moscow, November 25, 1887. His father, an enterprising, progressive minded and industrious man born to a peasant family in Volokolamsk district, became a big manufacturer. From their intelligent, modest and austere mother, the children inherited the diligence and unpretentiousness in life. This family gave USSR two academicians, presidents of the two Academies; one of the daughters became a bacteriologist, and the other one, a microbiologist.

N. Vavilov's childhood passed in Krasnaya Presnya district where in 1905 a widespread armed uprising against czarism took place. In 1906 Vavilov graduated from Moscow Commercial College where several prominent specialists of that time taught. In the same year he entered the Moscow Agricultural Institute (now, the Timiryazev Agricultural Academy) well known for its free-thinking traditions.

As early as in his student days Nikolai Vavilov started doing his research work while taking part in his first expedition to the North Caucasus and Transcaucasia. His teacher Dmitry Nikolayevich Pryanishnikov, preserved love and affection for his prominent student to the last days of his life, and when the hard times came, he tried to rescue Vavilov at the risk of his own life. N. Vavilov regarded the founder of the selection and breeding work in Russia, Dionissii Leopoldovich Rudzinsky as his teacher, and he kept contact with him even when Rudzinsky happened to find himself beyond the temporary frontier in his native Lithuania.

Vavilov was lucky in St. Petersburg as well, where in 1911 he started to work in the Bureau of the Applied Botany under the guidance of such prominent scientists as Robert Edwardovich Regel and Arthur Arthurovich Yachevsky.

In 1913 Vavilov was carrying research work into plant immunity in Great Britain in the laboratory headed by W. Bateson, a founder of genetics, and then in France and Germany. Vavilov held Bateson in very high esteem; later he wrote of him as a man 'fearless in criticising and generous in judging, a real apostle in research'.

Thus, everything—family, school, teachers—contributed favourably to the formation of Vavilov as a scientist. And even then he regarded honesty, purity and tolerance for other people's opinion as the 'decency gene' and hated people who did not have such a 'gene'.

In 1917 the Saratov period of Vavilov's life commenced. Soon he was elected professor and became Head of the Department of Genetics, Selection and Applied Agriculture of Saratov University. He came to love this hot, sunny steppe territory with rigorous climate, studied its flora, published his work *Field Crops of South-east Territories* followed by a big monograph *Plant Immunity to Infectious Diseases*, and, what is most important, delineated the law of the homologous lines in genetic variability. This discovery created quite a sensation. Vavilov's star rose here.

This law provides not only for the systematisation of the whole diversity of known species, but for the prediction of the nature of unknown plant forms. This law is generally believed to be as important as Mendelejev's Periodic Law of atomic weights.

In 1921 he made a report on the subject at the International Phytopathological Congress in New York, and it was then that he won world recognition:

Vavilov organised scientific expeditions to more than 50 countries; he visited all continents except for Antarctica and Australia, and explored the major agricultural regions of the world. All these expeditions had only one objective—exploration of plant genetic resources. This had been dictated by the necessity of mobilising these resources to establish food reserves in the country. Here is an example.

In 1921 the Volga basin and other regions were stricken by a devastating drought. Radical measures had to be taken to withstand this calamity. Vavilov organised expeditions to various countries in search of drought resistant plants. His route lay through Morocco, Tunisia, Algeria, Greece, Syria, Lebanon, and later, through Ethiopia and Eritrea. He collected valuable plant forms in the USA and Canada, in Central and South America, Asia, Far East, Japan and China (Taiwan).

In his book *Five Continents* he wrote : "Coming to any country I wanted to do very much, I wanted to understand 'the agricultural soul' of the country, existing conditions, to study thoroughly the plant species composition, take what was most important and relate these data to the evolution of world agriculture and world crop production". Such an approach is exemplified by his superb work *Agricultural Afghanistan* covering elements of geography and ethnology too.

Vavilov was one of the first to be awarded Lenin Prize for his work on the centres of origin of cultivated plants. His books *Geographical Regularities in the Distribution of Genes of Cultivated Plants* and *The Teaching on the Origin of Cultivated Plants after Darwin* are still classics. He was uncompromising in upholding the principles and methods of science. At one meeting he remarked "We shall go into the fires, we shall burn, but we won't tread on our belief". In 1929 he organised the All-Union Congress of Genetics and Selection in Leningrad. He was the founder of the All-Union Institute of Plant Breeding at Leningrad of which he remained Director until 1940. On Vavilov's initiative the State Variety Testing programme was organised for identifying suitable varieties for different parts of the Soviet Union. On June 29, 1929, he became the first President of the Lenin All-Union Academy of Agricultural Sciences. He defined the role of the Academy as follows :

"The most important task of the Academy and its institutions, as we understand it, is carrying on comprehensive research aimed at solving the most important problems in agriculture. The top priority task of the Academy and its institutions is to stir up creative activity of researchers, to concentrate on the most important problems..., try to find new ways".

In 1935 Vavilov was removed from his post and two years later Lysenko became the President of the Academy through political manipulation.

Academician Nikonov asked the question how could such injustice happen in the middle of 20th century? He himself answered the question by pointing out that such an event could take place in the Soviet Union in the 30's because of the cult of personality and absence of democracy. Vavilov died in prison in Siberia in 1943. Genetics journals outside the Soviet Union during the late 30's and 40's were full of articles on the danger to science represented by Lysenkoism. The late Prof. H. J. Muller was in the forefront in articulating world-wide concern

both for the future of Soviet genetics and for the personal liberty and safety of Vavilov. To set the record right Academician Nikonov made the following announcement :

I am authorised to state that the present staff of the All-Union Academy of Agricultural Sciences deeply regrets such a deplorable fact as the August VASKHNIL session of 1948 to have taken place in the evil time of its history.

I am authorised to state that the present staff of the VASKHNIL condemn and repudiate everything that is related to the Lysenkovschina.

VASKHNIL is taking consistent measures aimed at overcoming the hard consequences of the Lysenkovschina. Both in the Academy and in its institutions normal creative conditions are being created to make any manifestation of monopolism out of question.

We pay high tribute to Vavilov's scientific legacy and his ideas will be further developed. The world collection of cultivated plants is being enriched, new expeditions are being organised. Scientists of the Vavilov Institute studied plant resources of 36 more countries and visited Australia three times, the continent Vavilov was unable to visit.

At one of the sessions of the Presidium of the Academy in Leningrad, problems related to further development of the All-Union Institute of Plant Breeding based on creative use of Vavilov's ideas were given close consideration. Thus, Academician Nikonov officially restored the position of eminence of Vavilov in the history of Soviet science.

All of us who have admired and followed the work of N. I. Vavilov and benefited greatly from the search for new genes which he urged us to undertake, salute him on the occasion of his birth centenary. It is a tragedy that a paranoid individual like Lysenko could cause such great harm to the onward march of Soviet genetics. Genetics could not, however, be extinguished in the Soviet Union. Many individual geneticists continued their work silently. Among them were : Zhebrak, Rapoport, Astuarov, Nemchirov Lisitsin, Propofeeva Belgovskaya and many others. Vavilov was elected as the President of the 7th International Congress of Genetics but he could not attend it. It was a triumphant occasion for Soviet geneticists when the 14th International Congress of Genetics was held in Moscow in 1978. It is at that Congress that the decision to hold the 15th Congress of Genetics in 1983 in New Delhi was taken. As the late Prof. C. V. Raman once said 'Let the dogs bark, the caravan of science will always move on'. Unfortunately, in the case of Vavilov his opponents not only barked but also bit him to death. Here is a lesson for scientists all over the world—never mix politics with science.

More than at any other time in the history of agriculture we appreciate the work of Vavilov now, since had we not followed in his footsteps we would have lost a considerable proportion of genetic diversity in crop plants through

habitat destruction. Modern genetic engineering methods enable us to transfer genes across sexual barriers. The exploration and conservation of plant genetic resources has assumed even greater scientific significance and practical value than when Vavilov initiated this movement over 65 years ago. Vavilov's name will live for ever in the history of crop improvement.