



# Establishment and Development of The Semrug Innovative Seed Cluster in Uzbekistan

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**Abstract:** This article explores the establishment and development of the Semrug Innovative Seed Cluster in Uzbekistan, which was created following the directives of President Shavkat Mirziyoyev. The cluster integrates scientific research with practical agriculture, collaborating with major research institutions to cultivate high-generation, innovative seed varieties of cotton and wheat. The implementation of advanced technologies and modern irrigation systems has significantly contributed to enhancing seed quality and productivity. Additionally, the cluster has expanded its operations by incorporating new seed production farms, creating employment opportunities, and achieving export success. The study highlights the role of government support in fostering agricultural innovation and the prospects of integrating research-driven approaches into the seed production sector.

**Keywords:** Semrug Seed Cluster, seed production, agricultural innovation, Uzbekistan, cotton breeding, wheat varieties, irrigation technologies, export, scientific collaboration, entrepreneurship.

**Introduction:** In accordance with the directives issued by the President of Uzbekistan, Shavkat Mirziyoyev, during his visit to Jizzakh region on January 30-31, 2019, and in line with the priority tasks outlined in Clause 153 of the extended Session No. 5, the first innovative seed cluster in the country, "Semrug," was established.

The Semrug Seed Cluster was created in collaboration with various research institutions, including the Institute of Genetics and Experimental Biology of Plants at the Academy of Sciences of Uzbekistan, the Center for Genomics and Bioinformatics, the Research Institute of Cotton Breeding, Seed Production, and Agrotechnologies, the Research Institute of Rainfed Farming in Gallarol, and the Andijan Research Institute

of Grain and Legume Crops. Under a scientific-practical memorandum, these institutions have joined efforts to cultivate and multiply the highest-generation, innovative varieties of cotton and early-maturing, high-yield, drought-resistant, and disease-resistant wheat varieties over a 216-hectare area. Using advanced technologies imported from China, the cluster prepares seeds in accordance with standard requirements and supplies them to agricultural clusters and seed-producing farms across Uzbekistan.

Under Presidential Decree No. 307, issued on July 6, 2022, regarding the implementation of the Uzbekistan Innovation Development Strategy for 2022-2026, the Semrug Seed Cluster was recognized as the first specialized innovative seed production enterprise in the country. The decree included the cluster in the list of new academic enterprises focused on producing high-tech innovative products in partnership with scientific organizations.

Between 2021 and 2024, the Semrug Seed Cluster became an exporting company, achieving the highest price for seed cotton among clusters in Uzbekistan and successfully exporting it to Kazakhstan. Additionally, it has supplied certified primary seeds of cotton and wheat to 45 cotton and grain clusters across nine regions of Uzbekistan and 184 major and advanced seed-producing farms.

Currently, Semrug collaborates with cotton research institutions under scientific cooperation agreements and memoranda. It focuses on cultivating compact, high-yielding cotton varieties with a vegetation period of 105-110 days, fiber output of 42%, and a yield potential of at least 45 centners per hectare. The cluster produces varieties such as "Porloq-4," "Sulton," "Ravnaq-2," "Ravnaq-1," "Zafar," and "Baraka," with an annual production of approximately 120 tons of high-generation seed cotton. Since 2021, the cluster has also implemented modern water-saving technologies, including drip irrigation on 82 hectares of cotton fields and sprinkler irrigation on 30 hectares of wheat fields.

The National Center for Agricultural Knowledge and Innovation, in cooperation with the Research Institute of Grain and Legume Crops, has designated Semrug as its Jizzakh regional branch. The institute provides the cluster with high-yielding, early-maturing, drought- and disease-resistant wheat varieties such as "Vekha," "Aleksich," "Grom," "Elanchik," "Antonina," "Gurt," and "Bezostaya-100." This collaboration has led to an annual production of over 400 tons of wheat seeds.

Taking advantage of government support for entrepreneurship and business, the Semrug Seed Cluster has expanded its operations and implemented innovative developments. Since 2022, the cluster has

transitioned into the "Semrug Innovative Seed Company," integrating farmer enterprises from Dostlik, Pakhtakor, Zarbdor, and Mirzachul districts into its seed production system under contract agreements. This initiative has resulted in the creation of 115 new jobs.

The company has also secured authorship rights for two innovative, promising cotton and grain varieties in Uzbekistan. In 2023, it further integrated agriculture and science to generate new employment opportunities and attract foreign investment. In line with the Presidential Decree on Measures to Establish a Mutually Beneficial Cooperation Framework with Entrepreneurs to Reduce Poverty, the company is participating in the "20,000 Entrepreneurs—500,000 Qualified Specialists" program. Under this initiative, Semrug aims to process cotton fiber for export, producing finished, marketable products. To support this goal, contracts worth \$2 million have been signed with Chinese firms for the import of textile equipment. The project is expected to create employment opportunities for 150 individuals currently registered as unemployed under the "Iron Notebook" program.

The Semrug Innovative Seed Cluster represents a significant step toward the modernization and development of seed production in Uzbekistan, integrating scientific research with practical agriculture to enhance productivity and sustainability.

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