

Xinjiang launches national laboratory to accelerate specialty fruit and vegetable breeding

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The new laboratory in Moyu County will focus on developing high-quality, salt-tolerant and stress-resistant varieties for melons, specialty peppers and fruit trees, while linking agricultural research with commercial cultivation and large-scale deployment



The first academic committee meeting and unveiling ceremony of the Key Laboratory of Xinjiang Characteristic Fruit and Vegetable Biological Breeding, under the Ministry of Agriculture and Rural Affairs (MARA), was held at the Modern Agricultural Industrial Park in Moyu County, Hotan Prefecture.

Jointly proposed by the Xinjiang Academy of Agricultural Sciences and Xinjiang Nongyoute Industrial Co., Ltd., the laboratory was officially approved for establishment in January 2026. It is the first national-level scientific research platform in southern Xinjiang dedicated to the biological breeding of characteristic fruits and vegetables.

The laboratory is being established at a time when Xinjiang's agricultural sector is seeking to improve productivity, strengthen seed self-sufficiency and create greater value from its large cultivation base. The region's characteristic fruit and vegetable cultivation covers more than 666,700 hectares. However, limited varietal diversity, long breeding cycles and an inadequate supply of salt-tolerant and stress-resistant varieties have constrained the sector's ability to move up the value chain.

These challenges are particularly important in southern Xinjiang, where agricultural production must respond to varying soil conditions, water availability, salinity, pest pressures and climatic stresses. The development of locally adapted varieties is therefore central to improving yields, crop quality and farm-level returns.

The new laboratory will focus on key regional crops, including melons, specialty peppers and fruit trees. Its research programme will combine germplasm resources and molecular-breeding technologies from scientific institutions with the large-scale cultivation, commercialisation and full-chain operating capabilities of enterprise partners.

The platform will prioritise the development of saline-alkali-tolerant, pest-resistant, stress-resistant and high-quality varieties. It will also support research into core biological-breeding technologies and domestically developed breeding equipment.

By bringing research institutions and agricultural enterprises into a single innovation framework, the laboratory aims to shorten the distance between scientific discovery and commercial application. The model is expected to support the full process—from germplasm collection and genetic analysis to variety selection, field testing, commercial cultivation and large-scale deployment.

The laboratory has already established 495 new melon-variety test plots across approximately 5.34 hectares of demonstration fields. Researchers are studying the desirable genetic traits of local varieties such as Laohan melon and Suannai melon. The work is intended to support the selection and breeding of proprietary, high-quality varieties adapted to the ecological conditions of southern Xinjiang.

The test plots will also provide a field-based platform for evaluating new varieties under local production conditions. This is important for assessing traits such as tolerance to saline-alkali soils, resistance to pests and environmental stress, crop performance, fruit quality and suitability for commercial cultivation.

At the ceremony, the academic committee reviewed the laboratory's medium- and long-term development plan. It established three core research directions: melon germplasm innovation; the research and development of domestically produced breeding equipment; and local-adaptation breeding for varieties suited to southern Xinjiang.

The committee's priorities reflect the industry's need for both biological innovation and practical production tools. Better germplasm and breeding technologies can help address varietal limitations, while locally produced equipment could improve the efficiency and affordability of breeding programmes.

The laboratory also fills an institutional gap in southern Xinjiang's agricultural research system. Its establishment creates a national-level platform that connects basic research at scientific institutions with industrial application by enterprises and demonstration through agricultural extension bases.

This innovation chain could help strengthen the region's seed industry and reduce dependence on varieties developed for other ecological conditions. Greater availability of locally adapted seeds could improve production stability, raise crop quality and support the expansion of high-value fruit and vegetable cultivation.

The laboratory's significance extends beyond the development of individual crop varieties. It is expected to contribute to a more integrated bio-breeding ecosystem in southern Xinjiang, involving researchers, growers, enterprises, agricultural service providers and extension organisations.

For agricultural businesses, access to better-adapted varieties could improve the efficiency of large-scale cultivation and strengthen supply-chain planning. For farmers, improved seed quality could support higher productivity, greater resilience and better market opportunities. For the wider region, the initiative could help convert Xinjiang's extensive cultivation base into greater value-added production.

The laboratory is also positioned to support the modernisation of specialty agriculture through closer coordination between research and industry. As agricultural markets become more quality-conscious and competitive, breeding programmes will need to deliver varieties that meet commercial requirements for productivity, appearance, taste, shelf life, transportability and resistance to production risks.

The establishment of the Key Laboratory of Xinjiang Characteristic Fruit and Vegetable Biological Breeding marks an important step in that direction. By combining scientific research, molecular breeding, field testing, enterprise participation and agricultural extension, the platform aims to create a more efficient route from innovation to commercial scale.

Its long-term success will depend on the ability to translate laboratory findings into varieties that perform consistently in farmers' fields and meet the needs of processors, traders and consumers. If that link is sustained, the laboratory could become a key institutional base for improving the quality, productivity and competitiveness of southern Xinjiang's characteristic fruit and vegetable industry.