

## Jiangxi Biotech Firm's engineered egg lysozyme receives official new pesticide common name

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**Yuansheng Chuanghe's engineered egg lysozyme receives official pesticide common-name designation, opening a new pathway for enzyme-based crop protection and plant health management**



Jiangxi Yuansheng Chuanghe Biotechnology Co., Ltd. has secured an official new pesticide common name designation for its independently developed egg lysozyme active ingredient, marking a step forward for China's emerging enzyme-protein biopesticide sector.

The active substance, developed through genetic site-directed modification, has been designated by the Institute for the Control of Agrochemicals, Ministry of Agriculture and Rural Affairs. Its chemical identity is N-acetylmuramoylhydrolase, with CAS Registry Number 12650-88-3.

The company said its R&D team used 18S rRNA gene sequencing and site-directed genetic modification to alter the protein's three-dimensional structure and address limitations associated with natural lysozyme, including temperature sensitivity, limited systemic movement within plants and short field persistence.

According to the company, the resulting engineered egg lysozyme demonstrates enhanced targeted lysis against two major citrus bacterial diseases and has also shown activity across a broader range of crop disease and stress-management applications.

### **A protein-based approach to pathogen control**

Lysozyme functions as a molecular tool that targets peptidoglycan, a key structural component of bacterial cell walls. By hydrolysing the peptidoglycan network, the enzyme disrupts cell-wall integrity and can ultimately cause bacterial cells to lyse through osmotic pressure.

The company said its engineered egg lysozyme is designed to provide a broader biological activity profile than conventional lysozyme. In addition to its reported antibacterial activity, the technology is being evaluated for effects against fungal spores and mycelial structures.

For bacterial diseases, the company said the enzyme can directly attack bacterial cell walls and offers a biological mode of action that differs from conventional chemical bactericides. It also claims strong systemic movement within crops, including the ability to reach vascular tissues and disease sites that may be difficult to access through conventional contact treatments.

The technology is being evaluated particularly for citrus Huanglongbing and citrus canker, two major disease challenges for citrus production.

The company also reported applications in soil-borne fungal diseases. In cotton affected by Fusarium and Verticillium wilt, the product is being evaluated for root absorption and movement through plant vascular systems. According to the company, the technology may help inhibit pathogen development while supporting recovery of damaged vascular systems and improving water and nutrient transport.

### **Beyond disease control**

Yuansheng Chuanghe said the technology is also being developed as a multifunctional biological input with potential biostimulant properties.

The company reports that egg lysozyme can activate crop antioxidant enzyme systems and help plants recover from stresses associated with pesticide phytotoxicity, fertilizer injury and continuous cropping. It is also being evaluated for effects on photosynthetic efficiency, nutrient accumulation, crop growth, quality and yield.

This positions the technology beyond the conventional model of pesticides designed primarily around pathogen suppression. The company describes the approach as a functional framework combining protein stimulation, immune activation and metabolic regulation.

The company said the agricultural-grade egg lysozyme differs from conventional food-grade lysozyme. It is being developed as a multifunctional biological protein pesticide using synthetic-biology-based gene reconstruction and high-density fermentation and purification technologies.

### **Field trials expand across crops**

The company has entered aqueous solution, soluble powder and oil-based suspension formulations into field trials supporting pesticide registration.

Demonstration programmes are being conducted for citrus Huanglongbing and canker, while trials targeting cotton Fusarium and Verticillium wilt are being conducted in severely affected areas. Broader demonstrations focused on crop quality and yield improvement are also being carried out across different agricultural regions.

According to Yuansheng Chuanghe, the technology is being evaluated across grain, oilseed, fruit, vegetable and other economic crops, with the objective of combining disease management with crop growth and quality benefits.

The company expects the product series to be launched nationally in 2028, subject to completion of registration and related regulatory requirements.

The official common-name designation represents an important regulatory milestone for the technology and could help advance the commercial development of enzyme-based biological crop-protection products in China. More broadly, the programme reflects growing interest in engineered proteins, synthetic biology and biological mechanisms as potential tools for developing alternatives and complements to conventional chemical pesticides.