

# Peanut Blog

An ounce of information



## Microbial preparations open the way to sustainable disease prevention for peanut plants.

**HNN – The research project "Study on the production of microbial preparations with high enzyme activity from indigenous microorganisms and their application in preventing and controlling wilt disease in peanut plants," conducted by a research group from the University of Agriculture and Forestry, Hue University, is a testament to the connection between research and practice.**

Experimental application of microbial preparations to peanut plants to prevent wilt disease.

### Based on practical needs

Peanuts are one of the main crops in the central region of Vietnam, contributing to the livelihoods of tens of thousands of farming households. However, for many years, peanut growers have faced a group of wilting diseases caused by fungi, especially black mold and white mold root rot. These are soil-borne diseases that persist for a long time and are very difficult to control, even with the use of chemical pesticides, which have not yielded significant results. Based on that practical need, in 2021, a research team from the Faculty of Agriculture, Hue University of Agriculture and Forestry, Hue University, launched a research project applying biotechnology to create a microbial preparation for disease prevention in peanut plants. After three years, in 2024, the project was completed and the finished product, named BAZ04, was released.

Associate Professor Dr. Nguyen Thi Thu Thuy, Department of Plant Protection, Faculty of Agriculture, Hue University of Agriculture and Forestry, Hue University, and project leader, stated that the research team chose an approach based on indigenous microorganisms. These are microbial strains that are naturally adapted to the climate and soil conditions of Central Vietnam. According to Associate Professor Dr. Nguyen Thi Thu Thuy, wilt disease originates from the soil, so chemical pesticides are largely ineffective. Therefore, a biological solution using antagonistic microorganisms is a more suitable and sustainable approach.

Through research, hundreds of microbial strains were isolated, among which three elite strains of Bacillus bacteria were selected to create the multi-strain preparation BAZ04. These strains are capable of producing enzymes such as glucanase, chitinase, and cellulase – enzymes that help break down the cellular structure of pathogenic fungi, resulting in high disease control efficacy. Not only did the research team work in the laboratory, but they also developed a production process for the product and a procedure for its application in the field, ensuring its practical applicability. Spraying the product in two stages, immediately after sowing and 15 days after sowing, helps increase plant growth, reduce disease infection rates, and improve yield.

### Product commercialization

The highlight of this project is its proven effectiveness through numerous practical production trials in Hue City and Quang Tri Province. In the demonstration models, the BAZ04 product helped reduce the wilt disease rate in peanut plants by over 80-85%, while increasing yield by 20-22% compared to traditional farming methods. Farmers' profits increased by tens of millions of VND per hectare. Mr. Tran Hieu, from Phu Vang commune, has used the BAZ04 product on 1,000m<sup>2</sup> of peanut plants in recent planting seasons. According to Mr. Hieu, previously, wilt disease often caused scattered plant deaths, significantly reducing yield despite using various pesticides. After 3 seasons of applying the microbial product, the disease prevention rate reached over 85%, the plants developed uniformly, and the yield was more stable.

Several peanut farmers in Huong Tra ward, after using the BAZ04 microbial product, acknowledged that it not only effectively controlled wilt disease in peanut plants but also improved soil aeration, reducing the cost of chemical pesticides and labor. This product contributes to reducing environmental pollution, preserving soil microorganisms, and moving towards clean, organic agricultural production. Production models also showed clear economic benefits. Peanut yields in fields using the product reached approximately 3 tons/ha, about 0.7 tons/ha higher than the control fields. Net profit increased from 10 to over 36 million VND/ha depending on the cultivation area. A novel aspect of this research is the use of multi-strain native microorganisms. Thanks to their good adaptation to local temperature and humidity, the product is more stable than many imported products, while also helping to reduce input costs for producers. Currently, the research team is implementing a pilot model on a large-scale field at Van Xa Tay Cooperative, Huong Tra Ward, to refine the mass production process. Simultaneously, the project has collaborated with businesses in Quang Tri province to transfer technology and commercialize the product. According to the plan, by the end of 2026, the BAZ04 product will be mass-produced to supply the Central Vietnam market, which has nearly 70,000 hectares of peanut cultivation and a very large demand for biological disease control.

Associate Professor Dr. Nguyen Thi Thu Thuy believes that the greatest value of the research project lies not only in the scientific product but also in its ability to directly apply science and technology to production. When scientists, businesses, and farmers participate together in the value chain, the research results will truly be effective. The success of the BAZ04 microbial product demonstrates that science and technology are solving difficult problems in agricultural production, creating environmentally friendly solutions, and increasing productivity and income for farmers. Based on the superior results of the research, the project won first prize at the Hue City Technical Innovation Competition in 2025 and recently won second prize at the Vietnam Science and Technology Innovation Award in 2025. This achievement affirms the value of scientific research linked to production efficiency and serving people's lives, which is a crucial requirement and a realization of Resolution 57 of the Politburo on creating breakthroughs in science and technology development, innovation, and digital transformation.

**Source:** <https://www.vietnam.vn/en/che-pham-vi-sinh-mo-huong-phong-benh-ben-vung-cho-cay-lac>