

Next trade barrier in agriculture isn't tariffs—It's microbes

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As microbial fertilizers become central to sustainable farming, China, the US, the EU and Japan are tightening import rules, turning regulatory compliance into a competitive advantage



The race to replace chemical fertilizers with biological alternatives is accelerating worldwide. But while governments are encouraging farmers to embrace microbial fertilizers as part of climate-smart agriculture, they are simultaneously erecting increasingly sophisticated regulatory barriers around their import.

Unlike conventional fertilizers, microbial fertilizers contain living microorganisms capable of improving nutrient uptake, enhancing soil health and increasing crop resilience. Because these products introduce live biological agents into agricultural ecosystems, regulators are treating them less like fertilizers and more like potential biosecurity risks.

The result is a new global regulatory landscape where scientific validation, biosafety assessments and phytosanitary compliance have become as important as product performance. For companies eyeing international markets, the challenge is no longer simply producing an effective biofertilizer—it is navigating an increasingly complex web of import regulations.

China: High Potential, Higher Barriers

China, one of the world's fastest-growing biological agriculture markets, also operates one of its most rigorous approval systems.

Every imported microbial fertilizer must receive registration from the Ministry of Agriculture and Rural Affairs (MARA) before it can be commercialized. Revised guidelines introduced in 2025 have further raised the bar, requiring robust efficacy data, strain characterization and biosafety evidence.

Imports containing plant-derived microorganisms also fall under the scrutiny of the General Administration of Customs (GACC), requiring overseas manufacturers to be registered through their home-country authorities before shipments are approved.

While Beijing actively promotes biofertilizers to reduce dependence on synthetic chemicals and restore soil health, it remains unwilling to compromise on biosecurity, making regulatory preparedness essential for market entry.

United States: A Patchwork Regulatory Landscape

The United States has adopted a markedly different approach.

Rather than a dedicated national biofertilizer framework, oversight is divided among multiple federal and state agencies. The USDA's Animal and Plant Health Inspection Service (APHIS) evaluates imports containing live microorganisms, primarily through a pest-risk lens, while products making pesticidal claims require approval from the Environmental Protection Agency (EPA). Adding another layer of complexity, several states impose their own registration, licensing and labelling requirements.

For exporters, success in the US depends less on navigating one regulator than coordinating compliance across several.

Europe: Sustainability with Scientific Rigor

The European Union has opted for harmonisation—but only within carefully defined scientific boundaries.

Under the EU Fertilising Products Regulation (EU) 2019/1009, only microbial plant biostimulants containing approved microorganisms listed under Component Material Category (CMC) 7 qualify for CE marking, allowing unrestricted movement across all 27 member states.

Products containing microorganisms outside the approved list must instead comply with national regulations, significantly increasing the complexity of market access.

The approach reflects Europe's broader Green Deal philosophy: encourage biological innovation while maintaining stringent standards for safety, efficacy and environmental protection.

Japan: Precision Over Speed

Japan continues to maintain one of Asia's most quality-focused regulatory systems.

Governed under the Fertilizer Control Act, microbial products are assessed based on their classification, with many requiring quality verification, labelling compliance and domestic representation rather than full fertilizer registration. The country's Green Food System Strategy is driving greater adoption of biological inputs, but regulators continue to insist on rigorous quality assurance before products reach farmers.

Compliance Is Becoming a Business Strategy

Across all four markets, one message is unmistakable: microbial fertilizers may be biological products, but they are increasingly being regulated like strategic technologies.

Authorities are demanding detailed microbial identification, production protocols, phytosanitary certificates, contaminant testing, efficacy data and traceability documentation before granting market access. Approval timelines can stretch from several months to nearly two years, making regulatory planning an integral part of commercial strategy.

For an industry expected to play a pivotal role in reducing chemical fertilizer dependence and improving soil health, the implications are profound. The companies that succeed globally will not necessarily be those with the most innovative microbes—they will be those that can demonstrate the strongest science, the highest biosafety standards and the deepest regulatory expertise.

In the emerging bio-input economy, compliance is no longer a cost of doing business—it is becoming one of the industry's most valuable competitive assets.