

TECHNOLOGY PROFILE

Nodu™

A region-matched rhizobial inoculant that establishes an early, effective and persistent nitrogen-fixing symbiosis — one formulation per legume.

+8–11%

Legume yield response

8 crops

Crop-matched formulations

290+

Demonstration sites

Non-GMO

Naturally isolated strains

Standalone yield response versus uninoculated controls across Huasheng Bio multi-site demonstration trials; response is greatest on new ground and on fussy hosts such as soybean. Field performance varies with soil, climate, variety, native rhizobial background and management.

Developed and supplied worldwide by Huasheng Bio Limited.

1 About Huasheng Bio & the Legume-Inoculant System

Huasheng Bio Limited develops and supplies a complementary three-part legume-inoculant technology for food and forage legumes. The three products are designed to co-apply at sowing, each addressing a different limiting factor:

- **Nodu™ (rhizobial)** — supplies the crop-matched nitrogen-fixer that forms active, effective root nodules.
- **Vigor™ (PGPR)** — builds root systems and solubilizes bound soil phosphorus, improving drought and salinity tolerance.
- **Orvan™ (coupled biocontrol & nitrogen fixation)** — amplifies nodulation while suppressing aflatoxin-producing *Aspergillus flavus*.

This profile introduces the Nodu™ technology, its mechanism, evidence and positioning. Full formulation specifications, rates, compatibility and storage are given in the separate Nodu™ Technical Data Sheet.

2 The Nodu™ Approach

Legumes fix atmospheric nitrogen only in partnership with compatible rhizobia, which colonise the root and form nitrogen-fixing nodules. This partnership is host-specific: the rhizobial partner that nodulates one legume may do nothing for another. Where the specific partner is absent (for example soybean on new ground) or where the native population fixes poorly, the crop under-fixes even when it looks nodulated.

Nodu™ delivers elite Bradyrhizobium / Rhizobium inoculants that establish a strong, early and persistent nitrogen-fixing symbiosis — one formulation per legume. Each strain is selected against four criteria and confirmed against the region's native populations before release:

- **Infective** — forms nodules reliably on the target host;
- **Effective** — fixes nitrogen at a high rate (pink, active nodules);
- **Competitive** — wins nodule sites against the rhizobia already in the soil;
- **Persistent** — survives on the seed / in the furrow and establishes at sowing.

3 Crop-Matched Partners

Because the effective rhizobial partner differs by legume, Nodu™ ships as one crop-specific SKU per legume — the region-matched partner is confirmed against local native populations before release:

Crop	Rhizobial partner	SKU
Peanut	Bradyrhizobium (Arachis group)	Nodu™ GN
Soybean	Bradyrhizobium japonicum / diazoefficiens	Nodu™ SY
Common bean	Rhizobium tropici / etli / phaseoli	Nodu™ CB
Cowpea	Bradyrhizobium (cowpea / Vigna group)	Nodu™ CP
Pigeon pea	Bradyrhizobium (Cajanus group)	Nodu™ PP
Mung bean	Bradyrhizobium (Vigna group)	Nodu™ MB
Black gram	Bradyrhizobium (Vigna group)	Nodu™ BG
Alfalfa	Sinorhizobium (Ensifer) meliloti	Nodu™ ALF

4 Field Evidence

Standalone yield response and demonstration scale by crop (matched rhizobia vs. uninoculated control), from Huasheng Bio multi-site demonstration trials. Response is greatest on new ground and on fussy hosts such as soybean, where the specific partner is scarce or absent.

Crop	Avg. yield response	Demonstration scale
Peanut	+9.8%	70 sites
Soybean	+10.8%	60 sites
Common bean	+8.4%	26 sites
Cowpea	+10.2%	24 sites
Pigeon pea	+8.9%	18 sites
Mung bean	+9.3%	28 sites
Black gram	+8.3%	16 sites
Alfalfa	+10.4%	52 sites

Site-specific performance may vary with soil, climate, crop variety, native rhizobial background and management, and should be validated through local trials. All strains are non-GMO and naturally isolated.

5 Formats & Fit

Nodu™ is available in six formats — peat, liquid, seed coat, granule, freeze-dried and a dual-chamber pack — matched to the grower's application interface, from on-seed treatment to in-furrow soil application. It co-applies with Vigor™ and Orvan™ at sowing and with neutral-pH NPK. Per-format carriers, guaranteed viable counts, application rates and compatibility are specified in the Nodu™ Technical Data Sheet.

How Nodu™ fits an existing program

Nodu™ supplies the nitrogen-fixer; Orvan™ amplifies nodulation and suppresses aflatoxin-producing *Aspergillus flavus*; Vigor™ builds roots and solubilizes phosphorus. The three co-apply at sowing and are complementary — Nodu™ is compatible with, not a replacement for, a grower's existing inoculant and fertility program.

6 Registration & Assurance

- **Registration:** China Ministry of Agriculture and Rural Affairs — microbial inoculant registration No. 16340 (2026). Per-crop SKU and destination-market registrations are confirmed per country.
- **GMO status:** Non-GMO; all strains naturally isolated.
- **Biosafety:** handled as low-risk (Risk Group 1) agricultural microorganisms.
- **Documentation:** full specifications sit in the Nodu™ Technical Data Sheet; strain deposit / identity documentation is available to qualified partners under NDA.

Contact & Support

Huasheng Biosciences

Huasheng Biosciences develops and supplies Nodu™ and its companion legume-inoculant technologies (Vigor™ and Orvan™) to growers worldwide.

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For trial materials, samples, formulation selection, and regulatory dossiers, contact us by email or WhatsApp. Technical dossiers, safety data sheets, and regulatory-grade strain documentation are available to qualified partners under a mutual non-disclosure agreement.

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Performance disclaimer. Field performance data derive from Huasheng Bio Limited multi-site demonstration trials. Actual field performance may vary with soil, climate, crop variety, native rhizobial background, cropping system, water regime and management. Users are responsible for ensuring the product is registered and permitted in the destination market, for validating performance through local trials, and for verifying compatibility with their own seed treatments and fertilizers before commercial deployment.

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