The *nodD1* gene of *Sinorhizobium fredii* HH103 restores nodulation capacity on bean in a *Rhizobium tropici* CIAT 899 *nodD1 nodD2* mutant, but the secondary symbiotic regulators *nolR*, *nodD2* or syrM prevent HH103 to nodulate with this legume

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List of Supplementary Material

Figure S1. Nodule primordia (panel A) and lateral roots (panel B) on *Phaseolus vulgaris* roots. Photos on the left were taken under a Leica microscope (100x). Photos on the right were taken under a binocular loupe (bars correspond to 0.5 cm).

Figure S2. Symbiotic performance of *R. tropici* CIAT 899, *S. fredii* HH103 and its *nodD2*, *nolR*, *syrM*, and *ttsI* derivatives with *Phaseolus vulgaris*. Appearance of roots.

Table S1. Bacterial strains and plasmids used in this work.

Dataset S1. List and areas of Nod factors produced by *R. tropici* CIAT 899, CIAT 899 Δ*nodD1D2*, and CIAT 899 Δ*nodD1D2* (pMUS296) upon induction with apigenin. Nod factors produced by CIAT 899 in the absence of flavonoids are also shown.

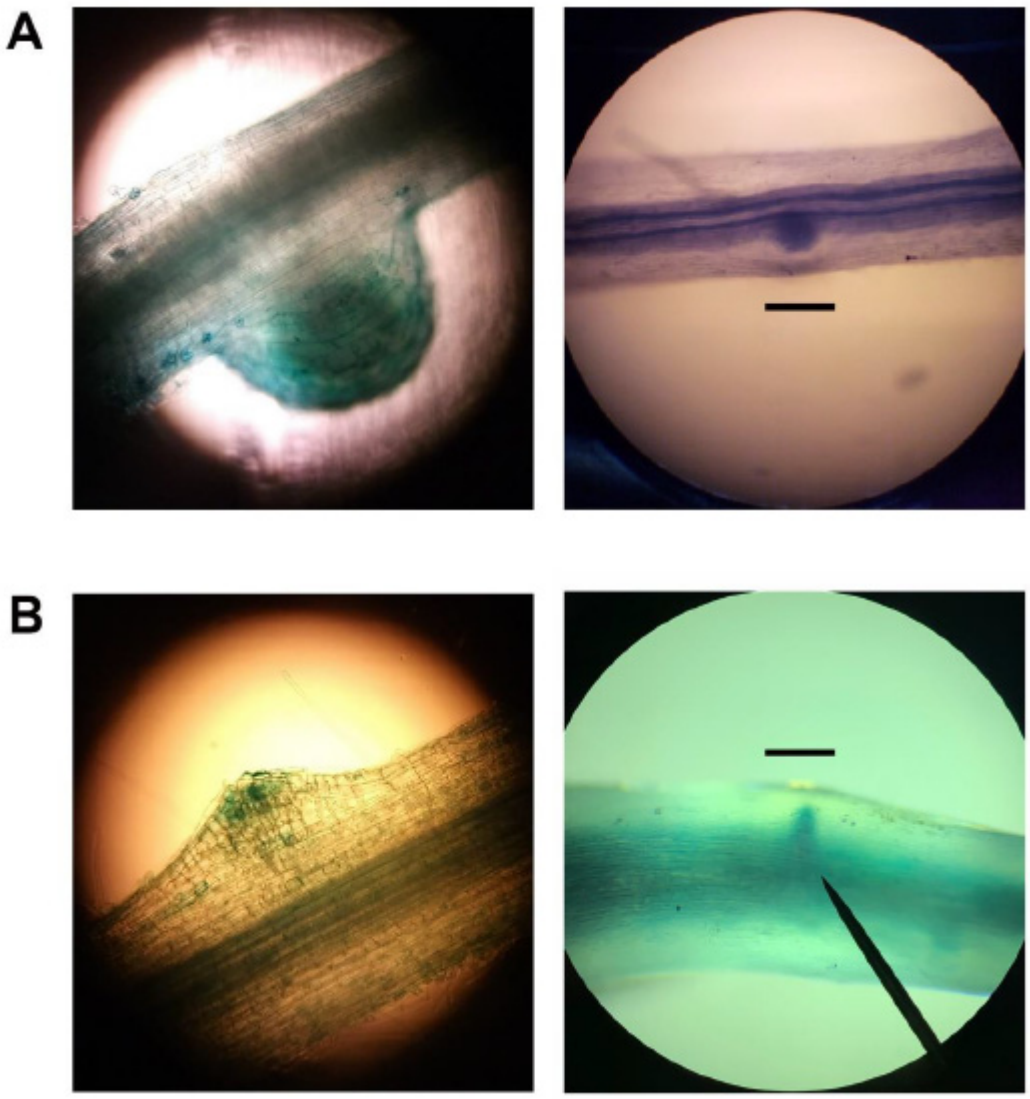

Figure S1. Nodule primordia (panel A) and lateral roots (panel B) on *Phaseolus vulgaris* roots. Photos on the left were taken under a Leica BioMed (Germany) microscope (100x). Photos on the right were taken under a Optika SZN 4 (Italy) binocular loupe (bars correspond to 0.5 cm).

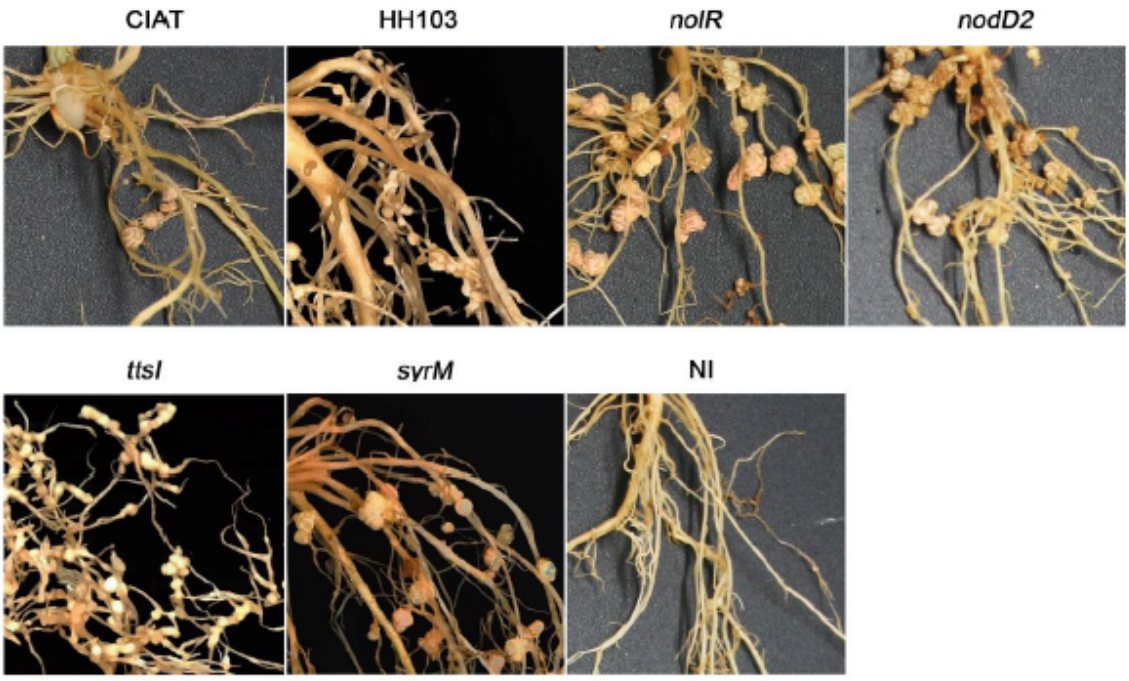

Figure S2. Symbiotic performance of *R. tropici* CIAT 899, *S. fredii* HH103 and its *nodD2*, *nolR*, *syrM*, and *ttsI* derivatives with *Phaseolus vulgaris*. Appearance of roots.

Table S1. Bacterial strains and plasmids used in this work.

Strain	Derivation and relevant properties[a]	Source or reference
Rhizobium tropici		
CIAT 899	Wild-type strain (Rif^R)	[1]
CIAT 899 Δ*nodD1* Δ*nodD2*	CIAT 899 Δ*nodD1* Δ*nodD2*	[2]
Sinorhizobium fredii		
HH103 RifR	Spontaneous Rif^R derivative of HH103	[3]
HH103 Rif^R *nodD2*	HH103 RifR nodD2::	[4]
HH103 RifR nolR	HH103 Rif^R *nolR::lacZ*Δp-GmR	[5]
HH103 Rif^R *syrM*	HH103 Rif^R ΔsyrM	[6]
HH103 Rif^R *ttsI*	HH103 RifR ttsI::	[4]
Plasmids		
pMUS296	Broad host range plasmid pMP92 carrying HH103 *nodD1*, Tc^R	[7]
pMUS746	pMP92 carrying HH103 *nodD2*, Tc^R	[4]
pRK2013	Helper plasmid, KmR	[8]

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