



# RhizoFix®

Liquid rhizobial inoculant for the direct inoculation of seeds immediately prior to sowing



# RhizoFix®

Liquid rhizobial inoculant for the direct inoculation of legume seeds

## Rhizobia

### Fertiliser Factories in Roots

Legumes form a symbiotic relationship with species-specific rhizobia (root nodule bacteria). Through the root nodules, legumes are able to fix atmospheric nitrogen. Therefore, only legumes with a sufficient number of root nodules are able to achieve optimal performance. Atmospheric nitrogen, which makes up 78% of the air, represents a large nitrogen reservoir. However, most plants can only absorb nitrogen in mineral form, as ammonium and especially as nitrate. Only legumes, in symbiosis with rhizobia, are able to fix molecular atmospheric nitrogen.

To ensure this symbiosis, contact between the plant roots and the bacteria is required. In order to attract the rhizobia to the roots, the plants release substances that guide the bacteria towards the roots. Through these substances, the bacteria recognize the plant cells, and an "infection" of the root cell takes place. To ensure an adequate supply of rhizobia, crops such as soybean and lupins must be



Root of a Soybean with RhizoFix®-Inoculation

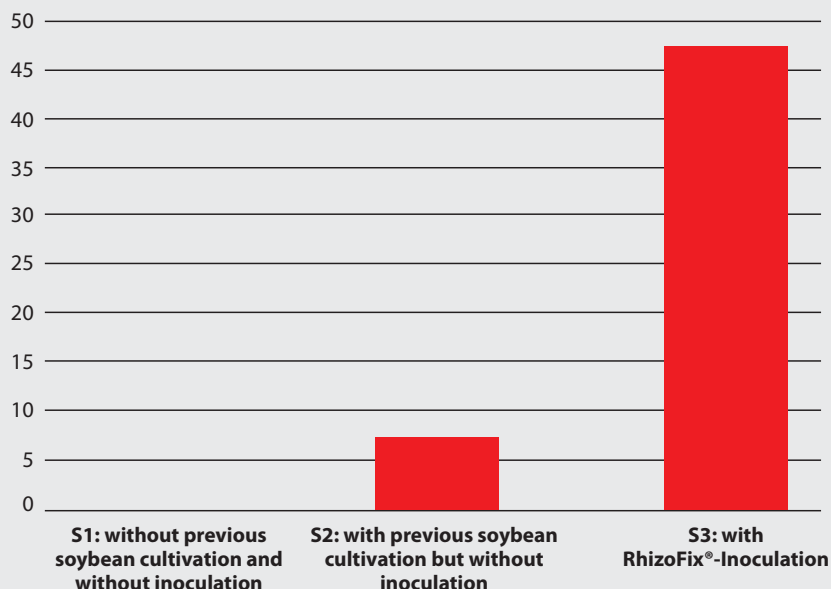
inoculated with root nodule bacteria. In the case of native grain legumes such as broad beans and peas, the bacteria are sometimes already present in the soil. However, additional inoculation is generally recommended. For clover and especially for al-

falfa, the presence of rhizobia in the soil depends strongly on the existing soil conditions. In all cases, we recommend appropriate inoculation with RhizoFix® to guarantee sufficient rhizobial supply and to ensure optimal growth.

### Advantages of an inoculation with RhizoFix®:

- Higher yields compared to non-inoculated crops (also under repeated cultivation)
- Quickest possible symbiosis between crops and rhizobia
- Direct contact with the seeds  
⇒ fast establishment at the roots
- A specific rhizobial strain exists for each variety of legume
- Especially suitable for areas without natural sources of rhizobia
- Good plant growth
- Easy handling of the inoculant
- Ready for use

### Number of rhizobia nodules per crop





**White lupins without inoculation**

**White lupins with RhizoFix® inoculation**

**RhizoFix®** is a liquid inoculant for legume seeds. For the last few years, Feldsaaten Freudenberger has been conducting intensive research to develop its own rhizobia strains. The best strains have been selected in many lab and field trials.

The objective of the selection process is to find strains that quickly form a symbiosis with the host plant, while also leading to an optimum yield. RhizoFix® products make it possible to also grow legumes in areas that have no

natural rhizobia. Freudenberger provides appropriate rhizobia strains for all common crops.

The product is ready to use immediately, without pre-mixing of the individual components. Only careful seed mixing is required to ensure that all seeds come into contact with the inoculant. We recommend performing inoculation directly in the seed drill or in a suitable concrete mixer or similar. A pump sprayer or a field sprayer can be used to distribute the inoculant.

Product	Content	For	Also suitable for	Application rate per 100 kg seed	Contents for approx.	Sowing rate in kg/ha	Sufficient for approx.	1 bottle product no.	6 bottles product no.	5 l canister* product no.
RhizoFix® RF-10	1000 ml	Soybean (Glycine max)	Mung bean, serradella (common bird's foot)	750 ml	130 kg	100-150	1 ha	5210	5213	5215
RhizoFix® RF-20	1000 ml	Broad bean (Vicia faba)	-	700 ml	150 kg	150-250	0,75-1 ha	5220	5223	5225
RhizoFix® RF-30	1000 ml	Pea (Genus Pisum)	Lentil	500 ml	200 kg	150-250	1 ha	5235	5233	5236
RhizoFix® RF-40	1000 ml	Vetch (Genus Vicia)	Grass pea, chickpea	500 ml	200 kg	100	2 ha	5240	5243	5248
		Lupins (Genus Lupinus)		500 ml	200 kg	150-200	1 ha			
RhizoFix® RF-45	500 ml	Clover (Genus Trifolium)	Red clover, white clover, alsike clover, balansa clover, Egyptian clover, crimson clover	1000 ml	50 kg	25	2 ha	5245	5246	-
RhizoFix® RF-50	500 ml	Alfalfa (Medicago sativa)	Sweet clover, black medick	1000 ml	50 kg	25	2 ha	5255	5256	-
RhizoFix® RF-55	1000 ml	Sainfoin (Onobrychis viciifolia)	-	500	200 kg	200	1 ha	5258	5259	-
RhizoFix® RF-60	75 ml	Common bean (Phaseolus vulgaris)	Bush bean	500 ml	15 kg	15	1 ha	5260	-	-
RhizoFix® RF-70	500 ml	Chickpea (Cicer arietinum)	-	500 ml	100 kg	100	1 ha	5270	5273	-
RhizoFix® RF-80	500 ml	Catch crop	Flower strips, fallow land	1000 ml	50 kg	-	-	5280	5283	-
RhizoFix® RF-90	500 ml	Clover-grass	Grassland, arable feed crop	1000 ml	50 kg	-	-	5290	5293	-

In the case of small-seed legumes such as clover and alfalfa, we can also recommend the use of Coated Seed Rhizo.

Since there is no standard sowing rate for either catch crop or forage mixtures, no general information can be provided regarding sowing rates or area coverage. Please calculate these values based on the specifications of the respective mixture.

All values are guidelines which can change due to a variety of factors.

\* 5 l canister only while stocks last!



# RhizoFix®

Visit our homepage:  
[www.freudenberger.net](http://www.freudenberger.net)



RhizoFix® RF-10 for:  
Soybean



RhizoFix® RF-20 for:  
Broad bean



RhizoFix® RF-30 for:  
Pea



RhizoFix® RF-40 for:  
Lupins, Vetches



RhizoFix® RF-45 for:  
Clover



RhizoFix® RF-50 for:  
Alfalfa



RhizoFix® RF-55 for:  
Sainfoin



RhizoFix® RF-60 for:  
Common bean



RhizoFix® RF-70 for:  
Chickpea



RhizoFix® RF-80 for:  
Catch crops



RhizoFix® RF-90 for:  
Clover-grass