



Inoculation Of Legumes For Free Nitrogen

Part 1

If you want legumes to produce their own nitrogen, you need to have the correct species of rhizobium in your soil. This is especially important if you are growing a crop that you haven't grown before in that soil, or you are sowing lucerne. There are 16 main groupings of legumes according to the rhizobium species they require. Many suppliers of legume seed also can provide the inoculation.

To check if you have the right and functioning rhizobium, examine the roots of the legume after it is well established, at 8-10 weeks old. Carefully dig up several plants and gently wash the soil off in a bucket of water; do not pull plants up as some nodules will break off. Nodules are formed on the crown, the tap root and lateral roots. Are there nodules present? Are there many? Cut one open: Is it pink or red inside? If it is green it is not functioning and if it is brown it is spent. If there are none there will be no nitrogen-fixing benefits to growing the crop. If numbers are low inoculation will also be of benefit, and can more than double the yield.

The ideal number of nodules per plant varies with the species of legume. Generally at least 20 nodules are required in sandy soil and up to 100 in clays for peas, vetch and broad beans. Annual clovers need at least 50 while for perennial clovers and lucerne 10 is good. Peanuts need more than 100. For most others 20 is a good number.

It is important to note that rhizobia need good conditions to flourish, and there is little point applying the inoculant if these conditions are not met. There needs to be:

- adequate calcium, molybdenum and cobalt,
- good soil aeration, and
- no chemical fertilisers, herbicides or pesticides.

The preferred pH of the rhizobium is close to the preferred pH of the host plant.

Lupin and lupin rhizobium tolerate acidic soils better than other species.

Pea, broad bean, vetch, lucerne and medic rhizobia are not at all tolerant of soil acidity.

Nitrate fertilisers, even if they are organic, inhibit the rhizobium, probably because the plant refuses to feed them when nitrogen is well supplied and it doesn't need them.

Soluble phosphate fertilisers (super, MAP, DAP) are also suppressive, while rock phosphate or bone meal are not.

Composts should have a high carbon to nitrogen ratio – cool processed composts rather than hot composts.

Both cobalt and molybdenum are used in minute amounts; a few hundred grams per hectare is enough to correct deficiency.

Farming Secrets says: For crops you have not grown before it is worthwhile obtaining the rhizobia with the seed.

Ref: Seedbed The Newsletter Of The Organic Agriculture Association Inc. Winter 2016 Alan Broughton