Why Inoculate Legume Seeds?

Legumes such as peas, beans, vetches, alfalfa, clovers, etc., are notable in the plant world for their ability to “fix” nitrogen. This important function allows these plants to convert nitrogen from the gaseous form found in the air, which is unusable by crops, into a plant-usable form, which allows both the legumes and subsequent crops to harvest this nitrogen for plant growth. Some legumes are capable of fixing up to 300 lbs of nitrogen per acre, others fix between 50-200 lb/acre. Species and variety selection, plant population, soil type and fertility, water availability and growing periods all affect the vigor and nitrogen fixation ability of legumes. Legumes fix nitrogen due to the relationship that exists between legume plants and a group of soil bacteria commonly known as rhizobacteria or rhizobium. This symbiotic relationship allows the bacteria to live on the roots of the legume plant, consuming carbohydrates from the plant and providing the plant with nitrogen that the bacteria convert into plant-usable form. Without these beneficial bacteria, legumes cannot fix nitrogen! Most soils do not contain very many, if any, of these bacteria. In order to ensure good nitrogen fixation by the legume, so it is necessary to inoculate the legume with the proper strains of bacteria prior to planting the seeds. This simple, low-cost process returns many times higher than the costs.

How To Inoculate Legume Seeds

1) Purchase and use fresh inoculant. All inoculants have a shelf life of approximately 15 months after their formulation date.

2) Make sure that you have the proper inoculant. Each species of legume requires a specific type of rhizobacteria for nitrogen production. For example, vetch inoculant will not work on clovers. The package will be labeled with the plant species for which the inoculant is intended. You can mix different species of seed and inoculants together when conducting the following procedures, but make sure that you use the correct types of inoculant to treat all varieties as needed.

3) You cannot use too much inoculant; but you can use too little. It is OK to use 2 or 3 times the recommended rate on the package. This is especially useful if planting into a soil which has never had this type of legume before or if planting into soils which are not going to be irrigated, as some of the rhizobium will die if rains are not timely.

4) The bacteria are sensitive to heat and sunlight. Do not leave the packages laying in the sun!! Unused inoculant should be stored in a cool location, a refrigerator is best.

5) Most growers inoculate as they go to ensure high populations of the bacteria on the seed. Inoculated seed can be stored for up to 4-8 hours; after that you should re-inoculate the seed. Keep inoculated seed out of the sun as much as possible.

6) The inoculant comes pre-mixed on a peat moss carrier to allow for ease of handling. The peat and bacteria must stick to every seed to be effective. The best way to make the powder stick to the seed is to slightly wet the seed prior to applying the inoculant. Non-chlorinated water can be used, but much better results are obtained by using a combination of whole milk and molasses. Prepare a mix by combining 1 quart of milk with 2 tbsp. of molasses. Thoroughly stir, the mix well and it will act as sticking agents for the peat moss as well as food for the bacteria (calcium, sugars and trace minerals). One quart of this mixture will go a long way; it can treat up to 1500 lb of seed.

7) Place the seeds in a cement mixer, wheelbarrow, pail or on a plastic sheet. Lightly spray the seeds with the milk mixture or water, using a very small amount (1-3 ounces per 100 lb of seed). Turn the seed while spraying to ensure even coverage. Conduct this process in the shade. When the seed is evenly and lightly coated, sprinkle the peat inoculant on the seeds, turning the seeds to ensure an even coating. The seed will blacken from the peat if it comes in contact with the inoculant.

8) Plant immediately. If the seed is too wet to plant, allow the seed to dry, in the shade, until it will flow through and not clog your machinery.

9) Cover the seed in the ground immediately. The longer the seed stays exposed to sunlight, the less effective the inoculation will be. The bacteria die when exposed to sun. Because a seed drill uses less seed and buries the seed immediately, it is the preferred method of planting. Broadcasting the seed is adequate, but it is very important to cover the seed with a harrow, ring roller, rake, mulch, straw, etc. immediately after planting.

10) Irrigate immediately if possible. This will increase the survival and germination of the seed and the inoculant.

11) The inoculant is non-toxic. You can get it on you, on other seeds, plants or soil without any problem other than a possible staining from the peat. The preceding information is provided as a general information service and is not intended to be a recommendation for this process or any other pest control or fertilization techniques. Use of these suggestions is strictly at the risk of the user.