

Plant Pathology Fact Sheet

“Emergency” Inoculation for Poorly Nodulated Legumes

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Introduction

Frequently, stunted and yellowed legumes are thought by growers to be diseased. Close examination often reveals that such “diseased” plants are actually just poorly nodulated.

“Emergency” inoculation refers to the application of inoculant to a crop after it has emerged and begun to show nitrogen deficiency symptoms. A developing crop may need this type of inoculation because no inoculant was used initially, the inoculant or pre-inoculated seed was stored improperly, or soil conditions were too hot and dry, resulting in plants with few or no nodules on the roots. “Emergency” inoculation should not be needed if you use good quality inoculant and employ recommended inoculation methods at the start. However, there are times when something unforeseen does happen and “emergency” inoculation is necessary. “Emergency” inoculation has at best a 50:50 chance of success, but if it works it is much cheaper than completely replanting a field.



HEALTHY, WELL-NODULATED ALFALFA ROOTS (RIGHT) COMPARED TO ROOTS WITH LITTLE TO NO NODULATION (LEFT).

“Emergency” Inoculation Methods

The types of “emergency” inoculants that can be used to alleviate poor nodulation problems are discussed below. Keep in mind that because the *Rhizobium* bacteria are very sensitive to UV radiation, exposure to sunlight must be minimized. Ideally, these procedures should be applied on a cool, cloudy day, preferably in late afternoon. Rain following the application increases the chances of success.

It is also important to note that the pH of the soil can be a deterrent to nodulation. In this case “emergency” inoculation would not be a solution as long as the pH is also a problem. If the soil pH is below 6.0, some type of lime application should be used to adjust the pH. The application of limestone normally requires 6 months to raise the soil pH, so a well thought-out liming program is necessary for optimum legume growth on acid soils. Make sure the soil pH is not a problem prior to using emergency inoculation.

If you have any questions regarding any of these methods, contact your County Extension agent or a University of Kentucky Extension Agronomist.

HUMUS-BASED INOCULANT can be applied in one of three ways:

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the University of Kentucky Department of Plant and Soil Sciences Forage Web site
<http://www.uky.edu/Ag/Forage>.

- Alfalfa-The Queen of Forage Crops, ID-76
<http://www.ca.uky.edu/agc/pubs/agr/agr76/agr76.pdf>
- Establishing Forage Crops (2003)
<http://www.ca.uky.edu/agc/pubs/agr/agr64/agr64.htm>
- Inoculation of Forage Legumes, AGR-90 (2002)
<http://www.ca.uky.edu/agc/pubs/agr/agr90/agr90.pdf>

- Liming Acid Soils, AGR-19 (1993)
<http://www.ca.uky.edu/agc/pubs/agr/agr19/agr19.htm>
- Lime and Nutrient Recommendations (2010-11)
<http://www.ca.uky.edu/agc/pubs/agr/agr1/agr1.pdf>

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*Photo courtesy of the University of Kentucky
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