



Tropentag, October 5-7, 2011, Bonn

“Development on the margin”

The Effects of Coatings and/or Rhizobia on the Growth of Alfalfa (*Medicago sativa* Verko)

LINDA YUYA GORIM¹, FOLKARD ASCH¹, TOM HATTIG², JÜRGEN BESTAJOVSKY²

¹University of Hohenheim, Dept. of Plant Production and Agroecology in the Tropics and Subtropics, Germany

²Feldsaaten Freudenberger, Seed Coating, Germany

Abstract

Fertilisers containing nitrogen though widely used in agricultural systems are expensive for resource poor farmers couple with the fact that they are a major source of greenhouse gases. Biological nitrogen fixation remains a major source of nitrogen input but under stress conditions, only particular strains of rhizobia survive. Seeds coated with rhizobia together with other growth promoting substances can play a major role agricultural systems since particular stress resistant strains can be introduced depending on the situation encountered. The aim of this study was to (a) evaluate the effects of rhizobia coated grains compared to those without rhizobia on plant phenology and above and below ground biomass and (b) compare nodule parameters between coated and uncoated seeds. Treatments involved alfalfa seeds obtained from the company, Freudenberger coated with (1) Humic acid + a plant fortifier + rhizobia (2) Humic acid + a plant fortifier (3) Uncoated seeds. Plants were sown in sand (pH 6.4) in pots (12 cm × 12 cm × 20 cm) in the greenhouse from February to April 2011. A 10 % kick off starter nitrogen was fed at the beginning of the experiment but subsequent fortnight fertilisation regiments excluded nitrogen. Plants were assessed every 2 weeks from the fourth week. Results show that coats containing rhizobia produced plants which had significant ($\alpha = 5\%$) number of leaves and tillers. Nodule count and both above and below ground biomass were also significant ($\alpha = 5\%$) for plants resulting from coats having rhizobia compared to the other treatments. Plants resulting from coated seeds without rhizobia also showed significant improvement over those resulting from the uncoated seed. This implies that coating with rhizobia was advantageous and further investigations under field conditions are required.

Keywords: Biomass, nodules, phenology, rhizobia, seed coating