EVALUATION OF SEED DRESSING USING MURTANO AND MARSHAL IN CONTROL OF ROOT ROT (Fusarium solani) IN COMMON BEAN

By:

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In Kenya, common bean is the most important legume. Approximately 960,705 hectares of land is under bean production with yields of about 465,363 metric tons (MOA, 2010). Beans are grown from 1200 to 2200 meters above sea level but do best at medium altitude areas of 900 to 2000 meters, grown in well drained soils of pH 5-6 and temperatures between 15-23°C and a tolerance of up to 35°C temperatures during the day (PROTA, 2006).

Soil borne fungal pathogens are widespread throughout dry bean and snap bean production areas. They can affect quality as well as yield. Pathogens that predominate and limit production differ from one bean-growing region to another.
Many small-scale farmers have suffered yield losses in production of beans due to infections of root rot (*Fusarium solani*). *F.solani* is a major threat to beans leading to scarcity in bean seed production. Fungicides and insecticides are more effective compared to other methods of control e.g. Biological and cultural methods. Prevent the germinating seeds and seedlings from attack by the pathogen *F.solani*.
Objectives

Specific objectives

- The overall objective of this study is to increase the quality and quantity of beans produced.

Other objectives

- Evaluate the germination of seeds after treatment.
- Determine the susceptibility of fusarium to the different seed treatment chemicals.
- Evaluate the effectiveness of different seed dressing chemicals in controlling root rots of common beans (Phaseolus vulgaris)
Materials and Methods

Experimental site
- The field experiment was carried out in 2013

Experimental Designs
- Randomized complete block design with four replicates.

Materials
- Five treatments were applied for each variety, i.e. KK8 and GLP2.
  - T1-Marshal + Pathogen + Fertilizer.
  - T2-Murtano + Pathogen + Fertilizer.
  - T3-Control.
  - T4-Fertilizer + Pathogen + Murtano + Marshal.
  - T5-Fertilizer + Pathogen.
Data Collection

- Data was collected on;
  - Stand count per treatment
  - Root rot incidence
  - Root rot severity
  - Nodulation on the roots
  - Dry matter of the beans
Relationship between pod load and harvest date

Stand count per treatment

![Graph showing stand count per treatment over different sampling periods (Emergence, wk 2, wk 4, wk 6, mean)].

- **T1**, **T2**, **T3**, **T4**, **T5**

**Sampling period**

**Stand count**
ROOT ROT INCIDENCE PER TREATMENT

INCIDENCE

SAMPLING PERIOD

Emergence wk 2 wk 4 wk6 mean

T1 T2 T3 T4 T5
root rot severity

Severity

T1 | T2 | T3 | T4 | T5 | mean

GLP2 | KK8

0  5  10  15  20  25  30  35
Discussion

- Most of the plants began showing symptoms of infection by the pathogen at week two after planting.
- Some plants did not germinate since they had been infected with the pathogens.
- At week three, the infection had become severe with an increase rate of yellowing some leaves curling.
- In the forth week, there was a premature leaf fall, this was evidence of fusarium.
- The treatment that had the ability to control fusarium root rot was T1-Marshal + pathogen + fertilizer.
Conclusion and Recommendation

- From the study, marshal +pathogen+fertilizer scored as an effective treatment for fusarium root rot though there was no significant difference to treatment 5.

- Seed dressing using marshal holds that ability to determine local seed security and seed sovereignty. This approach rests in the hands of agricultural researchers and farmers. This will be an advantage to farmers and the world as a whole. Farmers should also choose wisely right planting seeds, e.g. resistant varieties.
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