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**STUDIES ON LATE BLIGHT AND EARLY BLIGHT DISEASES
ASSOCIATED WITH POTATO AND THEIR BIOCONTROL BY NEEM
PRODUCT (NEEM SHIELD) WITH FYM**

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ABSTRACT

An attempt was made to study the bio-control efficacy of neem product (*Neem shield*) in managing the early blight and late blight of potato caused by *Alternaria solani* and *Phytophthora infestans*. Three type of treatment soil treatment, seed treatment and foliar treatment in combination with farm yard manure were given. The result was recorded at sixty days after sowing and ninety days after sowing. Neem product (*Neem shield*) effectively inhibits the growth of *Alternaria solani* and *Phytophthora infestans* significantly reduced the disease intensity of early blight, the best result was recorded in soil treatment followed by folier treatment and seed treatment and late blight, the best result was recorded in foiler treatment followed by soil treatment and seed treatment in comparison with control. Therefore from present investigation it is concluded that an eco-friendly biopesticide neem product (*Neem shield*) is very easy to use and having no adverse effect on crops, people or animals and they can be applied to prevent and control several pathogenic fungi. The neem product (*Neem shield*) can be used as a bio-control agent as it is low cost and profitable dependent system and it also helps in conserving the natural resource.

KEYWORDS: Neem product (*Neem shield*), soil treatment, foliar treatment, pathogenic.

INTRODUCTION

India is fortunate enough to have vast diversity of land soil and agro climatic condition to grow various vegetable. Potato is the one of the most starchy food crops of the world. Today farmer are searching for resource efficient low cost and profitable dependent system, chemical pesticides when especially used indiscriminately have contaminated the environment .A number of plant diseases especially the soil and seed born could not be significantly controlled by chemical means and gain the resistance from the chemicals. So the substitute is only to apply cultural and biological practices, biological control methods are alternative means of disease control of the crop, which are the otherwise unprotected because of the involved expenses. An ecofriendly biopesticides viz. Neem product (*Neem shield*) is very easy to use and having no adverse effects on environment (crop, people or animals).They can be applied to prevent and control several pathogenic fungi such as *Fuarium*, *Rhizoctania*, *Phythium*, *Phytophthora*, *Alternaria* etc.

MATERIALS AND METHODS

Experimental site

The experiment was conducted in the farm of Allahabad Agriculture Institute-deemed university Allahabad during the Rabi season of 2001-2002 and 2002-2003. Immediately after harvest of the kharif crop, the experimental field was ploughed 20-25

cm deep with soil turning plough. Cross ploughing and one planking was also done to obtain the good tilth fifteen centimeters deep furrows were opened with the help of bullock drawn furrows maker at the appropriate distance. Seed beds were prepared for respective treatment as per the lay out planned plot for each treatment 2 x 2 square meters. The seed variety selected for the study was Kufri Bahar. FYM: farm yard manure was given @ 30t/ha in selected plot and mixed well with the soil and was broadcasted uniformly in the soil.

TYPES OF APPLICATION

1. SEED TREATMENT

The seeds of potato were treated and then the seeds were spread on an airy and hygiene place. The uniform sized and well sprouted healthy tubers were collected for sowing.

2. SOIL TREATMEANT

Little amount of soil was taken and treated. 15 cm deep furrows were made with the help of hoe. Treated soil was broadcasted informally in to the furrows. Seeds were placed in the furrows and were later covered with soil.

3. FOLIAR SPRAY

Foliar spray was given by hand sprayer till the leaves became thoroughly wet. This treatment was given 30 days after sowing. This spray was repeated after 15 days of interval till February.

Detail of Treatments:

- 1- T₁- soil application @ 3 Kg/ha+FYM
- 2- T₂- Seed application @ 200 g/500 tubers+FYM
- 3- T₃- Foliar application @ 2.5kg/ha+FYM
- 4- T₀- control

Observation recorded for the calculation of Disease intensity.

$$D.I. = \frac{\text{Sum of diseases rating} \times 100}{\text{Total number of leaves} \times \text{max grading}}$$

RESULTS

Effect of Neem product (Neem shield) with FYM on early blight & late blight disease intensity (%) at different days after sowing

Treatment	Disease intensity early blight (%)		Disease intensity late blight (%)	
	60 DAS	90 DAS	60 DAS	90 DAS
T ₀ Control	20.48	26.48	7.46	16.84
T ₁ Soil NS+FYM	17.33	21.05	2.35	10.62
T ₂ Seed NS+FYM	18.56	24.88	5.26	11.26
T ₃ Foilar NS+FYM	12.90	21.07	1.29	9.52

NS - Neem product (*Neem shield*); FYM - Farm yard manure; DAS – Days after sowing

DISCUSSION

Effect of Neem product (Neem shield) on disease intensity of early and late blight of potato:

Significant reduction of the disease intensity of early blight of potato was found in treatment T₁ (soil NS+ FYM) and late blight of potato was found in treatment T₃ (foiler NS+ FYM) as compared to other treatment and all treatments showed significant reduction as compared to control.

Result has been observed by Mirza et al (2000) tested four Neem products namely crude Neem seed oil, nimbokil, crude neem seed oil terpenoid extract and neem leaf decoction against *phytophthora. infestans* causing late blight disease of potato the result show that neem products have potential for the management of potato late blight.

Babu et al (2000) tested several plant extracts from various plants species were tested for their fungitoxic effects on the mycelial growth and spore germination of *Alternaria solani* the causal agent of tomato leaf blight disease. Result showed that neem was also effective against *Alternaria solani*.

From the above discussion we can say that among biocontrol agents when applied in combination with FYM, reduced the disease intensity of early and Late blight of disease.

CONCLUSION

From all the above results we can conclude that biocontrol agent when applied in combination with FYM reduced the disease intensity of early and late blight disease of potato.

REFERENCES

1. Babu, S.; Seetharaman, K.; Nandakumar, R. and Johnson, I. 2000. Effect of selected plant extracts/ oils against tomato leaf blight. *International Journal of Tropical Agriculture*. 18(2): 153-157
2. Babu, S.; Seetharaman, K.; Nandakumar, R. and Johnson, I. 2000. Fungitoxic properties of some plant extracts against *Alternaria solani*, the tomato leaf blight pathogen, *Journal of Ecotoxicology and Environmental Monitoring*. 10(2):157-159.
3. Mirza, J.I.; Hameed, S.; Ahmed, I.; Ayub, N. and Strang, R.H.C. 2000. In vitro antifungal activity of neem product against *Phytophthora infestans*. *Pakistan Journal of biological Sciences*. 3(5): 824-828