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STUDIES ON RHIZOSPHERE MYCOFLORA OF THE MAIZE CROP AFTER WEED MANURE TREATMENTS.

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ABSTRACT
The crop cultivated on weed manures and compost in study area from last ten years had shown a unique feature that is decaying root system and death of the plants cultivated in control plots. This was continuously observed in all four replicates of the control plots while other plants cultivated on different weed manures were healthy. That means the other plants they are getting some thing, which kept them healthy, but the control plots are suffering from some of the deficiency, which is the cause of the slow death of the crops in control plants. This observation compelled us to see the soil microflora which might be responsible for the healthy growth of the treatment crop and damping of the crop on the control plots.The promising effect of manure treatments on population microbial flora on rhizosphere maize crop.

KEY WORDS: Key words: Cultivation, Maize crop, manure treatment, Rhizosphere

INTRODUCTION

Soil harbours numerous microorganisms as protozoa, fungi, bacteria, algae and nematodes. Organic manures considerably alter the number of individuals or the population of microorganisms or the microbial community. Studies were undertaken to evaluate the impact of application of organic and inorganic nutrient sources on the soil microbial population under Sorghum wheat cropping sequence in Maharashtra (India). After two cycles the soil microbial properties were significantly influenced due to various combinations of manurial treatments. The population of bacteria, fungi and actinomycetes decreased in higher proportion in control. However highest population of microbes was observed in treatment receiving 50:50 inorganic + organic combinations. Fertilizer application alone showed relatively less increase in population of microbes. Introduction of organic manure in combination with fertilizers helped to increase bacteria, fungi, actinomycetes, and total microbes after two cycles in Sorghum wheat cropping sequence (Timonin, 1940; Malwar et al., 1999).

Decomposition of organic matter primarily forms a part of the feeding and growth processes of these microscopic plants and animals, sugar and fatty substances (lipids) and lastly lignin or woody substances. When organic matter becomes chemically and biologically inert, the soil becomes infertile. However, not all the soil organisms are beneficial. There are certain bacteria which under anaerobic conditions of water logged soils cause denitrification, releasing free nitrogen which gets lost into the air. In this investigation attempts have been made to see the effect of manure treatments on the population of microbial flora on the rhizosphere of maize crop.

MATERIALS AND METHODS

Soil suspension : 1 %
Medium : Rose Bengal.
Method : Spread plate

For present study, observed the crop cultivated on weed manures and compost in our botanical garden, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad from January-2002 to January 2012.

The rhizosphere mycoflora was studied by soil dilution and plate count technique of Timonin (1940). 1 gm. soil sample of each treatment dissolved in 100 ml distilled water. In sterilized petriplates molten rose Bengal agar was poured and kept for few minutes for solidification. One ml of soil suspension was spread over the medium in petriplates with the help of spreader. These plates were incubated at 27oC for 96 hours (4 days). Results were recorded after the desired incubation.

RESULTS AND DISCUSSION

On the rhizosphere (around the root surface) nine species of fungi were recorded as in Table 1. They were *Rhizoctonia bataticol*a DC. Ex Fries, *Rhizoctonia solani* DC. Ex Fries, *Fusarium oxysporium* Link., *Trichoderma viride* Pers. Ex. r, *Aspergillus niger* Link., *Chaetomium globosum* Kunz AxFr., *Penicllium notatum* Link, *Cephalosporium acremonium* Corda and *Cladosporium herbarum* Link. Some species are pathogenic in nature (*R. bataticola, R. solani and F. oxysporium*) and some are saprophytic in nature (*Trichoderma viride, A. niger, Chaetomium, Penicillium,*

Cephalosporium, Cladosporium'). When rhizospehre mycoflora was observed before one month of sowing of maize plant, the pathogenic fungi were more frequent in the soil than saprophytic fungi.

Both *Rhizoctonia* species were mostly found as in Table 2. Quantitatively number of colonies of pathogenic fungi was more in the control than that of urea, *Achyranthes* followed by *Cassia*, *Crotolaria* and *Tephrosia* treatment.

Table 1. Effect of green manure on Rhizosphere mycoflora before one month of sowing of maize plant.

Sr. No	**Treatments**	**Pathogens**	**Saprophytes**							
		Rhizoctonia bataticola	*Rhizoctonia solani*	*Fusarium oxysporium*	*Trichoderma viride*	*A. niger*	*Chaeto-mium sp.*	*Penicillium sp.*	*Cephalosporium sp.*	*Cladosporium sp.*
1.	*Crotolaria*	11	13	14	8	9	4	2	4	3
2	*Cassia*	14	16	12	5	4	2	1	1	1
3	*Tephrosia*	10	9	13	7	10	6	3	2	2
4	*Achyranthes*	16	12	15	8	10	2	-	3	1
5	Urea	20	23	18	6	5	7	2	1	1
6	Control	25	24	21	10	6	7	-	2	1

Table 2. Effect of green manure on Rhizosphere mycoflora after three months of sowing of maize plant.

Sr. No	**Treatments**	**Pathogens**	**Saprophytes**							
		Rhizoctonia bataticola	*Rhizoctonia solani*	*Fusarium oxysporium*	*Tr/c/zo oferwa V7'/7(fe*	*A. niger*	*Chaeto-mium sp.*	*Penicillium SP.*	*Cephalo-sporium sp.*	*Clado sporium sp.*
1.	*Crotolaria*	8	5	7	10	9	7	4	5	6
2	*Cassia*	7	10	6	13	11	6	-	3	3
3	*Tephrosia*	5	4	8^	15	12	8	2	3	4
4	*Achyranthes*	9	7	8	12	14	6	3	4	3
5	Urea	18	15	12	8	7	3	-	2.	1
6	Control	20	23	17	9	7	5	2	.-	-

When pathogenic fungi were more frequent at the same time the rhizosphere has less number of saprophytic fungi species. Saprophytic fungi were more frequent while pathogenic fungi were less in quantity. One month before sowing of maize plant Trichoderma was highest in control followed by Crotolaria and Achyranthes reatments and other saprophytes. *A. niger* was mostly found in Tephrosia and Achyranthes treatment. Chaetomium was more frequent in control and urea treatments. Penicillium was highest in Tephrosia treatment and absent in control and Achyranthes. Cladosporium was mostly found in Crotolaria followed by Tephrosia treatment then in Cassia and Achyranthes.

The analysis of soil samples from all the treated as well as control plots for the mycoflora of the rhizosphere three months after the sowing of maize plants showed that saprophytic fungi were more frequent than pathogenic fungi due to the effect of green manure.

REFERENCES

Malewar G.U. Hasnabade A.R. and Ismail S. (1999). *J. Maharastra Agri. Univ.* **24**(2): 121-124.
Timonin M.I. (1940). *Canad . J. Res.* **18**: 307-317.