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Response of Silica Enriched Nutrient Management on Pest Infestation and Disease Incidence of Okra

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ABSTRACT

An investigation conducted at open field of Horticulture farm, Department of Horticulture, Rajasthan College of Agriculture, MPUAT, Udaipur during two consecutive seasons of 2019 and 2020. The factorial experiment was laid out in split plot design with three replications, assigning Seven levels of silica enriched nutrient management (Control, 25 tonnes FYM/ha + Silica Diatomaceous 2%, RDF + Silica diatomaceous 2%, RDF + 25 tonnes FYM/ha + Silica diatomaceous 2%, RDF + 25 tonnes FYM/ha + Silica diatomaceous 4%, RDF + 25 tonnes FYM/ha + Silica diatomaceous 6% and RDF + 25 tonnes FYM/ha + Silica diatomaceous 8%) and four levels of spray scheduling (Three weeks after sowing, Five weeks after sowing, Seven weeks after sowing and Nine weeks after sowing). The whole field was divided into three blocks each representing a replication and each replication consists of 28 treatments combination. The results showed that silica enriched nutrient management levels non-significantly improved insect pest and disease incidence percentage of okra crop during both the years of investigation. The maximum growth attributes was recorded with RDF + 25 t FYM/ha + silica diatomaceous 8% (F_7) being at par with RDF + 25 t FYM/ha + silica diatomaceous 6% (F_6) and RDF + 25 t FYM/ha + silica diatomaceous 4% (F_5) during first and second year of investigation. Spray scheduling also significantly enhanced growth, yield attributes and yield of okra crop and recorded maximum values with S_1(three weeks after sowing) being at par with S_2(five weeks after sowing) during both the years of The investigation.

Key words : *Silica, Nutrient Management, Okra*

Introduction

Vegetables provide all the nutrient components like carbohydrate, protein, fat, vitamins, minerals and water along with roughages in good quantities which are the essential constituents of a balanced diet. Calorific value of the vegetables is not much in comparison to the cereals and animal products. Vegetables abounding in vitamins and minerals are rightly called as protective foods. Raw vegetables are particularly useful because of many vitamins are water soluble such as vitamin C and compounds of vitamin B complex are not stable at cooking temperatures. Mineral complexes of the products of animal origin create on excess of acid inside the body, which disrupts protective mechanisms and metabolic processes. Vegetables neutralize these substances and provide alkaline medium to neutralize reactions for normal metabolism. Consumption of sufficient quantities of vegetables very much reduces the possibility of cancerous growth in the intestine and colon.

In India, vegetables are grown over an area of 10316 thousand hectares with production of 189.46 million tonnes (Anonymous, 2019-20). Among the vegetables, okra (*Abelmoschus esculents* (L.) Moench)

is an important vegetable crop of India. It is the most popular vegetable around the world in respect of area, production and availability.

Okra or lady's finger (*Abelmoschus esculentus* L. Moench), commonly known as bhendi and belongs to the family *Malvaceae*, is a warm season fruit vegetable grown in the tropical and subtropical countries of the world. In India, it is grown over an area of 534 thousand hectare with an annual production of 6371 thousand metric tonnes and least in productivity of 11.93 tonnes per hectare. It shares about 6.1 percent of area and 4.2 percent of total vegetable production under vegetable crops in our country (Anonymous, 2019-20). In Rajasthan, it is grown over an area of 173.70 thousand hectare with production of 1877 thousand tonnes and productivity of 10805 kg per hectare. (Anonymous 2019-20).

Materials and Methods

Considering the nature of factors under study and the convenience of agricultural operations, factorial experiment was laid out in split plot design with three replications, assigning Seven levels of silica enriched nutrient management (Control, 25 tonnes FYM/ha + Silica Diatomaceous 2%, RDF + Silica diatomaceous 2%, RDF + 25 tonnes FYM/ha + Silica diatomaceous 2%, RDF + 25 tonnes FYM/ha + Silica diatomaceous 4%, RDF + 25 tonnes FYM/ha + Silica diatomaceous 6% and RDF + 25 tonnes FYM/ha + Silica diatomaceous 8%) and four levels of spray scheduling (Three weeks after sowing, Five weeks after sowing, Seven weeks after sowing and Nine weeks after sowing). The whole field was divided into three blocks each representing a replication and each replication consists of 28 treatments combination. All the treatment combinations were allotted to each replication randomly by following the principles of randomization and the whole set-up was repeated during the 2nd year to confirm the results.

Results and Discussion

Pest infestation and diseases incidence

Pest infestation (%)

Silica enriched nutrient management: A critical examination of data (Table 1) showed that silica enriched nutrient management practices did not cause significant improvement on pest infestationof okra during both the years of experimentation and in pooled analysis.

Spray scheduling: Further data (Table 1) showed that spay scheduling found non-significant in respect to pest infestation in okra crop during both the year of study and in pooled analysis.

Table 1. Effect of silica enriched nutrient management and spray schedule on insect population (%) and disease incidence (%) of okra

Treatment	Insect population (%)			Disease incidence (%)		
	2019	2020	Pooled	2019	2020	Pooled
Silica enriched nutrient management						
F_1	12.80	12.84	12.82	32.84	35.79	34.31
F_2	11.98	13.06	12.52	31.88	34.75	33.32
F_3	11.78	12.66	12.22	30.81	32.96	31.89
F_4	10.90	11.49	11.20	27.63	29.34	28.48
F_5	10.61	11.58	11.10	24.30	25.51	24.90
F_6	9.97	11.16	10.57	21.25	21.89	21.57
F_7	9.61	10.66	10.13	19.14	19.33	19.24
SE m±	0.68	0.85	0.87	3.13	3.78	2.91
CD (P=0.05)	NS	NS	NS	NS	NS	NS
Spray Scheduling						
S_1	10.73	10.97	10.85	23.44	24.93	24.19
S_2	10.50	11.46	10.98	25.86	27.49	26.68
S_3	11.42	12.46	11.94	27.92	29.66	28.79
S_4	11.73	12.81	12.27	30.11	31.96	31.03
SE m±	0.40	0.52	0.42	1.73	1.79	1.40
CD (P=0.05)	NS	NS	NS	NS	NS	NS
F x S	NS	NS	NS	NS	NS	NS

Interaction effect of Silica enriched nutrient management x Spray scheduling: The interaction effects between silica enriched nutrient management and spay scheduling was found non-significant during both the year of investigation and in pooled analysis.

Disease incidence (%)

Silica enriched nutrient management: A critical examination of data (Table 1) showed that silica enriched nutrient management practices was found non-significant in terms of disease incidence in okra crop during both the years of experimentation and in pooled analysis.

Spray scheduling: Further data (Table 1) showed that spay scheduling found non-significant in respect to disease incidence (%) in okra crop during both the year of study and in pooled analysis.

Interaction effect of Silica enriched nutrient management x Spray scheduling: The interaction effects between silica enriched nutrient management and spay scheduling was found non-significant during both the year of investigation and in pooled analysis.

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