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Review Of Research

"EFFECT OF NON LEGUMINOUS WEED MANURES ON MORPHO-PHYSILOGICAL CHANGES OF GREEN LEAFY FODDER MAIZE CROP"

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Field Photo of crop: Zea mays L.

ABSTRACT

All over the world green leafy fodder corn use feed for cattle, Goats, Ships and other domestic herbivores, there is a need to create large amount of different types of organic food using different weeds everywhere to increase growth of green leafy fodder maize crop.

The experimental design was a randomized block design [RBD] with ten treatments and three replications. For Green, Dry and Compost manuring the weeds selected were Achyranthes and Parthenium. it was applied to the plots with size 3 x 3 meters in a random block design having three replicates along with the control.

The morph-physiological traits of the crop were noted at 102 DAS as 4th upper leaf area per plant and harvesting after 104 DAS respective plots Fresh wt. of fodder maize crop vegetation was determined. The chemical analyses were done by adopting standard analytical methods. Estimation of the total leaf chlorophyll, leaf chlorophyll 'a' and 'b' was done at the age of 103 days.

On the basis of result obtained, it can be concluded that all the results of weed manure treatments were statistically significant over control i.e. Comparatively saw highest in Parthenium green manure followed by Parthenium compost manure then Achyranthes compost manure then Parthenium and Achyranthes green manure.

KEYWORDS: *Weeds, total leaf chlorophyll, leaf chlorophyll 'a' and 'b', and Fodder Maize.*

INTRODUCTION

Organic matter plays a vital role in the productivity and conditioning of soil. It serves as a source of food for soil bacteria and fungi which are responsible for converting complex organic materials into simple substances readily used by plants. Un-decomposed organic matter opens out heavy clay soils and improves their physical properties, such as aeration and percolation.

Organic manure can be applied to all crops and all types of soil but the rates of application will vary according to the soil, crop and climate, local availability and also the quality of manure. The rate of application of organic manure will depend upon soil texture, slope and depth to water table. The addition of organic manure to sandy soils will increase the availability of moisture to the plant and thus reduce the number of irrigations necessary.

In heavy textured clay soils, the addition of organic manures will increase permeability to water and air and increase water infiltration, thereby reducing surface run-off. One of the greatest benefits from the use of organic manure is to reduce the water requirement for plant growth. In rain-fed and irrigated areas, this may help water conservation and thus need less irrigation.

Green manures add organic matter to the soil, which improves its water holding capacity, nutrient content, nutrient balance, friability and pH. The nitrogen and organic matter are added to the soil with no transportation costs. Green manures add nitrogen to the soil. ***Lupinus mutabilis*** is capable of fixing 400 kg N ha-1while mucuna (***Mucuna pruriens***) adds about 150 kg N ha-1 (Bunch, 1995).

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The effects of manures, compost production mechanized with utilization of a piles aerator. The cattle farmyard manure composted 3 aerations produce a high quality compost after six weeks (Dach and Zbytek, 2000). Vesicular arbuscular mycorrhizal (VAM) infection enhances the uptake of nutrients (especially phosphorus) by crops (Osinubi *et al*., 1992; Atayese and Laisu, 2001).

However based upon the potential use of compost as reported by (Slivka *et. al.*, 1992), prices may increase as growers learn to use the product. (Shelton James E.1995)

MATERIALS AND METHODS:

Experimental Design: The experimental design was a randomized block design [RBD] with ten treatments and three replications.

Treatments, Composting Process and Plot Size: The weeds selected were *Achyranthes* and *Parthenium* along with Green, Dry and compost manure was incorporated in the randomize selected respective plots after analysis each weed plant before using as nutritive Biofertilizers applied to the plots with size 3 x 3 meters in a random block design having three replicates along with the control.

The maize seeds sowing of the variety 'African Tall' produced by National Seed Corporation Ltd., Beej Bhavan, Pusa Complex, New Delhi were sown at the rate of 75 kg/ha on 27 September with row to row distance 22.5 cm to keep the population uniform, in all the plots along with the control. Duplicate samples from each weed manure dried in oven at 105°C till it gives constant weight for the determination of the Dry matter percentage of the green manure, dry plant manure and compost manure. The dried samples were converted into fine powder in the laboratory and it was used for further analysis.

Plant Sampling: After 104 days i.e. on 09, January the crop was harvested early in the morning and the fresh yield of the aerial part of the crop was noted and calculated as kg/ha. 3kg sample of fresh vegetation was pulped (Davys and Pirie, 1969). From it 100gm of pulp was dried in oven at 90°C till it gives constant weight for the determination of dry matter (DM). Dried sample was converted in to fine powder and used for further laboratory analysis. Yield of fresh green fodder and dry matter (kg/ha) was calculated considering the yield of green fodder per plot and its dry matter content.

ANALYSES :Growth Analyses - The morph-physiological traits of the crop were noted at 102 DAS as 4th upper leaf area per plant and harvesting after 104 DAS respective plots Fresh wt. of fodder maize crop vegetation was determined by gravimetric method [Shahane and Mungikar, 1984; Mungikar, 1986].

Chemical Analyses - The chemical analyses were done by adopting standard analytical methods. Estimation of the total leaf chlorophyll, leaf chlorophyll 'a' and 'b' was done at the age of 103 days after the first and second dose were estimated following Yoshida *et al*.,[1976], using 80 % acetone as a solvent for extraction of pigments. The dried samples were taken for analyses.

Statistical Analyses - All the results were statistically analyzed by the analysis of method of variance [ANOVA] test and treatments means were compared using the least significant difference [CD,P_0.05] which allowed determination of significance between different applications [Mungikar, 1997].

Sr. No.	Field Activities	Date	Period [DAS]
01	Weed Collection: *Achyranthes, Parthenium*	01 AUG.	00 DAS
02	Preparation of Dry Manure	15 AUG.	15 DAS
03	Preparation of Compost Manure	30 AUG.	30 DAS
04	Treatments given to R. B. D. plots	01 SEP.	32 DAS
05	Sowing of Crop Maize.	27 SEP.	58 DAS
06	Basal Dose of PK	27 SEP.	**[00 DAS]**
07	Growth Analyses of Crop - I	07 JAN.	102 DAS
08	Chlorophyll Analyses of Crop - I	08 JAN.	103 DAS
09	Harvesting of Crop	09 JAN.	104 DAS
10	Chemical Analyses	24 JAN.	119 DAS

Table: I :- Estimation of Chl. 'a', Chl. 'b',Total Chl. & Leaf Area of Maize Vegetation. [103 DAS].

Treatments	(Mg/gm)			total chl. X 100	(cm^2)
	Chl.a	Chl.b	Total Chl.		Leaf Area
1} P.&A.GM.	1.26	0.78	2.03	203.35	928.74
2} PK	1.08	0.70	1.78	177.86	945.72
3} A.GM.	1.45	0.82	2.27	226.82	974.46
4} NPK	1.31	0.83	2.14	214.10	794.19
5} A.DM..	1.35	0.76	2.11	211.05	883.02
6} P.GM.	1.24	0.77	2.00	200.33	1080.26
7} A.Co.	1.24	0.78	2.03	202.68	930.04
8} P.Co.	1.12	0.74	1.86	185.58	997.97
9} P.DM.	1.43	0.75	2.18	218.08	603.48
10} CON.	0.92	0.50	1.42	142.26	714.51
S.E. =	0.20	0.11	0.30	30.34	
C.D. =	0.41	0.24	0.64	63.71	

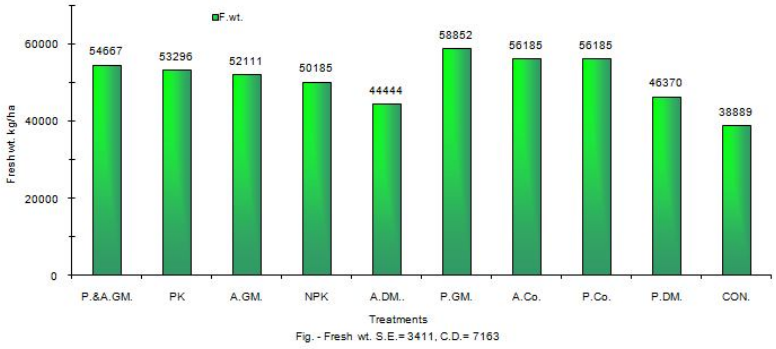

Fig. - Fresh wt. S.E.= 3411, C.D.= 7163

RESULTS AND DISCUSSION:

Analyses of Chlorophyll Contents [Table I]:- shows the estimation of leaf area and chlorophyll a, b, and total chlorophyll of the maize plant of each treatment plots along with the control after 103 DAS. Table II. Shows the plant highest leaf area in the treatments *Parthenium* green manure i.e. 1080.26 cm^2 followed in order by *Parthenium* compost manure i.e. 997.97 cm^2, *Achyranthes* green manure i.e. 974.46cm^2, PK i.e. 945.72cm^2, *Achyranthes* compost manure i.e. 930.04 cm^2, lowest leaf area in the treatments *Parthenium* dry manure i.e. 603.48cm^2, Control i.e. 714.51cm^2, 794.19 cm^2 and 883.02 cm^2 in NPK and *Achyranthes* dry manure plots respectively.

The Estimation of chlorophyll a, chlorophyll b and total chlorophyll from 4th leaf from the top shows total chlorophyll highest in the plots *Achyranthes* green manure i.e. 2.2682 mg/gm followed in order by

Parthenium dry manure i.e. 2.18 mg/gm, NPK i.e. 2.14 mg/gm, *Achyranthes* dry manure i.e. 2.11 mg/gm, *Parthenium* & *Achyranthes* Green Manure treatments and *Achyranthes* compost manure i.e. 2.03 mg/gm while lowest shows in control treatment i.e.1.42mg/gm then in PK i.e. 1.78mg/gm.

On the basis of result obtained of Estimation of Chl. 'a', Chl. 'b',Total Chl. & Leaf Area of Maize Vegetation. [103 DAS]. & maize crop of fresh wt. kg/ha, it can be confirm that all the results were statistically significant over control i.e. *Parthenium* compost manure, *Achyranthes* compost manure, *Parthenium* green manure and *Achyranthes* green manure.

Fresh Wt. [Fig. Fresh wt. kg/ha]:- shows the non leguminous weeds used as Biofertilizers on maize crop of fresh wt. kg/ha highest in *Parthenium* green manure 58852 kg/ha followed by *Achyranthes* compost manure & *Parthenium* compost manure 56185 kg/ha, and the lowest value recorded in the plots of *Achyranthes* dry manure 44444 kg/ha followed in order by *Parthenium* dry manure 46370 kg/ha, NPK 50185 kg/ha.

CONCLUSION:

On the basis of result obtained, it can be concluded that all the results reported in tables and graphs are the means of three replicates in which near about all weed manure Biofertilizers treatment were statistically significant over control, i.e. Comparatively see highest in Parthenium green manure followed by Parthenium compost manure then Achyranthes compost manure then Parthenium and Achyranthes green manure.

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