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## RESEARCH ARTICLE

### EFFECT OF DIFFERENT CONCENTRATION OF VERMIWASH AND COWDUNG WASH ON GROWTH AND YIELD OF DIFFERENT SWEET CORN VARIETIES.

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#### ABSTRACT

The present investigation entitled Effect of different concentration of vermiwash and cowdung wash on growth and yield of different sweet corn varieties was carried out during the *rabi* season 2021 on the field of ASPEE, Agricultural Research and Development Foundation, TansaFarm, At- Nare, Taluka- Wada, Dist- Palghar, Maharashtra, India. The experiment was laid out in Randomized Block Design (RBD). The three treatments of different organic formulation (Control, vermiwash @ 10% and cowdungwash @ 10%) along with three sweetcorn varieties (Bioseed 4043, Sakata-16 and Royal madhu) were replicated three times. The plant height (cm), number of leaves per plant and total dry matter per plant at harvest were found maximum with the application of vermiwash @ 10% in sweet corn variety Sakata-16. The highest number of cobs/ plant, length of cob (cm), weight of cob without husk (gm), cob yield and green fodder yield (q/ha) were found with the application of vermiwash @ 10% in sweet corn variety Sakata-16. While, the lowest plant height (cm), number of leaves per plant, total dry matter per plant at harvest, number of cobs/ plant, length of cob (cm), weight of cob without husk (gm), cob yield and green fodder yield (q/ha) was found in the control treatment with sweet corn variety Bioseed 4043. The data clearly indicated that the yield obtained with treatment T5 (vermiwash @ 10%+ Sakata-16) was significantly higher than all other treatments, and also for growth parameters.

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## INTRODUCTION

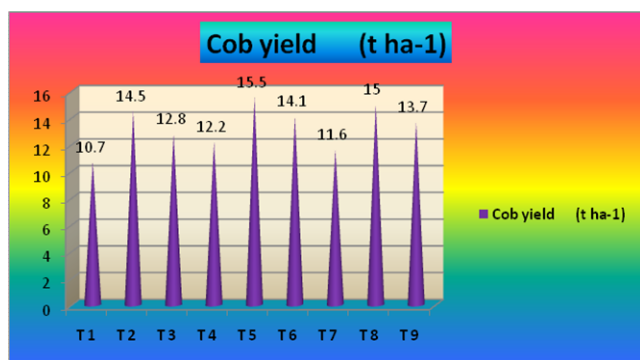
Sweet corn (*Zea mays L.*) considered as queen of cereals, is the world's third most important crop after wheat and rice. It occupies an important position among different types of specialty corn due to its diversified consumption. Sweet corn is usually eaten at stage of green cob in boiled, steamed or roasted form and consumed with wide variety of vegetable mixtures, soups and canning products. Sweet corn is gaining popularity both in rural and urban areas of our country because of high sugar content. Sweet corn is a heavy feeder, which requires adequate quantity of nitrogen, phosphorus and potassium for growth and development. Nutrient requirement of sweet corn varies depending on inherent soil fertility status, cropping season, variety used and management practices. Besides other factors, the productivity of sweet corn is very much influenced by soil fertility status and quantity of applied nutrient. Similarly, the date of harvest has a deciding effect on quality and quantity of sweet corn production. Therefore, it is necessary to find out suitable fertility level and appropriate date of harvest to maximize production of good quality sweet corn. It is well known that addition of organic manures has shown considerable increase in crop yield, quality and exerts significant influence on physical, chemical and biological properties of soil. Use of organic manures not only improve soil health but also help to sustain crop productivity for Indian conditions.

The organic farming is an ecofriendly and best way to attain sustainability in agriculture. The present investigation was therefore, undertaken to find the effect of different organic inputs on growth; yield attributes and yield in sweet corn.

## MATERIALS AND METHODS

The experiment was conducted at ASPEE, Agricultural Research and Development Foundation Farm, Village- Nare, Taluka- Wada, District, Palghar in the *rabi* season during 2021 in Randomized Block Design (RBD) with three replications (r=3) (Panse and Sukhatme, 1967). The experimental site was located at 19.650 N latitudes and 73.130 E longitudes with an average annual rainfall of 3600 mm. The three treatments of different organic formulation (Control, vermiwash @ 10% and cowdungwash @ 10%) along with three sweetcorn varieties (Bioseed 4043, Sakata-16 and Royal madhu) were replicated threetimes. Nine treatment combination comprising three levels of organic formulation and three sweetcorn varieties such as T1 - Bioseed 4043+Control, T2-Bioseed 4043+ vermiwash @ 10%, T3-Bioseed 4043+ cowdungwash @ 10%, T4- Sakata-16+ Control, T5-Sakata-16+ vermiwash @ 10%, T6- Sakata-16+cowdungwash @ 10%, T7- Royal madhu + Control , T8- Royal madhu+ vermiwash @ 10%, T9- Royal madhu+ cowdungwash @ 10% were tested in

Treatment	Plant height (cm)	No. of leaves	Total Dry matter plant-1 at harvest (g plant-1)	No. of cobs plant-1	Length of cob (cm)	Wt. of cob without husk (g plant-1)	Cob yield (t ha-1)	Green fodder yield (t ha-1)
T1	120.3	8.8	117.2	0.8	13.8	120.6	10.7	19.3
T2	150.2	11.5	136.4	1.5	18	154.2	14.5	26.9
T3	140.9	10.1	126	1.2	16.9	144.3	12.8	23
T4	137.9	9.9	123.4	1.1	16.4	140.8	12.2	21.8
T5	158.6	12.7	140.8	1.8	19.3	168.9	15.5	28.5
T6	147.2	10.9	133.1	1.4	17.6	153	14.1	25.4
T7	136	9.6	119.7	1	15.5	134.3	11.6	20.9
T8	154.7	12	138.4	1.6	18.5	161.1	15	27.8
T9	144.8	10.5	129.2	1.3	17.1	150.8	13.7	23.7
S.Em.±	0.17	0.08	0.13	0.07	0.05	1.04	0.08	0.11
CD	0.51	0.23	0.38	0.22	0.16	3.13	0.24	0.33



sweetcorn. Treatments were applied twice by spraying over a standing crop. The first spray was applied at 30 days after sowing, while the second spray was applied 45 days after sowing in field. The positive effects of vermin wash on sweetcorn cv.Sakata-16 on growth and production, manifested when it was specifically supplied during the reproductive growth stage rather than vegetative and ripening stages, which exerted a feed-forward effect on photosynthesis coupled with an increased in both stomatalconductances.

## RESULTS AND DISCUSSION

The organic formulations are supplied to plants through foliar application. The results obtained from the present investigation have been discussed below:

**Growth attributes:** Application of organic formulations significantly influenced the different growth attributes of sweet corn. The perusal of data presented Table 1 revealed that the application of vermiwash@10% recorded significantly higher values for the growth attributes of sweet corn var. Sakata-16 viz., plant height at harvest, number of functional leaves per plant at 56 days after sowing and total dry matter per plant at harvest of sweet corn. Mean values for the growth attributes of sweet corn viz., plant height at harvest, number of functional leaves per plant at 56 days after sowing and total dry matter per plant at harvest of sweet corn was significantly lowest under the treatment of absolute control with variety bioseed 4043 (Table 1). The similar increase in growth attributes per plant was reported by Pattanashetty *et al.* (2002) indicating the enhanced plant vigour in terms of plant height and leaf number per plant due to higher level of organic inputs which were found to be useful in increasing photosynthetic activities and there by accumulation of more carbohydrates and higher dry matter with higher levels of organic inputs.

**Yield attributes:** Application of vermiwash @ 10% in sweetcorn cv. Sakata-16 (apply on 30 and 45 DAS) recorded significantly higher number of cobs per plant and mean length of cob than rest of the treatment of organic inputs.

Number of cobs per plant and mean length of cob was found minimum in absolute control treatment with variety Bioseed 4043. The weight of cob without husk was found significantly higher with the application of vermiwash @ 10% (apply on 30 and 45 DAS) in sweetcorn cv. Sakata-16 as compared to rest of treatments. Significantly lowest weight of cob without husk was reported with the absolute control treatment with variety Bioseed 4043.

**Yield and quality:** The green cob yield of sweet corn was significantly higher with the application of vermiwash @ 10% in sweetcorn cv. Sakata-16 than rest of the treatments of organic inputs used alone or in combination with each other. Significantly lowest green cob yield was registered with the absolute control treatment with variety Bioseed 4043. More *et al.*, (2013), recorded the similar results and reported that use of vermiwash with levels alone or in combination increased the cob yield due to the beneficial plant growth hormones such as gibberlins and cytokinin. Application of vermiwash @ 10% in sweetcorn cv. Sakata-16 (apply on 30 and 45 DAS) recorded significantly higher green fodder yield compared to rest of the treatments of organic inputs. Significantly lowest green fodder yield was reported with the treatment of absolute control with variety Bioseed 4043. Similar results were reported by More *et al.*, (2013).

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