



ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(1): 408-409
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www.thepharmajournal.com

Received: 04-11-2021
Accepted: 06-12-2021

Rahul Dev Behera

SMS (Soil Sc. & Ag. Chem.) Cum
Co-PI Biotech Kissan Project,
KVK, OUAT, BBSR,
Bhubaneswar, Odisha India

Prarthana Mohanty

Farm Manager, KVK, Bargarh,
Odisha, OUAT, BBSR,
Bhubaneswar, Odisha India

Pratichhe Mohapatra

Young Professional, Biotech-
Kissan Project, KVK, OUAT,
BBSR, Bhubaneswar, Odisha
India

Sandeepa Nayak

Associate Professor Cum PI
Biotech Kissan Project, College of
Agriculture, Bhawanipatna,
Odisha, OUAT, BBSR,
Bhubaneswar, Odisha India

Sarthak Pattanayak

SMS(Agronomy) Cum Co-PI
Biotech Kissan Project, KVK,
OUAT, BBSR, Bhubaneswar,
Odisha India

Jayaprakash Narayan Nayak

Young Professional, Biotech-
Kissan Project, KVK, OUAT,
BBSR, Bhubaneswar, Odisha
India

Anindita Roy

Assistant Professor,
(Horticulture), Centurion
University of Technology and
Management, Odisha,
Bhubaneswar, Odisha India

Corresponding Author

Rahul Dev Behera

SMS (Soil Sc. & Ag. Chem.) Cum
Co-PI Biotech Kissan Project,
KVK, OUAT, BBSR,
Bhubaneswar, Odisha India

Scientific package of practices on sweetcorn cultivation

Rahul Dev Behera, Prarthana Mohanty, Pratichhe Mohapatra, Sandeepa Nayak, Sarthak Pattanayak, Jayaprakash Narayan Nayak and Anindita Roy

Abstract

A field experiment was conducted at village Kuhimunda, Bhoipali and Brahmanidunguri of Bolangir district to study the “scientific package of practices on sweetcorn cultivation” in western central table land zone of Odisha during rabi 2020-21 under Biotech-Kissan Project of OUAT, Bhubaneswar. The sweetcorn variety Misthi taken as recommended practice (RP) under demonstration programme. This variety was compared with farmers practice (FP) as local grain maize. The recommended practice Misthi produced significantly higher grain cob yield (121 q/ha) compared with local maize (98 q/ha). The recommended practice was 23% increase in yield over farmers’ practice. The misthi given higher Economic net return of Rs. 1,69,100/- compared to maize Rs. 58260/- with B:C ratio from 2.8 (FP) to 2.0. (RP). The diameter and length of cob was highest in RP (13.9 cm, 16 cm) compared to FP (10.2 cm, 12 cm).

Keywords: scientific package, sweetcorn cultivation, Biotech-Kissan

Introduction

Maize is the third most important cereal crop after rice and wheat in the world which cultivated in tropical, sub-tropical and temperate countries of the world. India is the seventh largest producer of maize with 14.06 million tonnes of production from 7.18 million hectares, with a productivity of 1959 kg/ha (Anonymous, 2011) [2]. Among the various specialty corns, sweetcorn is mutant type with one or more recessive alleles in homozygous condition, which enables the endosperm to accumulate twice the sugar content as that of the seed corn (Creech, 1965) [4]. It is a warm- season crop which is adapted to temperate climates through usually affected by weak seed vigor and common poor emergence rates. (Zhao *et al.*, 2007) [8]. Early spring sweetcorn is usually grown in cold soils at sub-optimal temperatures for seed germination (Hassell *et al.* 2003) [5]. Sweetcorn seed germination and early growth has been hampered by soil and air low temperature especially in the shrunken-2 hybrid. Transplanting could improve field crop establishment (Aguyoh *et al.*, 1999) [1] but several factors influence transplant production and performance, such as tray cell size (volume) and age at the time of transplanting (Ne Smith and Doval, 1998) [7]. Experimented evidence regarding the large scale cultivation of sweetcorn in western central table land zone of Odisha is lacking. Keeping the facts in view, a field experiment entitled “Scientific package of practices on sweetcorn cultivation” was conducted for diversification of grain crop to sweetcorn.

Materials and Methods

A field experiment was conducted during rabi 2020-21 at Kuhimunda, Bhoipali and Brahmanidunguri village of Bolangir district, Odisha to study the “Scientific package of practices on sweetcorn cultivation” under Biotech-Kissan Project of OUAT, Bhubaneswar. The experiment was laid out in a randomized block design (RBD) with 13 replications in village Kuhimunda (5), Bhoipali (4), and Brahmanidunguri (4). The variety taken in maize as local (FP) and sweetcorn as Misthi (RP). The soil of the experimental field was sandy loam in texture with pH6.4, 0.34 % organic carbon. The available nitrogen, phosphorus and potassium were 218 kg/ha, 13 kg/ha, 203 kg/ha respectively. The soil test-based fertilizer application conducted at dose 100kg Nitrogen, 50 kg Phosphorus and 40 kg potassium. Fertilizers were applied in three split doses like Basal (0 DAS), 1st top dressing (30 DAS) and 2nd top dressing (45 DAS). For management of stem borer attack plant protection chemicals (Emamectin benzoate) were sprayed. The green cobs were collected after harvest and the data were recorded on various parameters like cob yield, length of cob, diameter of cob and number of

seeds per cob. The economics study was calculated at the end to find out the income generation of the farmers.

Result and Discussion

1. Study of physiological parameters

The highest cob length was seen in RP (16cm) compare to FP (12cm) with 33 percent change over FP. The highest cob diameter was seen in RP (13.9 cm) compare to FP (10.2 cm) with 36 percent change over FP. The highest no. of seeds found in RP (66) compare to FP (22.8) with 47 percent change over FP (Table 1). Similar results found by the Behera, *et al.*, 2018. The sweetcorn significantly increased the cob length, cob diameter and number of seeds per cob over maize.

Table 1: Physiological parameters

Treatments	Cob length (cm)	Cob diameter (cm)	Number of seeds per cob
FP	12	10.2	44.8
RP	16	13.9	66
CD (0.05)	5.3	2.3	8.1
% Change	33	36	47

2. Study of yield parameters

The sweetcorn (RP) gives the higher cob yield i.e 121 q/ha compare to the maize (FP) yield i.e 98 q/ha. The yield was significantly increased by the RP. The sweetcorn cob size and quality were good. Under yield record RP 23 percent increase over FP (Table 2). Similar results found by the Keerthi *et al.*, 2017. The sweetcorn significantly increased the cob yield over maize.

Table 2: Yield parameter

Treatments	Yield (q/ha)
FP	98
RP	121
CD (0.05)	350
% Change	23

3. Study of Economic parameters

During sweetcorn cultivation the cost of seed is very high compared to maize seed. So, the cost of production in RP was Rs. 85000 where as in Maize was Rs. 64500. Similarly the gross return in RP was Rs. 254100 but compare to maize was Rs. 183260 (Table 3). The cultivation of sweetcorn recorded Rs. 169100 net profits compare to the maize Rs. 118760. The B:C ratio was found 2.8 in the FP where as in RP was 2.9 (Table-3).

Table 3: Economic parameters

Treatments	Cost of Cultivation (Rs.)	Gross Return (Rs.)	Net return (Rs.)	B:C ratio
FP	64500	183260	118760	2.8
RP	85000	254100	169100	2.9

Conclusion

From the experiment we conclude that the recommended practice of misthi variety of sweetcorn recorded significantly higher cob length (16cm), cob diameter (13.9cm) and number of seeds/cob (66 nos.) compare to the farmer practice of local maize variety. The Misthi produced significant higher grain cob yield (121q/ha) compared with local maize (98q/ha). The variety has given higher economic net return of Rs. 169100/-

compare to maize Rs. 118760/- with B: C ratio from 2.8 (FP) to 2.9 (RP). This study recommends the growing of sweetcorn variety Misthi for diversification from grain crop and better income generation for the farmers.

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