

Assessment on Grafting Technology in Brinjal to control soil born disease, improve yield and quality of fruits

Background: This study was conducted to examine the effect of grafted seedlings of open field Brinjal (*Solanum Melongena*) family – Solanaceae for controlling the soil borne disease problem and improving yield and quality of Brinjal. Brinjal cultivars, Vishal were grafted on *Solanum Torvum* (ST) rootstocks that are known to be tolerant to soil borne diseases (Phytophthora blight.). In the second treatment Brinjal Cultivar Vishal grafted on wild rootstock (Local- Hampi) & Non-grafted Brinjal was used as controls. Transplanting was done on raised bed.

Introduction & situation Analysis

Brinjal (*Solanum Melongena*) family – Solanaceae, is one of the important vegetable crops commercially grown in Maharashtra also in Pune district. India is the second largest producer of Vegetables in the world, next only to China.

Grafting is the union of two or more pieces of living plant tissues that grow as a single plant. It is usually used to reduce infections by soil-borne pathogens and to enhance tolerance against a biotic stresses such as low and high temperatures, salt, flooding, etc.

Baramati is drought prone area, where the average rainfall received is about 400-450 mm. As there are water scarcity and soil borne diseases problem, sucking pest infestation problems, most of the farmers uses the raised bed with or without mulching paper for plantation, drip irrigation systems to irrigation & Fertilizers application to crops. Although the Production of Brinjal is not better. So for increasing the production and reduction of percentage of soil borne diseases infestation trial was carried out at Village- Kusegaon Tal- Daund Dist.-Pune & 9 other contact farmers nearby Daund & Baramati Tahasils.

Generally farmers was planted Brinjal on raised bed but they do not use grafted seedlings for plantation because of this farmers practice there is attack of soil borne disease observed on crops and requires maximum cost for control of these diseases also crop life cycle was completed as earliest. So for to avoid these problems of farmers this technology was introduced by Krishi Vigyan Kendra, Baramati.

Material & Methods (Plan, Implement and Support from the farmer)

The trial on Grafting Technology in Brinjal to control soil born disease, improve yield and quality of fruits under Open field Cultivation condition was conducted during 2021-2022 & 2022-2023. The trials were conducted in Kharif season under Open field condition at Village-Kusegaon Tal- Daund Dist- Pune. The annual rainfall is 516.3 mm with 31 rainy days. Before this study the farmers planted brinjal without Mulching paper on raised bed but they do not use grafted seedlings for plantation because of this farmers practice there is attack of soil borne disease observed on crops and requires maximum cost for control of these diseases also crop life cycle was completed as earliest. So for to avoid these problems of farmers this study was carried out by Krishi Vigyan Kendra, Baramati. Now in the year 2021-2022 & 2022-2023., Total 10 trials were conducted in two tahasils of Pune districts. Also technical leaflet was developed on training & Pruning techniques on yield & quality of Brinjal under protected Cultivation. Experiment was conducted by Randomized Block Design.

Result & Discussion

Comparisons were made with farmers practice. From the present trial it can be concluded that, Due to Grafting Technology in Brinjal to control soil born disease, improve yield and quality of fruits under Open field Cultivation condition increases the fruit yield, quality of fruits and reduces soil borne diseases problem in Brinjal. Also due to this technology, farmers received maximum market price to crops as compare to farmer practice. The average duration of crop was increased by 45 as compare to other treatments.

It was observed that the yield of capsicum was increased by 9 % as compared to farmers practice with the good quality fruit production. The average yield obtained in trial plot was 48.37 ton/ha as compared to 44.23 tons/ha from farmers practice. The net returns Rs.36,85,340/- per ha and C : B ratio is 1 : 5.7 ratio were also recorded highest in treatment plots as compared to local check net returns Rs.27,02,812/-/- per ha and C : B ratio is 1 : 3.7.

Table No.1 Details of observations recorded in the on farm trial

Title of Trial (OFT)	Treatment Details	Data on the Parameters
1	2	3
Study on Grafting Technology in Brinjal to control soil born disease, improve yield and quality of	T1- Farmers Practice (Check/ Control) Growing of Improved Brinjal Variety- Vishal on raised bed without grafted seedlings	1. Yield Per Hectare - 37.5 Ton 2. % of soil borne diseases - 14.00 % 3. Crop Duration increased by days- Nil- Not increased days 5.Net Returns (Rs /ha)- Rs. 81,000/ - 6.C :B Ratio - 1 : 1.4
	T2-Trial Treatment- Growing of Improved variety of Brinjal- Vishal & Rootstock-ST (Solanum Torvum) on raised bed with grafted seedlings	1. Yield Per Hectare - 47.5 Ton 2. % of soil borne diseases - 1 % 3. Crop Duration increased by days- 55 days 5.Net Returns (Rs /ha)- Rs.2,23,000/ - 6.C :B Ratio - 1: 2.02
	T3-Trial Treatment- Growing of Improved variety of Brinjal- Vishal & Rootstock- Hampi (Wild local Rootstock) on raised bed with grafted seedlings	1. Yield Per Hectare - 41.2 Ton 2. % of soil borne diseases - 7.5 3. Crop Duration increased by days- 30 days 5.Net Returns (Rs /ha)- Rs.97,000 / - 6.C :B Ratio - 1: 1.4

Impact

The effect on Grafting Technology in Brinjal to control soil born disease, improve yield and quality of fruits under Open field Cultivation condition this technology is very useful to

reducing soil borne diseases problem and for improving fruit quality, yield and receiving maximum net returns to the farmers with increasing crop duration also.

By observing the result of this technology now days approx.115 farmers of Brinjal with covering a total area 48.5 ha in four tahasils i.e.Baramati, Purandar, Daund, Indapur of Pune districts.

Study on Grafting Technology in Brinjal to control soil born disease, improve yield and quality of fruits at Village- Khor Tal- Daund Dist- Pune Year- 2021-2022

