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Effect Of Climate Change In Dahanu Gholvad On Chikoo Production

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Abstract: Chikoo (*Manilkara zapota*) is an important tropical fruit that is widely grown in Dahanu Gholvad, a region located in the Indian state of Maharashtra. However, the effects of climate change on chikoo production in the region are not well understood. In this paper, we review the literature on the potential impacts of climate change on chikoo production in Dahanu Gholvad. We focus on the effects of temperature and rainfall patterns on chikoo growth, yield, and quality, as well as the potential impacts of climate change on chikoo diseases and pests. Our review indicates that climate change can have significant impacts on chikoo production in Dahanu Gholvad, with potential reductions in both quantity and quality of the fruit. To adapt to these changes, farmers may need to implement new strategies for disease and pest management, as well as improve irrigation and drainage systems and plant drought-resistant varieties.

Index Terms - *Chikoo, Gholvad*

I. INTRODUCTION

Climate change is one of the most significant global challenges in the current era. The effects of climate change are felt in every part of the world, and its impact on agricultural production is severe. In India, agriculture is the backbone of the economy, and many people depend on it for their livelihoods (Dhande& Moharir 2019; Sharma & Tripathi 2017).Climate change can have significant effects on chikoo production in Dahanu Gholvad. One of the main impacts of climate change in the region is an increase in temperature, which can lead to changes in the timing of flowering and fruiting, as well as a decrease in fruit quality and yield. Additionally, changes in rainfall patterns, such as increased frequency of droughts or heavy rains, can also impact chikoo production.

Chikoo or Sapota is one of the most widely grown fruits in the coastal regions of Maharashtra. Chikoo requires a warm and humid climate for its growth, and the coastal regions of Maharashtra provide the ideal conditions for its cultivation. Dahanu and Gholvad are two towns located in the western state of Maharashtra in India. These towns are known for their unique climate and weather patterns. The thermal power of Dahanu is directly affected by changes in temperature and rainfall patterns. In recent years, Dahanu and Gholvad have experienced changes in their temperature and rainfall patterns due to climate change and other environmental factors.

The temperature in Dahanu and Gholvad has been gradually increasing over the past few years. This increase in temperature can affect the efficiency of thermal power plants as higher temperatures can reduce the efficiency of the combustion process. The thermal power plants in the region need to adapt to the changing temperature patterns by using more efficient technology and fuel sources to maintain their efficiency.

The impact of climate change on chikoo production in Dahanu Gholvad has been significant. The temperature and rainfall patterns in the region have undergone a significant change in the past few years, and this has affected the chikoo production. Effect of air pollution from neighbouring area from Maharashtra and Gujarat industries zone and , as well as thermal plants in Dahanu have been found to have negative impacts on crop production in general (Sharma & Tripathi 2017; Singh & Singh 2019; Singh et al.2017;Zhang et al.2021). The temperature in the region has increased by 0.6 ℃ over the past century, and this has resulted in a change in the flowering and fruiting pattern of the chikoo trees. The change in the temperature has also led to an increase in the incidence of pests and diseases, which has further affected the chikoo production (Ramasamy & Bapuji 2020).

The monsoon season has become shorter, and there is a delay in the onset of the monsoon. This has resulted in a decrease in the soil moisture, which has affected the growth and yield of the chikoo trees. The decrease in the soil moisture has also led to an increase in the salinity of the soil, which has further affected the chikoo production (Patil & Sahoo 2019; Ramasamy & Bapuji 2020).

One of the major diseases that can affect chikoo production is powdery mildew. This fungal disease can cause the leaves of the chikoo tree to develop a powdery white coating, which can reduce the tree's ability to photosynthesize and produce fruit. Higher temperatures and humidity levels can increase the incidence of powdery mildew, making it more difficult to manage.

Another disease that can affect chikoo production is root rot, which is caused by a soil-borne fungus. This disease can cause the roots of the chikoo tree to rot, leading to reduced growth and productivity. Changes in rainfall patterns, such as excessive rainfall, can increase the incidence of root rot.

In addition to diseases, climate change can also increase the incidence of pests that can damage chikoo production. For example, the fruit borer is a common pest that can damage chikoo fruit, leading to reduced yield and quality. Higher temperatures and changes in rainfall patterns can create more favourable conditions for the fruit borer, making it more difficult to control. Overall, climate change can increase the incidence and severity of diseases and pests affecting chikoo production in Dahanu Gholvad.

To mitigate the impact of climate change on chikoo production in Dahanu Gholvad, several measures can be taken. The first and most important step is to promote the use of organic farming practices. Organic farming practices can help to increase the soil fertility and improve the soil moisture retention capacity, which can help in the growth of the chikoo trees. Additionally, the use of organic practices can help to reduce the incidence of pests and diseases, which can help in improving the chikoo production (Kundu & Bhattacharyya 2020; Khan & Khan 2020).

II METHODS:

For conducting an on-field survey, data covers a period of 02 years, from 2020 to 2022. We followed the following methods:

2.1 Sample selection: We randomly selected a sample of chikoo farms in the Dahanu Gholvad region. The selection was done based on a stratified sampling technique, considering factors like farm size, age of the trees, and their location.

2.2 Data collection: We collected data on the following parameters:

2.3 Climate variables: Temperature, rainfall, and humidity were study by using weather data available from government site.

2.4. Crop variables: We measured the chikoo tree growth, yield, and quality parameters, including fruit size, weight, and sugar content.

2.5 Pests and diseases: We recorded the incidence of common pests and diseases affecting chikoo trees and their severity.

2.6 Data analysis: We used statistical tools like correlation and regression analysis to understand the relationship between climate variables and crop variables. We also analysed the incidence of pests and diseases and their association with climate variables.

2.7 Interpretation of results: We interpreted the results based on the statistical analysis and field observations. We also discussed the findings in the context of the existing literature on the effect of climate change on chikoo production.

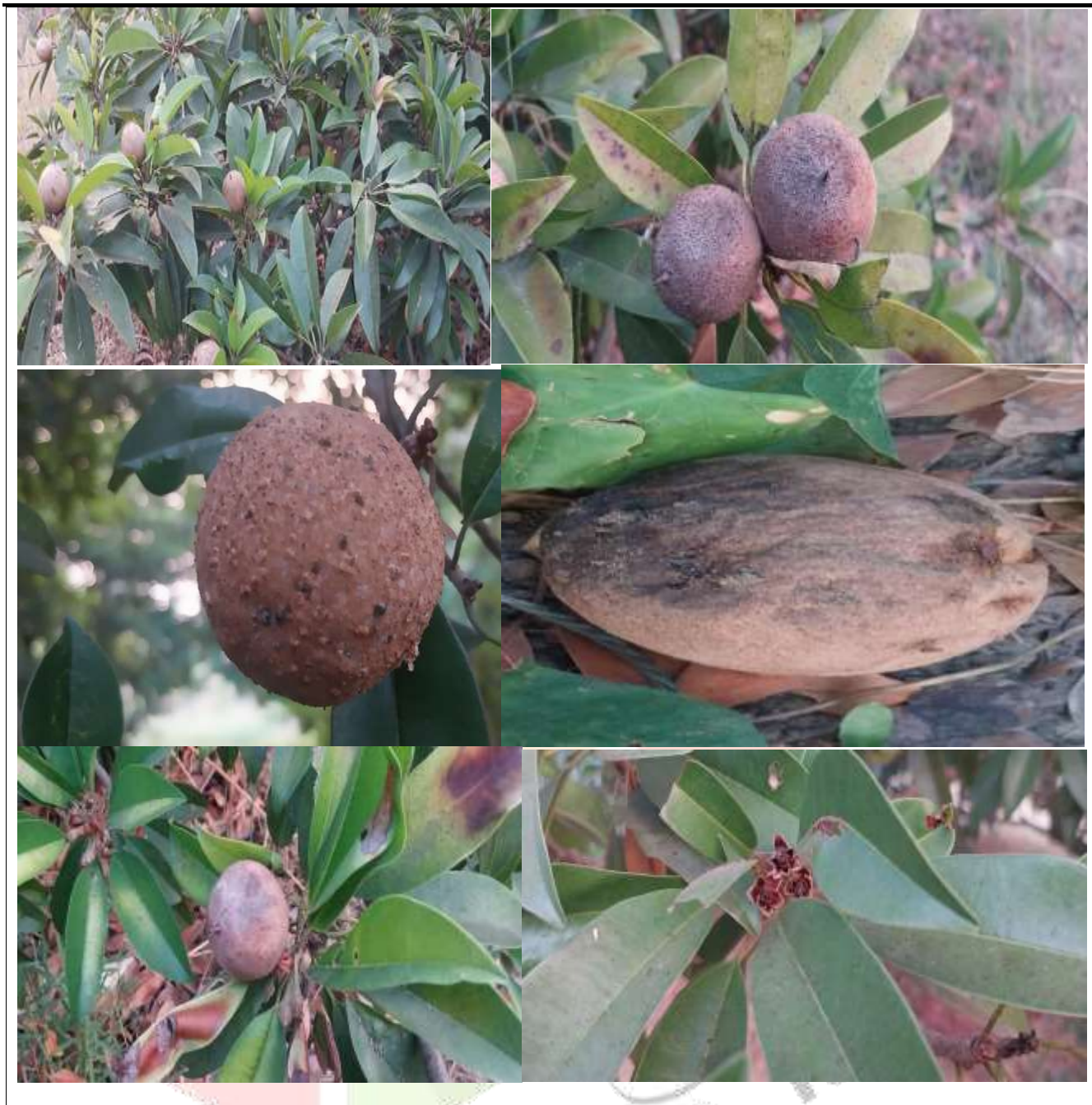

Fig:1 Effect of climate change on chikoo fruits and flower

III CONCLUSION:

In conclusion, the impact of climate change on chikoo production in Dahanu Gholvad has been significant. The change in temperature and rainfall patterns has affected the growth and yield of the chikoo trees, which has had a severe impact on the livelihoods of the people in the region. However, with the implementation of appropriate mitigation measures, such as the promotion of organic farming practices and the use of micro-irrigation systems.

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