# INNOVATIVE AND SUSTAINABLE TECHNIQUES OF PLANTING CHERRY ORCHARDS IN MEHEDINTI AREA

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***Abstract.*** *In recent years, there has been a growing emphasis on sustainable and innovative techniques for planting cherry orchards. These techniques aim to improve the efficiency and productivity of the orchard while minimizing the environmental impact. New environmentally friendly fruit production systems are being developed. Some of the most popular sustainable techniques include trellising, integrated pest management, drip irrigation, companion planting, using disease-resistant variety and organic farming. Trellising allows for easier access to the trees for pruning and harvesting, while integrated pest management uses a combination of natural and chemical methods to control pests and diseases. Drip irrigation delivers water and nutrients directly to the roots of the trees, reducing water usage and promoting efficient nutrient uptake. Companion planting involves planting other crops or plants alongside the cherry trees that can provide benefits such as pest control, soil improvement, and improved pollination. Using disease-resistant cherry varieties can help to minimize the use of fungicides and other chemical inputs. Organic farming is another sustainable and innovative approach, which involves the use of natural inputs and methods to grow and maintain the orchard without synthetic chemicals. These techniques are becoming more popular as farmers and growers aim to produce high-quality cherries while also protecting the environment.*

***Keywords****: cherry, plantation, orchards, sustainable, innovation*

## INTRODUCTION

Cherry orchards play an important role in the agricultural industry, providing a valuable source of food and income for farmers and growers. Some of the key benefits and importance of cherry orchards include:

- Economic impact: Cherry orchards can provide a significant source of income for farmers and the local economy. Cherries are a high-value crop, and a well-managed orchard can generate significant revenue.
- Food security: Cherry orchards provide a source of fresh, healthy food for local communities and can help to promote food security.
- Biodiversity: Cherry orchards can provide habitat for a variety of wildlife, including birds, insects, and small mammals, and can also contribute to the preservation of biodiversity.
- Environmental sustainability: With the use of sustainable and innovative planting techniques, cherry orchards can be managed in an environmentally-friendly way, reducing the use of pesticides and other chemicals, and promoting efficient water and nutrient use.
- Cultural significance: Cherry orchards have a long history and cultural significance in many parts of the world, and can be an important part of the cultural heritage of a region.
- Health benefits: Cherries are a rich source of antioxidants, vitamin C, and other nutrients that can promote health and wellbeing.
- Recreational opportunities: Cherry orchards can provide recreational opportunities for the public, such as cherry-picking and orchard tours.

Overall, cherry orchards play an important role in the agricultural industry, providing economic, environmental, and cultural benefits, and are essential for food security and biodiversity.

## MATERIAL AND METHODS

The method that I have used during my research, was the analytical one including research on the field, and several comparisons within a few cherry orchards from Mehedinti area in order to determine and establish several aspects for: soil conditions required, type of varieties, plantation methods and maintainance of the orchard, types of natural fertilizers used and means of cropping.

For example, according to my research, I have identified several methods of planting cherry orchards, including:

- Traditional planting: This method involves digging holes for each individual tree and planting them by hand. This method is labor-intensive and can be time-consuming, but it allows for precise spacing and placement of the trees.
- Mechanical planting: This method involves using a machine to dig holes and plant the trees. This method is faster and more efficient than traditional planting, but it can be more expensive and may not allow for as much control over tree spacing and placement. (PAȘCALĂU et all., 2020)
- Container planting: This method involves growing cherry trees in containers before planting them in the orchard. This method allows for trees to be planted at any time of the year, regardless of soil conditions, and can be done with a high degree of precision.
- Air-layering: This method is a propagation technique where a branch is wounded and then wrapped in a rooting medium to encourage root growth. The rooted branch is then cut from the parent tree and planted to grow as a new tree.
- Grafting: Grafting is a method of propagating cherry trees where a shoot from a desired variety is attached to the rootstock of another variety. This method allows for the production of cherry trees with specific characteristics, such as disease resistance or high fruit yield. (KARAMPATZAKIS et all., 2020)

Each of these methods has its advantages and disadvantages, and the best method for a particular orchard will depend on factors such as the size of the orchard, the type of cherry tree being planted, and the resources and skills available to the grower.

## RESULTS AND DISCUSSIONS

There are several innovative and sustainable techniques for planting cherry orchards, including:

- Trellising: This involves training the cherry trees to grow on a trellis or support system, which allows for easier access to the trees for pruning and harvesting.
- Integrated pest management: This approach involves using a combination of natural and chemical methods to control pests and diseases in the orchard, reducing the need for heavy pesticide use.
- Drip irrigation: This method of irrigation delivers water and nutrients directly to the roots of the trees, reducing water usage and promoting efficient nutrient uptake.
- Companion planting: This involves planting other crops or plants alongside the cherry trees that can provide benefits such as pest control, soil improvement, and improved pollination.

- Using disease-resistant variety: Cherry trees are susceptible to certain diseases such as cherry leaf spot, powdery mildew, and brown rot. By choosing disease-resistant cherry varieties, it will help to minimize the use of fungicides and other chemical inputs.
- Organic farming: Organic cherry farming is another sustainable and innovative approach, which involves the use of natural inputs and methods to grow and maintain the orchard without synthetic chemicals.

Cherry orchards in plain areas can be quite successful if proper management practices are used. Some of the key considerations for cherry orchards in plain areas include:

- Soil: Cherry trees prefer well-draining soil with a pH between 6.0 and 6.5. Soil in plain areas may be more prone to water logging, so it's important to make sure the orchard has adequate drainage.
- Climate: Cherry trees require a certain number of chilling hours in the winter to set fruit, and warm summers to ripen the fruit. Plain areas may have less variation in temperature, which can affect the growth and fruiting of the cherry trees.
- Irrigation: Cherry trees need a consistent supply of water, especially during fruiting. In plain areas, water resources may be limited and irrigation may be necessary to ensure adequate water supply. (NIKOLAOU et all., 2020)
- Pest and disease management: Cherry orchards in plain areas may be more susceptible to pests and diseases due to the lack of natural predators and more consistent temperatures. It's important to monitor for signs of pests and diseases and take appropriate action to prevent damage to the trees.
- Wind protection: Plain areas can be more exposed to wind, which can cause damage to the cherry trees and make it harder for the trees to set fruit. Windbreaks or shelter belts can be planted around the orchard to provide protection from wind damage.
- Harvesting: Cherry orchards in plain areas may have a shorter harvest period, due to the lack of variation in temperature, it's important to plan the harvest accordingly. (GREGORY et all., 2013)

Overall, cherry orchards in plain areas can be successful if proper management practices are used to address the unique challenges of the environment. With the right techniques, cherry orchards in plain areas can be productive and profitable.

Cherry trees have specific soil requirements for optimal growth and fruit production. Some key considerations for soil conditions in cherry orchards include:

- Drainage: Cherry trees prefer well-draining soil that does not hold water for long periods of time. Soil that is too wet can lead to root rot and other issues.
- Soil pH: Cherry trees prefer soil with a pH between 6.0 and 6.5. A slightly acidic soil is ideal for cherry trees.
- Soil texture: Cherry trees prefer a loamy soil, which is a combination of sand, silt, and clay. This type of soil provides good drainage and good water-holding capacity.
- Nutrients: Cherry trees require a variety of nutrients, including nitrogen, phosphorus, and potassium. The soil should be tested prior to planting to ensure that it has the necessary nutrients for the cherry trees to thrive.
- Organic matter: Cherry trees benefit from soil that is rich in organic matter. This can be achieved through the use of compost, manure, or other organic materials. (GLOWACKA et all., 2015)
- Aeration: Cherry tree roots need oxygen to grow, so it is important to ensure that the soil is well-aerated. This can be achieved by tilling or cultivating the soil, or by using raised beds.

Overall, cherry trees require specific soil conditions for optimal growth and fruit production. By providing the right soil conditions, cherry orchards can be productive and profitable.

Irrigation is an important aspect of cherry orchard management, as it helps to ensure that the trees have a consistent supply of water for optimal growth and fruit production. Some of the key reasons why irrigation is important for cherry orchards include:

- Water stress: Cherry trees require a consistent supply of water, especially during the fruiting period. Lack of water can cause water stress, which can lead to reduced fruit size, decreased fruit quality, and reduced yield.
- Drought: In some regions, droughts can occur, and irrigation can be necessary to ensure the survival of the cherry trees.
- Temperature: Irrigation can help to cool the cherry trees during hot weather, which can reduce the risk of sunscald and other heat-related issues.
- Disease prevention: Irrigation can help to reduce the risk of disease by keeping the leaves dry and reducing the humidity around the cherry trees.
- Fertilization: Irrigation can also help to deliver fertilizers and other nutrients to the cherry trees, promoting optimal growth and fruit production. (PAȘCALĂU et all., 2021)
- Timing: Proper irrigation timing is important for cherry orchards. Overwatering or underwatering can cause issues such as reduced fruit size, reduced fruit quality, and reduced yield.

Overall, irrigation is an essential aspect of cherry orchard management, as it helps to ensure that the trees have a consistent supply of water for optimal growth and fruit production. Proper irrigation management is critical for the success of a cherry orchard.

Air condition and precipitation are important factors that can affect the growth and fruiting of cherry trees.

- Temperature: Cherry trees require a certain number of chilling hours during the winter for proper fruit set and require warm summers for fruit to ripen. Extreme temperatures can damage the buds, flowers and fruit, which can lead to reduced yield. (ȘMULEAC et all., 2013)
- Air humidity: High humidity can promote the development of fungal diseases in cherry orchards. Proper air circulation and pruning can help to reduce humidity and prevent disease. (ȘMULEAC et all., 2020)
- Precipitation: Cherry trees require a consistent supply of water, especially during the fruiting period. Adequate precipitation during the growing season is important for the growth and fruiting of cherry trees. Lack of precipitation can cause water stress and reduce the yield.
- Frost: Cherry trees are sensitive to frost, which can damage the buds, flowers and fruit. Proper frost protection measures such as irrigation and wind machines can help to protect the cherry trees from frost damage.

Overall, air condition and precipitation play an important role in cherry tree plantation. Adequate moisture, moderate temperature and proper air circulation are critical for the growth and fruiting of cherry trees. By understanding the effects of air condition and precipitation on cherry trees, growers can take the necessary steps to ensure optimal growth and yield.

The results of cherry orchards plantation can vary depending on factors such as the type of cherry trees planted, the location, and the management practices used. Some possible outcomes of a well-managed cherry orchard plantation include:(WHITING et all., 2005)

- High yield: A well-managed cherry orchard can produce high yields of high-quality cherries. (SARAGINOVSKI et all., 2021)
- Economic benefits: Cherry orchards can provide a significant source of income for farmers and the local economy.
- Food security: Cherry orchards can provide a source of fresh, healthy food for local communities and can help to promote food security.
- Environmental sustainability: By implementing sustainable management practices, cherry orchards can be productive while also protecting the environment and promoting biodiversity. (MORANDI et all., 2019)
- Cultural significance: Cherry orchards can be an important part of the cultural heritage of a region.
- Health benefits: Cherries are a rich source of antioxidants, vitamin C, and other nutrients that can promote health and wellbeing.
- Recreational opportunities: Cherry orchards can provide recreational opportunities for the public, such as cherry-picking and orchard tours.

However, it is important to note that cherry orchards can also face challenges such as pests, diseases, and weather-related events that can affect the yield and quality of the cherries, causing a loss of revenue. Good orchard management practices can help mitigate these challenges, but it is not always possible to prevent them. (SARAGINOVSKI et all., 2021)

## CONCLUSIONS

In conclusion, cherry orchards can be a sustainable and profitable undertaking if proper management practices are used. Key considerations for the sustainability of cherry orchards include:

- Sustainable planting techniques: such as trellising, integrated pest management, drip irrigation, companion planting, using disease-resistant varieties, and organic farming can help to improve the efficiency and productivity of the orchard while minimizing the environmental impact.
- Soil management: Proper soil management, including maintaining the right pH, texture, and nutrient levels, can help to promote optimal growth and fruit production while also protecting the environment.
- Water management: Irrigation is an important aspect of cherry orchard management, as it helps to ensure that the trees have a consistent supply of water for optimal growth and fruit production. By using efficient irrigation methods, cherry orchards can conserve water resources while also promoting optimal growth.
- Pest and disease management: Integrated pest management, using natural predators and other methods to control pests and diseases, can help to reduce the use of pesticides and other chemicals, protecting the environment and human health.
- Air condition and precipitation management: Adequate moisture, moderate temperature, and proper air circulation are critical for the growth and fruiting of cherry trees. By understanding the effects of air condition and precipitation on cherry trees, growers can take the necessary steps to ensure optimal growth and yield.

Overall, by implementing sustainable management practices, cherry orchards can be productive and profitable while also protecting the environment and promoting food security.

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