

STEPPING UP SUSTAINABILITY: THE TIMELESS WISDOM AND MODERN BENEFITS OF TERRACE FARMING

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ABSTRACT

Terrace farming, a time-honored agricultural technique, involves carving stepped platforms into sloping landscapes, primarily in hilly or mountainous regions. This article explores the global prevalence of terrace farming, with a focus on its extensive practice in various regions of India. Highlighting its benefits over conventional farming in hilly areas, including soil and water conservation, increased land use, improved crop yields, and reduced labor requirements, the article delves into different terrace farming systems and the conditions necessary for their adoption. Suitable crops for terrace farming, ranging from rice and wheat to vegetables, fruits, and herbs, are also discussed. The advantages, such as maximized land use, soil and water conservation, increased crop yields, and overall sustainability, underscore the enduring significance of terrace farming in contemporary agriculture.



INTRODUCTION

Terrace farming is a type of agricultural method that involves carving a series of flat platforms, or terraces, into a sloping landscape in order to create a stepped or layered growing space. This technique is commonly used in mountainous or hilly regions where the terrain is too steep for conventional farming practices. Terracing has been used for thousands of years in various parts of the world, including in South America, Asia, and Africa. The terraces are typically supported by retaining walls made of stone or other materials, which help to prevent erosion and maintain the structure of the terrace.

Terrace farming has a number of benefits, including allowing farmers to cultivate crops on otherwise unusable land, improving soil quality, conserving water, and preventing soil erosion. Additionally, terrace farming can help to increase crop yields by providing more growing space and improving the overall efficiency of the farming system.

WHERE TERRACE FARMING IS PRACTICED IN INDIA?

Terrace farming, also known as stepped farming, is a traditional agricultural practice that is practiced in many hilly and mountainous regions of India. Here are some of the regions in India where terrace farming is commonly practiced:

1. *North-East India*: The hilly regions of North-East India, such as Meghalaya, Nagaland, and Arunachal Pradesh, are known for their extensive terrace farming systems, which are used to cultivate crops such as rice, maize, and millet.
2. *Western Ghats*: The Western Ghats mountain range, which runs parallel to the western coast of India, is home to several indigenous communities who practice terrace farming to cultivate crops such as coffee, tea, spices, and fruits.
3. *Himachal Pradesh*: The state of Himachal Pradesh, located in the northern part of India, is known for its extensive terrace farming systems, which are used to cultivate crops such as wheat, rice, maize, and vegetables.
4. *Uttarakhand*: The hilly regions of Uttarakhand, located in the northern part of India, are known for their extensive terrace farming systems, which are used to cultivate crops such as rice, wheat, and vegetables.
5. *Jammu and Kashmir*: The state of Jammu and Kashmir, located in the northernmost part of India, is known for its extensive terrace farming systems, which are used to cultivate crops such as rice, maize, and vegetables.

BENEFITS OF TERRACE FARMING OVER CONVENTIONAL FARMING IN HILLY AREAS?

Terrace farming, also known as stepped farming, has several advantages over conventional farming in hilly areas. Here are some of the benefits of terrace farming:

1. **Soil conservation**: Terrace farming helps to prevent soil erosion in hilly areas by creating a series of level steps on the slopes. This helps to slow down the movement of water and soil, allowing the soil to settle and preventing it from being washed away.
2. **Water conservation**: Terrace farming also helps to conserve water in hilly areas by allowing water to be stored in the soil and reducing runoff. The steps in terrace farming help to slow down the movement of water, allowing it to seep into the soil and recharge groundwater reserves.

3. Increased land use: Terrace farming allows farmers to cultivate crops on hilly land that would otherwise be unsuitable for agriculture. By creating level steps, terrace farming increases the effective land area available for cultivation and allows farmers to grow more crops.
4. Improved crop yields: Terrace farming can help to improve crop yields in hilly areas by providing better soil conditions, reducing water stress, and preventing soil erosion. This can lead to increased agricultural productivity and improved livelihoods for farmers.
5. Reduced labor: Terrace farming can also help to reduce labor requirements in hilly areas by making it easier to cultivate and harvest crops. The level steps in terrace farming make it easier for farmers to access their crops and reduce the need for manual labor in planting and harvesting.

TYPES OF TERRACE FARMING

There are several types of terrace farming systems used around the world, depending on the local climate, topography, and cultural practices. Here are some of the different types of terrace farming:

1. Contour terracing: This involves creating a series of level steps that follow the contour of the land. This type of terrace farming helps to prevent soil erosion and conserve water by slowing down the movement of water and soil.
2. Bench terracing: This involves creating a series of level benches or platforms that are built into the hillside. This type of terrace farming is often used in areas with steep slopes and helps to increase the effective land area available for cultivation.
3. Raised-bed terracing: This involves creating raised beds on the terraces, which are used to cultivate crops. Raised-bed terracing is often used in areas with poor soil quality, as it allows farmers to create fertile soil for their crops.
4. Rice terracing: This is a specialized type of terrace farming that is used to cultivate rice in areas with high rainfall and steep slopes. Rice terracing involves creating a series of flooded terraces that are used to grow rice crops.
5. Garden terracing: This involves creating small, terraced gardens for growing vegetables, fruits, and herbs. Garden terracing is often used in urban areas and can help to maximize the use of limited space.

CONDITIONS FOR ADOPTING TERRACE FARMING:

The conditions for adopting terrace farming can vary depending on the region, but generally include:

1. Sloping terrain: Terrace farming is most effective on sloping terrain, as it allows farmers to create stepped platforms for cultivation. The slope of the land should be at least 15-20% for terrace farming to be effective.
2. Adequate rainfall: Terrace farming requires adequate rainfall to support crop growth. The rainfall should be evenly distributed throughout the growing season and should be sufficient to support the water needs of the crops.



(Image by fanjianhua on Freepik)

3. Soil type and fertility: The soil in the region should be suitable for crop growth and have adequate fertility to support the needs of the crops. Soil erosion can be a problem in some areas, so farmers need to ensure that the soil is stable enough to support the retaining walls used in terrace farming.
4. Labor availability: Terrace farming is a labor-intensive method of agriculture, requiring significant manual labor to build and maintain the terraces. Farmers should have access to a sufficient supply of labor to build and maintain the terraces.
5. Access to water: Terrace farming requires access to water for irrigation during dry periods. This can be in the form of rainfall or through the use of irrigation systems.
6. Availability of materials: The materials required to build retaining walls and other structures for terrace farming should be available in the region. This includes materials such as stone, wood, or concrete.

SUITABLE CROPS FOR TERRACE FARMING

A wide range of crops can be grown using terrace farming, including:

1. **Rice:** Rice is a common crop grown on terraces in Asia. The flooded terraces provide ideal growing conditions for rice, and the stepped structure helps to conserve water and reduce soil erosion.
2. **Wheat:** Wheat is another crop that can be grown on terraces. It is a hardy crop that can tolerate a range of soil and weather conditions, making it a good choice for terrace farming.
3. **Vegetables:** Many types of vegetables can be grown on terraces, including tomatoes, peppers, cucumbers, and beans. The terraces provide a controlled environment for growing vegetables and help to conserve water and nutrients.
4. **Fruits:** Some fruits can be grown on terraces, including grapes, apples, and citrus fruits. The stepped structure of the terraces can help to improve drainage and prevent soil erosion, which is important for fruit trees.
5. **Herbs and spices:** Herbs and spices such as basil, oregano, thyme, and mint can also be grown on terraces. These crops can be grown in small plots on the terraces and are often used for culinary purposes.

The suitability of crops for terrace farming can depend on the specific growing conditions in the region, including climate, soil type, and water availability. Farmers should choose crops that are well-suited to the local growing conditions and that have a market demand in their area.

ADVANTAGES

Terrace farming has a number of advantages, including:

1. **Maximized use of land:** By using the terraced structure, terrace farming allows for the use of steep, hilly or mountainous areas that would otherwise be unusable for farming. This leads to more efficient use of land and maximizes the available growing space.
2. **Soil conservation:** Terrace farming helps to prevent soil erosion by slowing down the runoff of rainwater, thereby reducing the risk of soil loss and nutrient depletion. Retaining walls and other structures used in terrace farming also help to hold soil in place, keeping it from being washed away during heavy rains.
3. **Improved water conservation:** By slowing down the flow of water, terrace farming reduces the amount of water lost to runoff and makes more water available for crops. The terraces themselves can also be designed to capture and store rainwater, which can be used for irrigation during dry periods.
4. **Increased crop yields:** Terrace farming provides more growing space per unit of land, allowing farmers to plant more crops and increase their overall yield. The controlled irrigation and soil

conservation techniques used in terrace farming can also help to improve the quality of the soil and increase crop productivity.

5. Sustainability: Terrace farming is a sustainable method of agriculture that has been used for thousands of years, and is still practiced in many parts of the world today. It minimizes the impact of farming on the environment, reduces the risk of soil degradation, and provides a reliable source of food for communities.

CONCLUSION

Terrace farming emerges as a sustainable and efficient agricultural method, bridging ancient wisdom with modern needs. Its multifaceted benefits, from preventing soil erosion to maximizing land use and improving water conservation, underscore its adaptability to diverse terrains and climates. With a rich history spanning centuries, terrace farming remains a key player in securing livelihoods for millions of farmers globally. As we navigate the challenges of modern agriculture, embracing and innovating upon the principles of terrace farming can contribute to a resilient and sustainable future, ensuring the continued harmony between cultivation and the environment.
