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Coffee Farming: Sustainable Challenges and Solutions

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India is globally recognized as one of the leading coffee producers, with a history of coffee cultivation dating back to the 17th century, when the legendary holy saint Baba Budan brought seven Mocha seeds to the hills of Karnataka in the 1600s. His simple act of planting these seeds in the courtyard of his hermitage in Baba Budan Giri unknowingly set in motion the rise of India as one of the world's prominent coffee producers. Over the centuries, the cultivation of coffee in India has evolved from a humble practice to a thriving industry with the country's coffee now widely loved across the globe. The country is known for producing both Arabica and Robusta varieties, with distinct flavours that are popular worldwide. Indian coffee is grown primarily in the southern states of Karnataka, Kerala, and Tamil Nadu, where the unique topography and climate create the perfect conditions for coffee farming. India is now the seventh-largest coffee producer globally with exports reaching \$1.29 billion in FY 2023-24, almost double the \$719.42 million in 2020-21. India's coffee exports have grown significantly due to the increasing global demand for its rich and unique flavours. In the first half of January 2025 India exported over 9,300 tonnes of coffee with top buyers including Italy, Belgium, and Russia. Approximately three-fourths of India's coffee production consists of Arabica and Robusta beans. These are primarily exported as unroasted beans. However, there is a growing demand for value-added products like roasted and instant coffee, further fuelling the export boom.

Coffee Varieties in India

Arabica: Known for its smooth, delicate flavour, Arabica coffee is filled with extra-high levels and cooler conditions. Indian Arabica is perpetually sought after for its fragile taste and sweet-smelling profile.

Robusta: Robusta coffee is impressively more incredible, with a more grounded flavour and higher caffeine content. It is produced at lower levels and is more resistant to bugs and loads. Indian Robusta is renowned for its distinctive flavour and is consistently used in espresso blends.

Coffee Hotspots in India

The southern region of India is the main hub for coffee growth. In fact, Karnataka has the highest production of coffee, followed by Kerala and Tamil Nadu. Furthermore, there are over 4500 coffee fields, mostly at high altitudes of around 1300 meters above sea level.

1. Karnataka:

In terms of the growth area, Karnataka takes the lead, with more than 60% of India's coffee cultivation land being located within the state. In fact, Karnataka is one of the leading coffee-producing states in India and dominates the industry by contributing to more than 70% of the country's total coffee output.

More than half of Karnataka's coffee production comprises Robusta beans and with the rest being Arabica beans. Not only does Karnataka boast of high production levels, but it also achieves impressive yield rates, averaging over 1,000 kg per hectare. This remarkable success

is attributed to the state's favourable temperature and climate conditions. Since climate adds an ideal environment for large-scale coffee cultivation.

2. Kerala:

Kerala, the southern-most state of India, holds the position as the second-largest coffee-producing state, producing more than 20% of the country's total coffee output. The key coffee-producing regions in Kerala are Wayanad and Travancore, contributing to more than 95% of the state's coffee crop. Coffee plants in Kerala thrive at high altitudes, typically around 1,200 meters.

3. Tamil Nadu:

Moving down the list, we come to Tamil Nadu, a prominent coffee-producing state contributing more than 5% of India's total coffee output. Arabica coffee beans take the lead in Tamil Nadu's production, followed by Robusta coffee beans. Tamil Nadu boasts of several key coffee-growing regions, namely Palani Hills, Nilgiris, Salem, and Coimbatore. Among these four places, Palani Hills stands out as the highest producer, yielding over 7600 Metric Tonnes of coffee annually.

4. Andhra Pradesh:

It is the 4th largest coffee producer in India. Furthermore, Araku Coffee from the Araku Valley is an incredibly unique variety of Arabica achieved by a special method of drying the coffee cherries.

5. Odisha:

Odisha is the fifth largest coffee producer in India. In fact, Arabica coffee, known for its preference for moderate temperatures and ample rainfall, is the variety cultivated in Odisha. This state is home to four primary coffee-producing regions: Koraput, Rayagada, Phulbani, and Keonjhar.

Challenges in Coffee Farming

In addition to the numerous parameters necessary for creating an optimal environment for coffee cultivation, other factors get in the way of a successful crop. Some of the challenges faced at the production stage are:

1. Climatic and Weather changes:

Coffee farming is vulnerable to climatic changes and natural disasters, such as droughts, floods, hurricanes, and frost. Furthermore, erratic weather patterns and extreme events can disrupt flowering, affect fruit development, and damage the coffee plants, leading to yield losses and quality deterioration.

2. Labour shortage:

At every stage of coffee farming, there is a lot of manual labour involved. One of the biggest obstacles faced by coffee farmers these days is the lack of enough labour and high wages for availed labourers. The availability of skilled labour for coffee harvesting can be a challenge, particularly in remote or rural areas. Once in a while, limited labour supply can result in delayed harvesting, which can negatively impact the quality and yield of the crop.

3. Irregular Rains and Early Blooming:

Irregular rainfall patterns, including the early or late onset of rains, can disrupt the normal flowering cycle of coffee plants. Early blooming poses challenges as it affects the synchronization of flowering and subsequent fruit maturation, impacting overall yield and harvest quality.

4. Farm maintenance:

Harvesting coffee involves various labour-intensive activities such as cherry picking, sorting, and processing. Moreover, the associated costs, including wages, equipment, and materials, can significantly impact the overall maintenance cost for coffee farmers. To manage this challenge, farmers can explore cost-saving strategies such as efficient labour management, mechanization of certain tasks where feasible, and group collaborations for shared resources and equipment.

5. Storage of coffee:

Proper storage of harvested coffee poses a significant challenge after harvesting. Nevertheless, proper storage is crucial to maintain the quality and freshness of coffee beans. Farmers must ensure that harvested coffee is stored in suitable conditions, including appropriate temperature, humidity, and ventilation.

6. Transportation challenges:

Poor transportation and shipment can also present challenges after harvesting coffee. Furthermore, easier transportation is necessary to ensure that the harvested coffee reaches processing facilities or markets promptly. Using appropriate packaging materials, securing the coffee beans properly, and choosing reliable transportation methods are crucial.

7. Pests and Diseases:

Coffee farming faces the constant challenge of pests and diseases that can severely impact crop health and productivity. Common pests include coffee berry borers, mealy bugs, and shot hole borers, while diseases like coffee leaf rust and fungal infections pose significant threats. In fact, implementing effective pest management strategies and disease prevention measures is crucial to protect coffee plants.

8. Improper Irrigation:

In regions with inadequate or unreliable water sources, the lack of irrigation facilities poses a significant challenge to coffee farming. Insufficient water supply during critical stages of plant growth can lead to water stress, affecting productivity and crop quality.

9. Lack of Pruning:

Pruning is essential for maintaining the health, productivity, and longevity of coffee plants. However, the lack of proper pruning practices or inadequate labour availability can result in uncontrolled plant growth, reduced yields, and increased susceptibility to diseases.

10. Cultivation Cost:

Finally, coffee cultivation requires substantial initial investments in land preparation, planting, infrastructure, and inputs. The high upfront costs can be a barrier for small-scale farmers or those with limited financial resources, limiting their ability to adopt modern farming techniques and technologies.

Solutions for these challenges

Farmers can oversee the risks and improve overall productivity by actively addressing the various challenges in coffee farming. This includes implementing preventive measures, adopting best practices, and staying updated on the latest advancements in the industry.

1. Awareness:

Farmer education plays a crucial role in managing challenges. Providing farmers with access to training programs and workshops equips them with the knowledge and skills needed to tackle issues such as pest and disease management, proper maintenance practices, and effective harvesting techniques. Continuous education empowers farmers to make informed decisions and implement sustainable farming methods.

2. Research:

Research and development contribute to effective challenge management. Investing in agricultural research helps identify innovative solutions to the challenges faced in coffee farming.

3. Financial support:

Access to credit and resources is essential for managing challenges in coffee farming. Many challenges, such as high maintenance costs and lack of resources, can be addressed with adequate financial support. Furthermore, accessible credit facilities enable farmers to invest in the necessary equipment, materials, and technologies! This helps in improving their ability to cope with challenges and enhance their productivity.

4. Government support:

Government support plays a crucial role in promoting sustainable coffee farming practices. Government aid through policies, incentives, research funds, and subsidies aimed at supporting coffee farmers. To enhance coffee production and meet growing domestic and

international demand the Coffee Board of India has launched several important initiatives. Through the Integrated Coffee Development Project (ICDP) the focus is on improving yields, expanding cultivation in non-traditional regions and ensuring the sustainability of coffee farming. These measures are part of a comprehensive strategy to strengthen India's coffee industry, increase productivity and improve its global competitiveness.

Conclusion

Indian coffee cultivation is a blend of traditional practices and modern techniques, aimed at producing high-quality coffee beans that are prized around the world. From shade-grown coffee to sustainable farming methods, India's coffee farmers have adapted to changing conditions while maintaining the rich heritage of coffee production. With on-going support from the Coffee Board of India and a focus on sustainable practices, the future of Indian coffee farming looks promising as it continues to thrive both domestically and internationally.

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