



## **Role of Horticulture in achieving Sustainable Goals in Jammu and Kashmir A study of Jammu and Kashmir**

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### **Abstract:**

Horticulture of Jammu and Kashmir plays a significant role for social economic development of UT. Horticulture is one of the sectors of agriculture which is growing faster than other sectors in India. Horticulture helps our country to achieve growth of 4% during the 12th five year plan. With the launch of National horticulture mission in (2005-2006) help to achieve a significant growth in agriculture. In agriculture GDP horticulture contributes 29.5%. In horticulture (1992-1993) to (2004-2005) is considered the "Golden revolution" (Choudhary, S. K., 2013). The development of Jammu and Kashmir (J&K), a UT of India, has made lot of steps to achieving the United Nations Sustainable Development Goals (SDGs). The SDGs, adopted in 25 September 2015, in 70<sup>th</sup> session encompass 17 objectives and 69 targets aimed at fostering global prosperity, environmental sustainability, and social inclusion by 2030. J&K's journey faces difficulties after difficulties state to achieve best runner in sustainable development after showing notable improvements across various SDG indicators. Jammu and Kashmir has made notable progress toward achieving the Sustainable Development Goals, with significant improvements in health, poverty reduction, and environmental sustainability. While challenges remain in areas such as education, gender equality, and economic growth, ongoing efforts and strategic initiatives are paving the way for a more sustainable and inclusive future for the region. The good health and well-being, increased from 62 in 2019-20 to 70 in 2020-21. The paper will analysis CAGR stands for compound annual growth rate was used for overall score of SDGs. Sustainable Development Goals (SDGs) in India reveals the nation's multifaceted approach and the challenges faced in achieving these global objectives. The studies encompass various themes, including policy implementation, regional disparities, sector-specific analyses, and the role of technology and innovation. This paper explores opportunities for value addition and agribusiness development in the horticulture industry of Jammu and Kashmir. It may examine value-added products such as apple-based processed foods, beverages, cosmetics, and pharmaceuticals, as well as marketing strategies, branding initiatives, and investment opportunities to enhance the competitiveness and profitability of the horticulture sector.

**Keywords:** women empowerment, education, Poverty, health, Horticulture

### **Introduction**

The socio-economic impact of Horticulture on rural communities in Jammu and Kashmir. It may discuss aspects such as employment generation, income distribution, rural livelihoods, social empowerment, and community development initiatives supported by the apple industry. 15 Goals, 84 Targets and 226 Indicators are set by the UT of Jammu and Kashmir after the consultation of NITI Aayog and MOSI, Government of India. Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, are a comprehensive framework of 17



interlinked global objectives aimed at eradicating poverty, reducing inequality, and fostering environmental sustainability by 2030. This transformative agenda has immense relevance for regions like Jammu and Kashmir (J&K), a union territory in northern India, characterized by its diverse topography, cultural richness, and socio-political complexities. While the SDGs have a global focus, their localized implementation in J&K holds the potential to uplift its economy, address pressing developmental challenges, and promote long-term sustainability. Jammu and Kashmir, comprising sprawling valleys, snow-capped mountains, fertile agricultural plains, and rich biodiversity, has historically relied on agriculture, horticulture, tourism, and handicrafts as the backbone of its economy. However, the region's development trajectory has faced disruptions due to a mix of geographical constraints, socio-political challenges, and environmental vulnerabilities. Poverty, unemployment, infrastructural deficits, gender inequality, and climate change impacts are some of the pressing issues confronting J&K today. The SDGs offer a roadmap to address these challenges holistically by emphasizing inclusive growth, environmental conservation, and social equity. The significance of SDG implementation in J&K is evident when considering the region's unique circumstances. Despite being rich in natural resources, a significant portion of the population still depends on traditional subsistence agriculture, with inadequate diversification of income sources. SDG 1 (No Poverty) and SDG 2 (Zero Hunger) are critical to improving livelihoods and ensuring food security in rural and semi-urban areas. These goals emphasize adopting sustainable agricultural practices, enhancing productivity, and reducing vulnerabilities to market fluctuations or climate change. Climate change and environmental degradation are other major concerns for J&K. The climate-smart agricultural practices for adaptation to climate change in apple farming communities of Jammu and Kashmir. It likely assesses practices such as drought-tolerant varieties, water-saving irrigation techniques, soil moisture conservation, and weather forecasting tools to build resilience and mitigate climate risks in apple cultivation. The Himalayan region is particularly sensitive to global warming, with visible impacts such as melting glaciers, altered precipitation patterns, and an increased frequency of natural disasters like floods. The 2014 Kashmir floods were a stark reminder of how climate-induced risks can disrupt lives, infrastructure, and the economy. Therefore, SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation), and SDG 15 (Life on Land) are essential for building resilience in the region. These goals call for climate adaptation measures, conservation of ecosystems, and ensuring sustainable management of water resources, crucial for both agriculture and domestic use. Education and health, as highlighted in SDG 3 (Good Health and Well-being) and SDG 4 (Quality Education), are pivotal sectors requiring attention in J&K. Despite progress, the region still struggles with limited access to quality healthcare, particularly in remote areas. Challenges such as high maternal and infant mortality rates, the prevalence of communicable diseases, and a growing burden of non-communicable diseases like hypertension and diabetes demand comprehensive interventions. Similarly, improving education outcomes is vital, particularly for young girls and marginalized communities, ensuring no child is left behind. . The role of Information and Communication Technologies (ICTs) in enhancing market access for apple farmers in Jammu and Kashmir. It likely investigates the use of mobile phones, internet platforms, digital marketplaces, and agricultural extension services to improve market information, price transparency, and trade opportunities for farmers. Jammu and Kashmir's potential for achieving SDG 7 (Affordable and Clean Energy) and SDG 9 (Industry, Innovation, and Infrastructure) is immense. The region



possesses substantial hydropower resources, which, if harnessed sustainably, could transform it into a hub of clean energy production. Additionally, infrastructural development, particularly in terms of road connectivity, digital infrastructure, and industrial growth, can create employment opportunities, reduce regional disparities, and foster economic growth. Gender equality (SDG 5) and reducing inequalities (SDG 10) are also crucial in J&K, where traditional gender roles and social inequalities often hinder women's participation in the workforce and decision-making processes. Empowering women, promoting skill development, and ensuring equitable access to resources and opportunities are steps that can catalyze social and economic transformation in the region. Moreover, sustainable tourism, aligned with SDG 8 (Decent Work and Economic Growth) and SDG 12 (Responsible Consumption and Production), can act as a key driver of growth in J&K. With its breathtaking landscapes and rich cultural heritage, the region attracts millions of tourists annually. However, unchecked tourism growth has led to issues such as environmental degradation, pollution, and strain on local resources. A shift towards eco-tourism and community-based tourism models can ensure that the benefits of tourism are both sustainable and inclusive. Governance and institutional capacity-building are integral to achieving the SDGs in J&K. Strengthening local governance structures, fostering transparency, and encouraging participatory development are critical to ensuring the successful implementation of SDG 16 (Peace, Justice, and Strong Institutions). Additionally, partnerships with private stakeholders, NGOs, and international organizations are essential, as envisioned under SDG 17 (Partnerships for the Goals). Collaborative efforts can mobilize resources, share expertise, and create synergies to accelerate progress. The Sustainable Development Goals present a unique opportunity for Jammu and Kashmir to redefine its development priorities, address persistent challenges, and build a resilient and equitable future. By integrating the SDGs into its planning and governance frameworks, J&K can leverage its unique strengths while addressing vulnerabilities to ensure a sustainable and prosperous future for its people. The success of these goals in the region not only holds significance for its inhabitants but also serves as a model for other conflict-prone and environmentally sensitive areas worldwide. J&K has demonstrated commendable progress in health outcomes. The composite index score for SDG 3, which focuses on good health and well-being, increased from 62 in 2019-20 to 70 in 2020-21. This improvement has positioned the region in the "frontrunners" category, reflecting significant advancements in health infrastructure and services. Despite challenges, J&K has made strides in education. The SDG 4 score stands at 49, slightly below the national average of 57. Efforts are ongoing to improve educational infrastructure, quality, and accessibility to ensure inclusive and equitable education for all. J&K excels in providing clean water and sanitation, achieving an SDG 6 score of 88, surpassing India's average of 83. This reflects effective water management and sanitation infrastructure. J&K excels in providing clean water and sanitation, achieving an SDG 6 score of 88, surpassing India's average of 83. This reflects effective water management and sanitation infrastructure (Sdg., U. 2019). The region has achieved an SDG 7 score of 100, indicating universal access to affordable and clean energy, exceeding the national average of 92. This accomplishment is due to investments in renewable energy sources and infrastructure development. J&K's SDG 8 score is 47, below the national average of 61. Challenges persist in creating quality employment opportunities and fostering economic growth. Ongoing efforts focus on skill development and promoting sustainable industries to enhance economic prospects. J&K's SDG 10 score is 65, slightly below the national average of 67. Efforts are



underway to address social and economic disparities through inclusive policies and programs aimed at reducing inequalities.

## **Literature Review:**

Several studies emphasize the importance of robust policy frameworks in achieving SDGs. Studies highlight challenges in child development, with factors like malnutrition and inadequate healthcare services impacting progress towards health-related SDGs. Research underscores the need for sustainable practices in agriculture and industry to address environmental concerns, aligning with SDG 13 (Climate Action) and SDG 15 (Life on Land). The integration of science, technology, and innovation is pivotal in accelerating SDG achievement. Discuss how strengthening STI-based incubators can contribute to sustainable development, emphasizing the need for supportive policies and infrastructure. Accurate measurement of SDG progress is crucial for effective policy implementation (JK Planning, GIO., 2021). The "SDG Progress Report-2020" by the J&K government outlines progress on various UT indicators, reflecting a commitment to achieving SDGs through localized strategies (JK Planning., 2020). The critical role of women's literacy in advancing SDGs, particularly SDG 4 (Quality Education) and SDG 5 (Gender Equality) are important for the development of woman. It highlights the challenges women face, including discrimination and limited opportunities, and discusses government initiatives aimed at improving women's literacy rates in Jammu and Kashmir. Despite challenges, J&K has made strides in education. The SDG 4 score stands at 49, slightly below the national average of 57. Efforts are ongoing to improve educational infrastructure, quality, and accessibility to ensure inclusive and equitable education for all (Suri, K., & Sharma, A., 2023). The research assesses the sustainability of infrastructure projects in Jammu and Kashmir using the "Triple Bottom Line" approach, which considers environmental impact, social equity, and economic viability. The study identifies strengths and weaknesses in current projects and suggests areas for improvement to align with sustainability goals (Mir, A. A., & Hakim, I. A. (2023). This paper reviews the initiatives under the Smart City Mission in Jammu, focusing on sectors like healthcare, education, solid waste management, and transportation. It discusses the challenges faced in implementing smart city solutions and emphasizes the need for integrated planning to achieve sustainable urban development. The region's SDG 11 score is 57, below the national average of 79. Urban planning and sustainable development initiatives are being prioritized to create resilient and sustainable communities (Devi, S., et al, 2020). Through hydroelectric potential of Jammu and Kashmir, which are existing on various river basins. It underscores the importance of hydropower in meeting the region's energy demands sustainably and the need for efficient resource utilization (Jaral, S.V.S., 2018). The concept of urban regeneration in Jammu City, addressing the challenges of unplanned urbanization due to rural-to-urban migration. It proposes integrated approaches for sustainable urban development to improve



the physical and economic landscape of the city (R, M. A., 2016).The potential of eco-tourism in Jammu and Kashmir, given its rich natural heritage, including national parks and wildlife sanctuaries. It examines how eco-tourism can contribute to sustainable economic development while preserving the environment. With an SDG 9 score of 42, below the national average of 55, J&K faces challenges in industrial development and infrastructure. Strategic plans are being implemented to boost innovation and build resilient infrastructure to support sustainable industrialization (Seth, C. M. , 2019).The effectiveness of the Azad Jammu and Kashmir Community Development Program in reducing poverty through community development initiatives. It highlights the program's impact on improving health, education, and economic conditions, aligning with various SDGs. The region has made substantial progress in reducing poverty and hunger. J&K's performance in SDG 1 (No Poverty) and SDG 2 (Zero Hunger) surpasses the national average, with scores of 69 and 71, respectively, compared to India's averages of 60 and 47. These achievements are attributed to targeted poverty alleviation programs and enhanced food security measures (Hameed, G., et al., 2017).This official report provides an overview of the progress made towards achieving the SDGs in Jammu and Kashmir. It outlines the initiatives undertaken, challenges faced, and future strategies to accomplish the 2030 Agenda for Sustainable Development (JK Planning, GIO., 2020).It examines India's roadmap towards sustainable urban development, highlighting the challenges in integrating SDGs within the urban context of Jammu and Kashmir. It emphasizes the need for a holistic approach to urban planning to achieve sustainable outcomes Urbanization in J&K presents both opportunities and challenges. Integrating SDGs into urban planning is vital for sustainable city development, addressing issues like infrastructure and service delivery (Goswami, P., & Panda, G. R., 2023).The discussion of various themes related to SDGs, including issues specific to the Jammu and Kashmir region. It examines the progress and challenges in achieving SDGs, focusing on human capital development, economic growth, gender equality, and governance. The region faces challenges in gender equality, with a score of 46 compared to the national average of 48. Efforts to empower women through literacy programs are crucial pathways to achieving SDG 5 in J&K. Gender equality remains a priority, with J&K's SDG 5 score at 46, close to the national average of 48. Initiatives are in place to empower women through literacy programs and economic opportunities, aiming to bridge the gender gap (David, M., 2018).The cross-sectional analysis of India's progress towards SDGs, discussing state-wise achievements and challenges. It offers insights into the performance of different regions, including Jammu and Kashmir, in meeting the SDG targets. J&K is actively engaged in climate action, focusing on sustainable resource use and environmental conservation. The region is implementing measures to mitigate climate change impacts and promote environmental sustainability (Panda, R., et al 2018). To analyzes India's progress in achieving SDGs, focusing on indicator-wise, target-wise, and goal-wise gaps. It provides a comprehensive assessment of the areas where India, including Jammu and Kashmir, needs to focus to meet the 2030 Agenda(Kumar, K., & Anand, P.K., 2020).This document maps various Centrally Sponsored Schemes (CSS) and interventions by nodal ministries in India to specific SDG targets. It serves as a reference for understanding how different schemes are aligned with the SDGs, providing a framework applicable to regions like Jammu and Kashmir (NITI Aayog).





### **Objectives:**

1. To study the horticulture became the backbone to achieve sustainable developments goals in UT of Jammu and Kashmir.
2. To examine how horticulture help to reduce unemployment, poverty ratio and improve standard of living.

### **Research Methodology:**

Secondary Data was utilised for the research paper, previous research papers, Government websites, JK Planning GIO, economic survey of 2018-2022. Sustainable Development Goals Progress Report 2020 by Union Territory of Jammu and Kashmir and Director of Horticulture Jammu and Kashmir.

CAGR stands for compound annual growth rate was used for Growth of Production in Horticulture of Last Five Years.

$$\text{CAGR} = (\text{EB} / \text{SB})^{1/5}$$

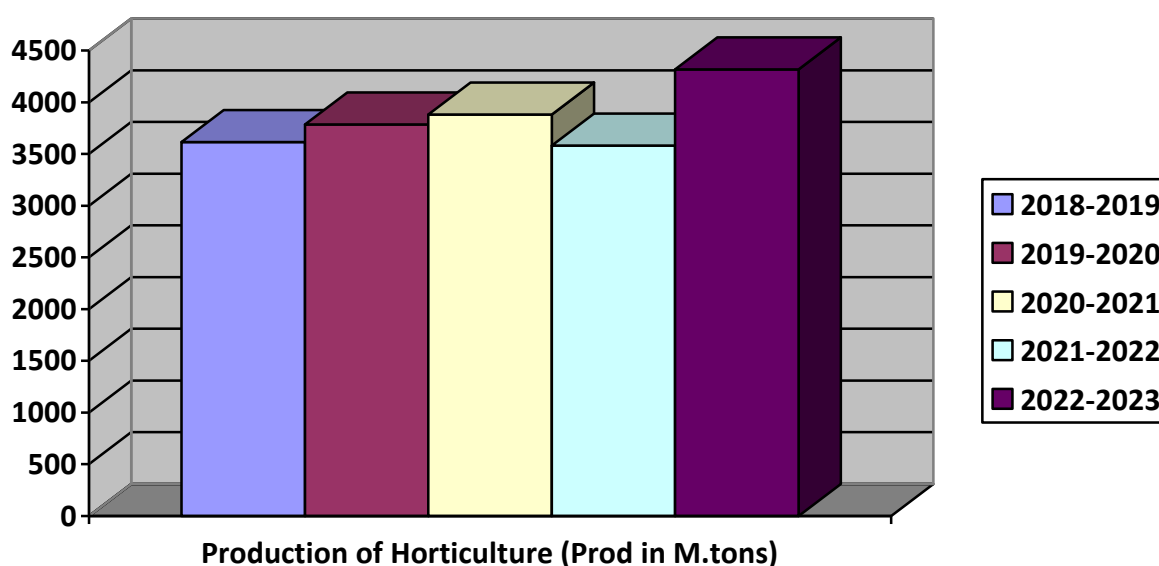
**Table 1. Production of Horticulture (M.tons) of Jammu and Kashmir from 2018-2023**

year	Production of Horticulture( M.tons)
2018-2019	3615.048
2019-2020	3786.114
2020-2021	3882.549
2021-2022	3581.722
2022-2023	4318.673

Source: Director of Horticulture Jammu and Kashmir.



**Chart 1. Production of Horticulture (M.tons) of Jammu and Kashmir from 2018-2023**



The Growth of production of Horticulture of Jammu and Kashmir has increased year after year. In 2018-2019 the overall Production of Horticulture (M.tons) is 3615.048. In 2019-2020 the overall Production of Horticulture (M.tons) is 3786.114. In 2020-2021 the overall Production of Horticulture (M.tons) is 3882.549. In 2021-2022 the overall Production of Horticulture (M.tons) is 3581.722. In 2022-2023 the overall Production of Horticulture (M.tons) is 4318.673. The Compound annual growth rate of 5 years of production of horticulture is 3.6%. The growth rate of horticulture is positive in between 2018 to 2023.

**Table 2. Overall sustainable development goals rank and score of Jammu and Kashmir.**

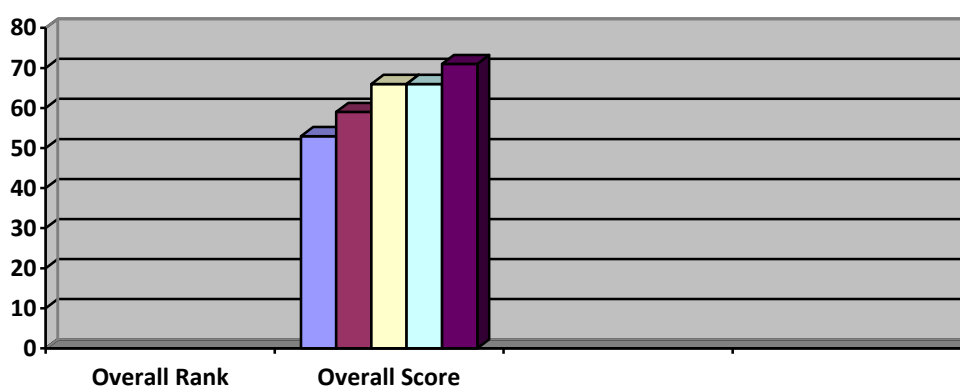
year	Overall Rank	Overall Score
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2018-2019	20 <sup>th</sup>	53
2019-2020	20 <sup>th</sup>	59
2020-2021	20 <sup>th</sup>	66
2021-2022	20 <sup>th</sup>	66
2022-2023	20 <sup>th</sup>	71

Source: Sustainable Development Goals Progress Reports of India.

**Chart 1. Chat of sustainable development goals rank and score of Jammu and Kashmir.**



Jammu and Kashmir has got overall score of 66 in all union territories and declared front runner. In 2018-2019 the overall score 53 ranks with 20<sup>th</sup>. In 2019-2020 the overall score 59 with rank 20<sup>th</sup>. In 2020-2021 the overall score 66 with rank 20<sup>th</sup>. In 2021-2022 the overall score 66 ranks with 20<sup>th</sup>. In 2022-2023 the overall score 71 ranks with 20<sup>th</sup>.

### **Suggestions:**

Government should provide such policies so that the participation of women (Gender Equality - SDG 5) in horticulture will improve.

Government should provide to Fast transportation for the horticulture products especially apple sector, so that the apple will reach at mandi on time.

Government should provide facilities to import horticulture products of Jammu and Kashmir to international level.





## **Conclusion:**

Sustainable development goals in Jammu and Kashmir have improved in the last 3 years. Poverty has been reduced, the health sector has improved, clean water facilities through tapes have improved, the education sector has shown remarkable improvements as well as other goals which are set by the Government of Jammu and Kashmir. Horticulture became a backbone for achieving these goals. To achieve these goals, horticulture provides employment for 1000 workers on one hectare of land, which will help to reduce unemployment in UT. It also helps to earn a handsome amount of money from apple production, which increased the income of people.

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