

LEAP TOWARDS CONNECTIVITY

The recent initiative to introduce helicopter services to the mountainous districts of Jammu marks a significant milestone in enhancing connectivity, fostering development, and ensuring timely access to essential services in some of the most remote areas of the Union Territory. With terrain that is often rugged, snow-bound, and prone to landslides, the introduction of aerial transportation is not merely a convenience-it is an essential lifeline for communities that have historically been cut off from mainstream infrastructure. The benefits of heli-services extend beyond passenger transport. In emergencies, whether medical, natural, or security-related, helicopters can drastically reduce response times, saving lives in critical situations. For residents of high-altitude areas such as Poonch, Rajouri, Doda, and Kishtwar, access to advanced healthcare facilities has often been hampered by poor road connectivity, landslides, and harsh winters. Heli-services can bridge this gap, ensuring that patients requiring urgent medical attention reach hospitals promptly, and essential supplies, including medicines, can be delivered without delay.

Tourism, a vital sector for Jammu, also stands to gain significantly. The scenic beauty of Jammu's mountains has long attracted adventure enthusiasts, trekkers, and spiritual tourists. However, difficult terrain has often limited tourist influx. Helicopter connectivity can open up new avenues for high-end tourism, boosting local economies and creating employment opportunities for youth in these regions. Moreover, such services can be crucial during peak pilgrimage seasons, facilitating safe and swift movement to religious sites that are otherwise difficult to access. From an administrative and security perspective, heli-services enhance the government's ability to monitor and manage remote areas effectively. In border-adjacent districts, rapid deployment of personnel and resources in case of emergencies becomes feasible, strengthening both governance and security measures. Furthermore, enhanced connectivity can encourage the private sector to invest in these regions, fostering entrepreneurship, trade, and overall socio-economic growth. The introduction of helicopter services to Jammu's mountainous districts is a visionary step toward bridging geographical divides and catalyzing holistic development.

Technology enriched India today no longer follower, beckons others to follow

■ DR. JITENDRA SINGH

Standing at the threshold of global scientific renaissance, technology enriched India today is no longer a follower, but beckons others to follow her.

Over the past decade, under the visionary leadership of Prime Minister Narendra Modi, the country has witnessed an unprecedented surge in science, technology, and innovation. From digital empowerment to space exploration, the contours of a self-reliant, technology-driven India - an Atmanirbhar Bharat - are becoming unmistakably clear. From the triumphs of Digital India and Startup India to the success of Swachh Bharat and One Health, the nation has demonstrated that large-scale transformation can be driven through science, technology, and innovation.

The UPI revolution has redefined digital payments globally. India's bioeconomy has seen exponential growth from growing sixteen-fold from \$10 billion in 2014 to an impressive \$165.7 billion in 2024 leading the way in biofuels, bioplastics, and green chemicals. The Chandrayaan and Gaganyaan missions have cemented India's place among space faring nations, while the 5G rollout and digital diplomacy have brought connectivity and empowerment to the last mile.

India is now emerging as a global leader in AI for all, ensuring that intelligence and innovation reach every sector - from agriculture to healthcare to governance. With over 100 unicorns and a thriving ecosystem of youth-led startups, the country's scientific and entrepreneurial spirit is unmatched.

The rise of green hydrogen, quantum science and technology, semiconductor manufacturing and precision agriculture, shows that India is not merely catching up with the world - it is helping to define the future.

This is the story of Atmanirbhar Bharat in motion-a self-reliant, forward-looking India steering confidently toward Viksit Bharat 2047, the centenary of its independence.

ESTIC: From Achievement to Aspiration
Against this backdrop of progress, the Emerging Science, Technology and Innovation Conclave (ESTIC) - to be held from November 3-5, 2025, at Bharat Mandapam, New Delhi- marks a bold new step. Convened by 13 ministries of the Government of India, ESTIC is more than a showcase of achievement; it is a crucible for collaboration, foresight, and national strategy.

Inaugurated by the Prime Minister, ESTIC 2025 will bring together leading scientists, innovators, policymakers, and global experts to deliberate on the future of emerging technologies. It will serve as a platform to identify gaps, forge partnerships, and co-create pathways that align science and technology with India's developmental priorities.

This is not just an event - it is a national convergence platform. uniting academia, industry, and government around one shared purpose: to power India's journey toward Viksit Bharat 2047, a fully developed, innovation-led nation by the centenary of its independence.

Built around 11 thematic areas crucial to

India's self-reliance in science and technology, ESTIC will serve as a nerve center for strategic dialogue, collaboration, and showcasing Indian excellence. Besides, celebrating the current achievements, it will also enable brainstorming, gap identification, and policy interventions to ensure that India's scientific progress remains closely aligned with societal needs and global opportunities.

At its core, ESTIC is about connecting the ecosystem - ministries that design policy, scientists who innovate, industries that scale ideas, and startups that disrupt. It celebrates both the journey so far and the road ahead toward sustainable, inclusive, and transformative growth.

Eleven Tracks, One Vision

ESTIC 2025 will revolve around eleven thematic tracks that together capture India's technological ambitions.

These include Advanced Materials & Manufacturing for building stronger, lighter, and smarter materials to power defense, space, and industry; artificial intelligence for transforming lives and making governance smarter and more inclusive; Bio-Manufacturing that is scaling the green economy with sustainable bio products and circular solutions; Blue Economy that is harnessing ocean resources responsibly for prosperity and resilience; Digital Communications driving connectivity from 4G to 5G and now towards 6G, empowering rural India, and leading in global digital diplomacy; Electronics & Semiconductor Manufacturing, turning the vision of "Make in India" into a silicon-powered reality,

Emerging Agriculture Technologies that can ensure food security through innovation, precision, and sustainability; Energy, Environment & Climate that is pioneering renewable energy and green hydrogen as models for the world; Health & Medical Technologies that is delivering affordable innovation for ensuring health equity; Quantum Science & Technology for a leap in secure communications, sensing, computing and materials and Space Technology inspiring generations, and expanding scientific horizons

These tracks together reflect India's comprehensive innovation map - a matrix where deep science, entrepreneurship, and policy converge.

Towards a Viksit Bharat 2047

In many ways, ESTIC represents the curriculum of India's growing confidence as a knowledge and innovation leader. It is a national mission to ignite imagination, inspire young minds, and innovate for the century ahead. By bringing together thought leaders, Nobel Laureates, policymakers, and industry pioneers, ESTIC 2025 will position as a scientific superpower and a global hub for innovation-led development.

As India marches towards 2047, ESTIC stands a symbol and a catalyst- a space where India's scientific achievements meet its developmental aspirations, ensuring that every innovation contributes to a resilient, sustainable, and inclusive Viksit Bharat.

(The author is Union Minister of State (Independent Charge) for Science and Technology)

Environment in 21st century

■ BABY SHARMA

Living in 21st century people are more aware about their environment yet still not enough, to be motivated to protect it. The gradual loss of our environment will eventually lead to an irreversible damage to earth which is directly going to impact us in numerous ways. The degradation of environment is caused by many issues like Global warming, Deforestation, Ozone depletion and Pollution.

Let's dive into some major challenges:
GLOBAL WARMING : The rise in the temperature of earth due to

greenhouse gases is known as Global warming. The rise in the temperature leads to the extreme weather events, like drought, cyclone, heavy rain and storms. Change in climatic patterns, melting of glaciers leading to the rise in water levels. Changes in ecosystem, coastal areas, biodiversity.
DEFORESTATION : Permanent clearing of forests is known as deforestation for reasons like agriculture, urbanization, mining and logging. Deforestation leads to biodiversity loss, change in water cycles, soil erosion, climatic changes and loss of food and shelter for local communities as well as the species.



OZONE DEPLETION : Ozone layer protects earth from harmful radiations of sun. The depletion in the layer creates a way for those radiations to enter our atmosphere which can lead to various consequences like Skin cancer. Chlorofluorocarbons have been a leading cause for the depletion of Ozone layer released from refrigerators, ACs and aerosols. To protect ozone an international treaty was signed in, 1987 Montreal Protocol, to reduce the emission of CFCs and greenhouse emission. It's also known as one of the most successful environmental treaty. The impact of environmental loss is

slow but gradual. Numerous policies, treaties, campaigns, awareness efforts made by government and organisations, still at fundamental level people don't consider protecting environment, as their responsibility.

Where are we lacking to make people understand that they aren't existing separately from their environment?

Changes in our surroundings will impact us directly. There's no other place to be called home if we failed to protect our planet.

(The writer is MA, Mass Communication and New Media, Central University Jammu)

Organic Production of Dragon Fruit (Pitaya) in the Jammu Region

■ PROF. (DR.) PARSHANT BAKSHI

Dragon fruit (Hylocereus spp.) has emerged as a sustainable and profitable venture for in many subtropical pockets of India including the Jammu region because it adapts well to warm subtropical climates, requires comparatively little water once established, and brings good market value. This crop has gained momentum in Jammu region with the technical interventions of SKUAST-J as well as due to its unique appearance, high nutritional value and medicinal properties. This fruit is rich in antioxidants, vitamin C, dietary fibre and minerals like calcium and phosphorus, making it a super fruit. The practical, field-ready guide tailored to organic production in Jammu: site and planting, cultural operations (trellis, pruning, nutrition, pest/disease management using organic methods), how to obtain organic certification, and post-harvest handling protocols suitable for Jammu's climate and market chains.

1. Why dragon fruit suits Jammu

Dragon fruit performs well in subtropical conditions and has already been adopted successfully by progressive growers in Jammu, Samba, Kathua regions; trials and local experience show good establishment and fruiting under local agro-climatic conditions.

2. Site selection and planting (organic focus)

" Climate and aspect: Choose a well-drained site with full sun to partial shade. Avoid waterlogged plots; dragon fruit tolerates some drought but needs steady moisture during establishment and fruiting.

" Soil: Light to medium textured soils with good drainage; pH 6.0-7.5 preferred. Improve heavy soils with organic matter (well-rotten farmyard manure, vermicompost).

" Planting time: In Jammu, planting is commonly done in January - February or at the start of dry season to avoid heavy monsoon stress on young plants.

" Propagation material: Use disease-free, well-rooted cuttings or hardened tissue-culture plants. Hardening and use of good potting mixes (soil:sand:vermicompost mixes) improves survivability.

3. Orchard layout and trellis systems (organic advantage)

" Trellis types: Use sturdy single-post + cross-arm posts, T-bar or horizontal wire trellises. Proper trellis design reduces spread of fungal spores (by improving aeration) and simplifies



pruning and harvest. T-bar/horizontal systems support higher planting densities and mechanize some operations.

" Plant spacing: Common layouts are 3-4 m between posts and 1.5-3 m between plants depending on trellis form; choose spacing that balances light penetration, air flow and labour efficiency.

4. Organic nutrient management

" Baseline: Apply well-decomposed FYM or compost at planting. Maintain organic carbon and soil biology with seasonal applications of vermicompost (e.g., 5-10 kg/plant/year split doses depending on age).

" Liquid organics: Use locally approved organic nutrient inputs, bio-fertilizers and microbial preparations (e.g., compost tea, microbial consortia, Kitchen waste, PGPR formulations) to enhance nutrient availability and plant health.

" Soil testing: Periodically test and correct deficiencies using permitted organic inputs (rock phosphate for P; green-sand/seaweed extracts for micronutrients when allowed under certifier rules).

5. Water, mulching and irrigation

" Irrigation: Drip irrigation is recommended for water use efficiency and disease control. Schedule irrigation to avoid prolonged wet foliage.

" Mulch: Organic mulch (straw, sugarcane trash) reduces evaporation, controls weeds and builds soil organic matter - important for organic certification

and soil resilience.

6. Organic pest and disease management

" Common issues: In humid spells, stem and fruit rots and some fungal infections are the main threats; insect pressure is typically low but mealybugs or scale can appear.

" Preventive measures: Maintain sanitation (remove diseased pads/fruit), ensure good air circulation (training/pruning), and avoid overhead watering. Bagging fruits (paper/fabric bags) during rainy periods helps prevent rain damage and reduces pest/disease entry.

" Approved treatments: Use copper-based fungicides within certifier limits, neem formulations, Bacillus subtilis/Bacillus thuringiensis products, and organic insecticidal soaps/kaolin clay where necessary - always check with your certification body for allowed materials and maximum residue limits.

" Tool hygiene: Sanitize cutting tools to prevent disease transmission (important for cactus crops prone to bacterial/fungal spread).

7. Pruning and training (productivity and sanitation)

" Timing and method: Prune to remove weak, excess or diseased stems and to maintain an open canopy; major pruning often done in dry season (e.g., November-December in the region).

" Sanitize tools between plants.

Proper cladode density (avoid overcrowding) improves flowering and fruit set.

8. Harvesting (organic considerations)

" Maturity indicators: Harvest when skin colour develops fully and scales begin to dry at tips maturity varies with cultivar. Avoid harvesting immature fruit as quality and storability drop.

" Harvest method: Use clean containers, harvest by cutting fruit with a sterile knife (do not pull), and avoid bruising. Train labour in gentle handling - bruised fruit is more prone to rot and downgraded in market.

9. Post-harvest handling for organically grown fruits in Jammu

Jammu's subtropical climate (warm days, cool nights in many pockets) and sometimes high monsoon humidity mean careful post-harvest handling is essential to maintain organic integrity and market value.

Precautions to be taken:

" Field sorting and culling: Do primary sorting in the field remove damaged, overripe, or insect-infested fruit; do not mix fallen/ground fruits with harvested fruit.

" Hygiene and packing materials: Use clean, food-grade packaging. For organic produce, only approved, non-contaminating packing materials are acceptable. Sanitize crates and surfaces with permitted materials (e.g., potable water, approved sanitizers) - keep

records for certification audits.

" Cooling and cold chain: Rapidly cool fruit to remove field heat. While dragon fruit tolerates ambient transport better than some soft fruits, use of coolers (or shaded, ventilated trucks) and cold storage at recommended temperatures increases shelf life and reduces post-harvest loss. For smallholders, explore community cold rooms or local pack-houses to link to markets.

" Humidity management: Maintain moderate relative humidity to avoid desiccation without encouraging fungal growth appropriate storage RH and temperature depend on cultivar and maturity; consult local pack-house recommendations.

" Minimal handling and traceability: Keep handling steps minimal and document harvest date, field/block, and post-harvest treatments - essential for organic traceability. Retain blocks of records: inputs, harvest logs, packing lists, transport details.

" Fruit bagging and protection for monsoon: During rainy spells bagging fruits helps prevent rain-splitting and fungal entry (bagging also fits organic systems as a physical control).

10. Organic certification of fruits in India - practical steps (NPOP/APEDA)

For producers in Jammu seeking market access as "organic," the National Programme for Organic Production (NPOP), implemented by APEDA, is the primary Indian scheme. Steps (high-level):

" Understand standards: Read the NPOP standard and the list of permitted inputs; only NPOP-approved practices and materials are allowed.

" Select an accredited certification body: Choose an NPOP-accredited certifier (there are many across India, including state certifiers). The certifier will explain documentation needs, audit timelines and fees.

" Conversion period and record keeping: If land was conventionally managed, a conversion period (usually 2 years for perennial crops from last prohibited input) applies before you can label produce as organic for most markets - keep detailed input records, field history and maps. A group certification option (Participatory Guarantee Systems or PGS) may be suitable for smallholders for domestic markets; for export NPOP third-party certification is required.

" On-site inspection: The certifier performs an inspection of the orchard, processing/packing area and record systems. Non-conformities must be correct-

ed.

" Certification and annual renewal: After compliance is confirmed, the certifier issues a certificate which must be renewed annually (with periodic inspections). Maintain traceability through packing and transport.

Note: Always check the latest APEDA/NPOP rules, lists of accredited certifiers, and specific export market requirements (e.g., EU, US NOP equivalence and additional paperwork) before marketing.

11. Practical checklist for an organic dragon-fruit grower in Jammu

- Choose certified clean planting material and mark field blocks.

- Build a durable trellis; plan spacing for pruning and harvest.

- Prepare soil with compost/FYM and plant in recommended months (January-February).

- Implement drip irrigation + mulching; maintain sanitation and tool hygiene.

- Use permitted organic inputs only; document every input and operation.

- Sort in field, use clean packing, cool fruit quickly, and use community cold-storage if available.

- Start certification process early (group or individual) and maintain records for audits.

12. Quick resources and next steps (where to look)

" APEDA - NPOP programme (standards, list of accredited certifiers and procedures).

" NIAM / state horticulture extension bulletins for dragon fruit cultivation details (spacing, training, yield expectations).

" Local KVK / State Horticulture Department and SKUAST extension officers (for Jammu-specific micro-climate guidance and help connecting to pack-houses/cold storage). (Local extension is invaluable for Farm-to-market solutions.

Organic dragon fruit in Jammu is a realistic, scalable enterprise when growers combine sound orchard design (trellis, irrigation, and pruning) with strict sanitation, allowed organic inputs, and careful post-harvest handling. Certification under NPOP opens domestic and export markets, but requires record diligence and an understanding of the conversion period and permitted materials. For highest returns, focus equally on quality (fruit sizing, colour, blemish-free) and on building links to pack-houses and cold-chain facilities in the region.

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