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High-Value Crop Diversification: Region-Specific Agriculture, Horticulture and Sustainable Farm-Income Growth

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Recent Developments:

- The **Union Budget 2026–27** has emphasised region-specific promotion of high-value agriculture, including coconut, cashew, cocoa and sandalwood in coastal areas and nut crops in hilly regions, to diversify farm output, improve productivity and generate employment.
- The policy approach seeks to move Indian agriculture beyond excessive dependence on cereal-based systems by aligning crop choices with **agro-climatic conditions, water availability, market demand and regional comparative advantages**.
- The **Economic Survey 2025–26** noted that horticulture productivity increased from 12.10 tonnes per hectare in 2019–20 to 12.56 tonnes per hectare in 2024–25, while horticultural cultivation expanded substantially under the Mission for Integrated Development of Horticulture.
- India's high-value agricultural strategy increasingly connects **crop diversification, post-harvest infrastructure, agro-processing, exports, climate resilience and farmer incomes**.

Concept and Significance of Crop Diversification:

What is Crop Diversification:

- **Crop diversification** refers to shifting agricultural land from excessive dependence on a limited number of crops, particularly water-intensive cereal rotations, towards pulses, oilseeds, horticulture, plantation crops, agroforestry and other commercially viable crops.
- Horticulture is particularly important because it can generate **higher value per unit of land**, support nutritional security, create employment and provide opportunities for processing and value addition.
- Region-specific diversification is more sustainable when crop selection is based on **soil characteristics, rainfall, temperature, irrigation availability, local skills and market access** rather than uniform national cropping patterns.

Emerging Agricultural Trends:

- Indian agriculture recorded a **4.45% decadal growth rate**, indicating a strengthening growth trajectory compared with earlier decades.
- Horticulture contributes approximately **37% of the gross value of output of the crop sector**, demonstrating its increasing importance within agricultural production.
- National horticultural production increased from **277.35 million tonnes in 2013–14 to 370.74 million tonnes in 2024–25**, comprising approximately 217.80 million tonnes of vegetables, 117.65 million tonnes of fruits and 35.29 million tonnes of other horticultural and plantation crops.
- India ranks **second globally in aggregate fruit and vegetable production**, while its horticultural commodities provide substantial opportunities for domestic processing and international trade.

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Region-Specific High-Value Crop Strategy:

Coastal States and Island Regions:

- Coastal agro-climatic conditions favour **coconut, cashew, cocoa and sandalwood**, enabling farmers to shift towards plantation crops with significant processing and export potential.
- India is the **second-largest coconut producer globally**, and the coconut economy supports approximately 30 million people, including nearly 10 million farmers.
- The **Coconut Promotion Scheme** announced under the Union Budget 2026–27 seeks to replace aged, senile and low-yielding palms with high-yielding varieties and certified planting material, with institutional support through farmer organisations.
- Diversification in coastal regions can integrate plantation production with **food processing, fibre products, oil extraction, rural employment and export-oriented value chains**.

Northeastern Region:

- The Northeastern Region possesses strong potential for **agarwood, organic agriculture, horticulture and agroforestry** because of its biodiversity, rainfall and varied ecological conditions.
- India has approximately **150 million agarwood trees**, with around 90% located in the Northeastern states, where cultivation is integrated with plantation and agroforestry systems.
- Tripura's agarwood sector has an estimated annual turnover potential of approximately **₹2,000 crore**, while government interventions increasingly focus on processing, market linkages and export promotion.
- Agarwood exports have received policy support through **geospatial mapping, enhanced export quotas, digital export applications and value-chain development**, creating opportunities for the region to move from raw-material production towards higher-value processing.

Hilly and Temperate Regions:

- Hilly and temperate areas possess comparative advantages for **walnut, almond and other nut crops**, which can provide higher-value alternatives to unsuitable conventional crops.
- Jammu and Kashmir accounts for the major share of India's commercial walnut production, while Uttarakhand, Himachal Pradesh, Ladakh, Arunachal Pradesh and Manipur also contribute to the sector.
- Walnut production reached approximately **3.22 lakh tonnes in 2024–25**, while exports were valued at about **7.80 million US dollars**, demonstrating the scope for export-oriented temperate horticulture.

Indo-Gangetic Plains:

- Punjab and Haryana require diversification away from excessive paddy cultivation because intensive groundwater extraction and residue-management problems have contributed to **groundwater depletion, soil degradation and ecological stress**.
- Shifting suitable areas towards **pulses, oilseeds and protected vegetable cultivation** can reduce pressure on groundwater while improving crop and income diversification.
- Integrating nitrogen-fixing pulses can also contribute to **soil fertility, nutrient cycling and lower dependence on synthetic nitrogen inputs**.

Significance of High-Value Diversification:

Farm Income and Employment:

- High-value horticultural and plantation crops can provide **greater income-generation opportunities per unit of land**, particularly when farmers participate in processing, grading, branding and direct marketing.
- Diversification can create rural employment beyond cultivation through **nurseries, storage, processing, packaging, transportation and export services**.

Water, Soil and Climate Resilience:

- Replacing water-intensive crops in groundwater-stressed regions can reduce **irrigation demand and groundwater depletion**, particularly when diversification is accompanied by micro-irrigation and improved agronomic practices.
- Horticulture and agroforestry can improve resilience to climatic variability by reducing dependence on a narrow crop portfolio and supporting **soil conservation, biodiversity and ecosystem services**.

Agro-Processing and Value Addition:

- Diversification expands the raw-material base for **food processing, cold chains, essential-oil extraction, perfumery, packaging and other agro-industries**.
- The Agriculture Infrastructure Fund can support farm-level and post-harvest infrastructure, while farmer organisations can help aggregate produce and improve bargaining power.
- The National Horticulture Board focuses on production clusters, post-harvest and cold-chain infrastructure, quality planting material and technology adoption in commercial horticulture.

Key Challenges:

Price and Market Risks:

- Unlike wheat and paddy, which benefit from relatively stronger procurement arrangements, many horticultural commodities remain exposed to **seasonal price volatility, perishability and inadequate market intervention**.
- Farmers may therefore hesitate to adopt high-value crops unless reliable markets, processing facilities and risk-management mechanisms are available.

Infrastructure and Post-Harvest Losses:

- Inadequate **pre-cooling, cold storage, refrigerated transportation, grading and processing facilities** can reduce the economic benefits of horticultural diversification.
- Fragmented supply chains also prevent small farmers from capturing a larger share of the final consumer price.

Long Gestation and Regulatory Constraints:

- Tree crops such as **agarwood, sandalwood and nut crops** may require several years before commercial returns are realised, creating liquidity constraints for small and marginal farmers.
- Fragmented processing, weak quality certification and complex phytosanitary and international-trade requirements can restrict access to premium export markets.

Way Forward:

Strengthening Infrastructure and Institutions:

- The **Agriculture Infrastructure Fund** should be used more extensively for primary processing, sorting, grading, storage and cold-chain facilities, particularly where farmer organisations can aggregate production.
- Farmer Producer Organisations should be strengthened as platforms for **collective input procurement, aggregation, processing, branding and market access**.

Improving Price and Production Support:

- Price-deficiency and market-intervention mechanisms should be expanded to suitable high-value crops during periods of severe market gluts.

- Regional nurseries should provide **certified, disease-free and climate-resilient planting material**, including improved varieties, tissue-cultured plants and suitable rootstocks.

Promoting Value Addition and Exports:

- Cluster-based agro-industrial development should connect farmers with **processing, packaging, branding and export markets** rather than relying predominantly on raw agricultural exports.
- Schemes such as the **Pradhan Mantri Formalisation of Micro Food Processing Enterprises** can support decentralised processing and value addition at the local level.
- Export facilitation should combine quality standards, traceability, phytosanitary compliance, logistics and international market intelligence.

Value Addition for UPSC:

Key Concepts:

- **Crop diversification** reduces dependence on a narrow crop basket, while **agro-climatic zoning** aligns crop selection with local ecological conditions.
- **High-value agriculture** links productivity with profitability, processing, employment and market demand.
- **Agroforestry** combines trees with agricultural production and can provide livelihood diversification, ecological benefits and climate resilience.
- **Value-chain development** enables farmers to capture greater economic returns through aggregation, processing, branding and market access.

Conclusion:

- India's agricultural transformation requires a shift from a predominantly production-oriented approach towards a **regionally differentiated, value-oriented and resource-efficient agricultural system**.
- The Union Budget 2026–27's emphasis on coastal plantation crops, Northeastern agroforestry and temperate nut crops reflects the principle that **India's diverse agro-ecological strengths should determine its future crop choices**.
- Combining crop diversification with **post-harvest infrastructure, farmer collectivisation, value addition, climate-resilient planting material and efficient export logistics** can make high-value agriculture a durable source of farmer prosperity and sustainable rural growth.