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## GOVERNMENT OF GOA

**Department of Agriculture**

Directorate of Agriculture

**Notification**

3/5/Extn/14/2025-26/D.Agri/507 Date: 06-Mar-2025

The Goa State Amritkal Agriculture Policy 2025 as approved by the Council of Ministers in the LXIIrd Cabinet Meeting held on 06/02/2025 is hereby published for the information and its implementation.

The same is issued with the approval of the Government vide U.ONo. 195/C dtd 07/02/25.

By order and in the name of the Governor of Goa.

*Sandeep Fol Dessai*, Director Of Agriculture & Ex Officio Jt. Secretary

**Goa State Amritkal Agriculture Policy, 2025**

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**GOA STATE AMRITKAL AGRICULTURE POLICY, 2025**

**Part A**

**Policy Preliminaries: -**

**1. Nomenclature and Structure of the document**

This Government of Goa policy document supersedes any other policy document of the state government on this subject. It would be known as Goa State Amritkal Agriculture Policy, 2025 and hereafter referred to as GSAAP-2025 or GS2AP , 2025. Throughout the document, “we” and “ours” imply the Government of Goa.

This policy document is divided into three parts:-

**Part A:-** Policy preliminaries

**Part B:-** Core Areas of the policy

**Part C:-** International Collaborations, Effective Implementation mechanisms, Improved mechanism for policy implementation, People's Vault of Good Ideas for Agriculture, Promotion of the Policy after the notification etc.

**2. Period for the implementation and revision**: -

Unless it is decided by the Government of Goa otherwise, the implementation period of the policy would be ten years from the date of its notification in the official gazette, and the first revision preferably could be made after five years or after such a period as the government considers appropriate but note less than five years.

**3. Preamble**

Whereas agriculture remains the bedrock of Goa's economy, heritage, and sustenance, providing the primary means of livelihood for a significant portion of its population and playing a pivotal role in the socio-economic fabric of the state;

Acknowledging the unique agro-ecological zones of Goa, including its khazan lands, coastal plains, and upland areas, which host a diverse array of flora and fauna, contributing to the state's rich biodiversity and agricultural heritage;

Recognizing the challenges faced by the agricultural sector in Goa, including but not limited to, climate change, urban encroachment, salinity intrusion, soil degradation, and the need for modernization of agricultural practices to ensure sustainability and resilience.

Mindful of the sacred heritage and spiritual dimensions of agriculture in Goa, which encompasses a deep-seated respect for the land, the cycles of nature, and the traditional festivals and rituals that celebrate the agricultural heritage of the state;

Affirming the commitment to sustainable development goals, the principles of the Food and Agriculture Organization (FAO), the Convention on Biological Diversity (CBD), and other relevant international conventions and national guidelines aimed at promoting sustainable agriculture, biodiversity conservation, and farmers' welfare.

Emphasizing the importance of innovation, technology, and research in transforming agriculture into a more productive, sustainable, and resilient sector, while ensuring the preservation of traditional knowledge and practices that have sustained Goa's agriculture for centuries.

Determined to foster an inclusive agricultural sector that values and supports the contributions of all farmers, including smallholders, women, youth, and indigenous communities, ensuring their access to resources, knowledge, and markets.

Hereby, the Government of Goa sets forth the Goa State Amritkal Agriculture Policy 2025, to revolutionize the agricultural sector by harnessing the state's unique strengths, addressing its specific challenges, and capitalizing on the opportunities for growth and development. This policy is dedicated to cultivating resilience, innovation, and prosperity for all stakeholders involved in agriculture and allied sectors, ensuring the sustainability and profitability of agriculture as a cornerstone of Goa's economy and way of life, and contributing to the overall well-being of the Goan community.

This preamble precedes the vision and mission statements of the Goa State Amritkal Agriculture Policy 2025, laying the foundation for a comprehensive and strategic approach to agricultural development in the state, guided by the principles of sustainability, inclusivity, and respect for both the land and its people.

## 4. Importance of Amritkal

The designation of the Goa State Agriculture Policy as the Goa State Amritkal Agriculture Policy, 2025, is a strategic and forward-looking initiative that aligns with the vision of Amritkal, marking the period up to the centenary of India's Independence in 2047. This period is envisioned as a transformative era during which India aims to become a fully developed country. The alignment of state policies with Amritkal's national vision is essential for cohesive progress and development across all sectors, including agriculture, which is a cornerstone of India's economy and societal fabric. Here are several justifications for designating the Goa State Agriculture Policy under the banner of Amritkal:

### 4.1. Sustainable and Inclusive Agricultural Development

The Amritkal vision emphasizes sustainable and inclusive growth. The Goa State Amritkal Agriculture Policy, 2025, will embody this by promoting sustainable agricultural practices that ensure environmental conservation, enhance biodiversity, and utilize natural resources judiciously. It will focus on inclusive growth by ensuring that benefits reach all segments of the agricultural community, including smallholder farmers, women, youth, and marginalized groups, thus fostering social equity and cohesion.

### 4.2. Technological Innovation and Modernization

Aligning with the Amritkal vision of transforming India into a fully developed country, the policy will embrace technological innovation and digital transformation in agriculture. This includes adopting precision farming, digital marketplaces, and climate-smart agriculture technologies, making farming more efficient, productive, and resilient to climate change. This approach not only enhances the sector's competitiveness but also makes agriculture attractive to the youth, ensuring the sector's future vitality.

### 4.3. Economic Growth and Farmer Prosperity

The Goa State Amritkal Agriculture Policy will aim to significantly contribute to economic growth by increasing the agricultural sector's productivity and profitability. It will introduce measures to ensure fair prices for farmers, reduce input costs, and promote value addition and diversification. By focusing on farmer prosperity, the policy will align with the Amritkal goal of elevating India to a fully developed economy with a vibrant rural economy as its backbone.

### 4.4. Food Security and Nutritional Well-being

The policy will prioritize food security and nutritional well-being, aligning with the Amritkal vision of a healthy and well-nourished population. It will promote the production of a diverse range of food crops,

including nutrient-rich and traditional varieties, to improve dietary diversity and nutritional outcomes. This focus is crucial for building a healthy workforce that can contribute to the nation's development.

4.5. Resilience to Climate Change and Natural Disasters

In recognition of the increasing challenges posed by climate change, the Goa State Amritkal Agriculture Policy will incorporate strategies for building resilience among farming communities. This includes adopting climate-smart agricultural practices, improving water use efficiency, and enhancing disaster preparedness and risk management, which are critical for safeguarding agricultural productivity and livelihoods in the face of environmental uncertainties.

4.6. Collaboration and Participatory Governance

The policy will promote collaboration among various stakeholders, including government agencies, private sector, civil society, and farming communities, to ensure that agricultural development is a shared vision. By fostering participatory governance, the policy aligns with the Amritkal ethos of collective effort and unity in achieving national goals.

4.7. Alignment with National Goals and Global Commitments

Finally, the Goa State Amritkal Agriculture Policy will coincide with national goals, including the Sustainable Development Goals (SDGs), and India's commitments under international agreements such as the Paris Agreement on climate change. This alignment ensures that Goa's agricultural development contributes to national progress and global sustainability efforts. By integrating these justifications, the Goa State Amritkal Agriculture Policy, 2025, positions itself as a forward-thinking, comprehensive strategy supporting the vision of Amritkal. It aims to transform agriculture in Goa and contribute to the larger goal of making India a fully developed country by the centenary of its independence in 2047.

**5.Vision**

5.1 The Goa State Amritkal Agriculture Policy 2025 envisions a vibrant, sustainable, and inclusive agricultural sector that harnesses the unique strengths and addresses the specific challenges of our state, amidst the backdrop of a high urban population, the looming threat of sea level rise, pressure on agricultural lands, vast areas under protected forests, and the dwindling manpower in the farming sector. Our vision is to cultivate resilience, innovation, and prosperity for all involved in agriculture and allied sectors, ensuring that agriculture in Goa not only thrives amid global changes but also leverages the state's high literacy rates, rich cultural heritage, and ecological diversity. This vision embraces agriculture as a profound expression of the symbiotic relationship between humanity and nature, a man-made ecosystem that is a sacred heritage of Goa, imbued with deep spiritual dimensions nurtured over millennia.

5.2 Recognizing agriculture as a living tradition, this policy commits to preserving and promoting the ancient tradition of respecting the land and its bounty, underscoring the importance of continuing traditional festivals and rituals that celebrate the agricultural cycle. It aims to weave the traditional wisdom of the past with the innovations of the future, creating a sustainable agricultural sector that respects the sacred bond between the land and its people. The policy pledges to enhance the value of agriculture and its products through modernization, research, and the adoption of best practices that ensure productivity and sustainability without compromising the state’s ecological balance.

5.3 Strategic land use planning and the promotion of integrated farming systems are key to balancing urban development pressures while preserving fertile agricultural lands, championing agro-biodiversity, supporting organic farming, and implementing water management practices that ensure the availability and efficient use of water resources. The development of a resilient agricultural sector capable of withstanding climate variability and other environmental risks is central to our vision, fostering the adoption of climate-smart agriculture practices, including precision farming and renewable energy, to build an agricultural sector that contributes to climate change mitigation and enhances food security.

5.4 Innovation and technology are viewed as catalysts for transformation, with the policy envisioning Goa as an agricultural research hub that attracts talent, fosters creativity, and develops solutions for

sustainable agriculture and food security. This vision is dedicated to creating an ecosystem that supports farmer welfare, ensures fair labor conditions, and empowers the youth and the wider community to engage in agricultural pursuits. It emphasizes strengthening farmer collectives, enhancing access to markets, credit, and insurance, and diversifying income through value addition and agro-tourism.

5.5 By integrating the spiritual and cultural dimensions of agriculture, this vision commits to a future where the respect for land, crops, and the natural cycles continues to be an integral part of Goan agriculture, enriching the lives of all who depend on it. The Goa State Amritkal Agriculture Policy 2025 is thus a pledge to uphold agriculture as a sacred heritage, ensuring that the spiritual connection to the land is celebrated and nurtured alongside the material advancements in agricultural practices. This holistic and all-encompassing vision for Goa's agricultural sector is a testament to a sustainable, prosperous, and resilient future, contributing to the well-being of all Goans and setting a benchmark for sustainable development as we move towards the centenary of India's independence.

**6 Mission: -**

6.1 The Goa State Amritkal Agriculture Policy 2025 mission steadfastly commits to transforming agriculture and allied sectors within Goa, fostering an environment where sustainability, resilience, and inclusivity elevate the entire agricultural community. This mission aligns with both national and international commitments towards sustainable development, climate resilience, and biodiversity conservation, intricately designed to secure food security, amplify farmer prosperity, and champion environmental stewardship, making agriculture a sustainable and profitable foundation of Goa's economy and societal fabric.

6.2 Central to this mission is the strategic emphasis on soil health improvement, water and nutrient management optimization, and the advocacy for organic and natural farming practices, thereby propelling the sector's sustainability forward. The integration of renewable energy sources and the deployment of precision agriculture technologies are envisioned to modernize operations, reduce resource intensity, and harmonize with global efforts to mitigate climate change, in accordance with the Paris Agreement and the Sustainable Development Goals (SDGs).

6.3 This mission is equally dedicated to cultivating a resilient agricultural system capable of withstanding climate change challenges by adhering to international frameworks for biodiversity protection and sustainable land use. It entails a conscientious effort to preserve, enhance, and judiciously utilize Goa's agricultural lands, ensuring they continue to contribute to ecological balance and biodiversity conservation.

6.4 In the realm of market access, value addition, and export promotion, the mission is steered by fair trade principles and equitable market practices, as endorsed by international trade frameworks. A supportive ecosystem for farmers is envisioned, ensuring decent work, fair wages, and overall well-being, aligning with the International Labour Organization (ILO) conventions.

6.5 Moreover, this mission encompasses a robust commitment to comprehensive extension services, farmer education, and community engagement, fostering a culture of innovation and continuous improvement. It emphasizes the synchronization of efforts with national initiatives and international obligations, contributing meaningfully to the global sustainable development agenda.

6.6 Furthermore, the mission underscores the importance of compliance with existing and any new Government of India national guidelines for agriculture and allied sectors, and farmers' welfare to be followed by the states. This includes adherence to initiatives such as the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), the Soil Health Card Scheme, and the National Mission for Sustainable Agriculture (NMSA), among others. Such compliance ensures that Goa's agricultural policies are in consonance with broader national goals, fostering a cohesive approach to agricultural development and farmers' welfare.

6.7 By pursuing this mission, the goal is to transform Goa's agricultural landscape into a beacon of resilience, innovation, and economic and social prosperity. Through collaborative efforts, transparency, and a shared vision, there is a commitment to fulfilling responsibilities to both the local and global community, establishing a new benchmark for sustainable agricultural development. The Goa State Amritkal Agriculture Policy 2025 thus dedicates itself to a mission that not only revolutionizes agriculture in Goa but also aligns with broader goals of environmental sustainability, social equity, and economic prosperity on a global scale. This mission, reflective of the sacred heritage of agriculture in

Goa, aspires to nurture the spiritual connection to the land alongside material advancements, preserving the sanctity of this age-old tradition for future generations while ensuring alignment with national guidelines and fostering a holistic and compliant approach to agricultural development.

**7 Core Values: -**

7.1 Innovation: Embrace technological advancements and innovative solutions to address agricultural challenges and enhance productivity sustainably.

7.2 Inclusivity: Ensure equitable access to resources, opportunities, and benefits for all stakeholders, with a focus on empowering smallholder farmers and marginalized communities.

7.3 Sustainability: Promote practices that conserve natural resources, protect biodiversity, and mitigate climate change impacts to build a resilient and environmentally responsible agriculture sector.

7.4 Collaboration: Foster partnerships with government agencies, research institutions, private sector entities, civil society organizations, and international bodies to drive collective action and knowledge sharing.

7.5 Quality: Uphold high standards of quality, safety, and traceability across the agricultural value chain, delivering nutritious and safe food products to consumers.

7.6 Empowerment: Invest in human capital development, capacity building, and entrepreneurship opportunities to enable farmers and rural youth to thrive in the agricultural sector.

8 **Key Strategic Objectives for the Next 10 Years:**

8.1 Enhance Agricultural Productivity and Diversification: Implement initiatives to increase yields, promote crop diversification, and introduce high-value and climate-resilient crops.

8.2 Strengthen Value Chains and Market Access: Develop market infrastructure, promote agribusiness development, and facilitate domestic and international agricultural product market access.

8.3 Foster Technology Adoption and Innovation: Encourage the adoption of precision agriculture, digital tools, and innovative farming practices to optimize resource use, improve efficiency, and enhance farm profitability.

8.4 Promote Sustainable Natural Resource Management: Implement watershed management programs, soil conservation measures, and sustainable water use practices to preserve natural resources and mitigate environmental degradation.

8.5 Support Rural Livelihoods and Socio-economic Development: Provide comprehensive support services, skill development programs, and financial incentives to enhance the livelihoods and well-being of rural communities.

8.6 Strengthen Institutional Capacity and Governance: Enhance the effectiveness and efficiency of agricultural institutions, streamline regulatory frameworks, and promote transparent and accountable governance.

8.7 Foster Research and Development: Invest in agricultural research, extension services, and technology transfer mechanisms to facilitate knowledge dissemination and innovation diffusion among farmers.

8.8 Promote Climate Resilience and Adaptation: Develop climate-smart agriculture strategies, promote resilient crop varieties, and implement risk management measures to build resilience against climate change impacts.

8.9 Ensure Food Security and Nutrition: Implement food security programs, promote sustainable food systems, and improve access to nutritious and diverse food options for all segments of society.

8.10 Promote Agro-tourism and Rural Entrepreneurship: Leverage Goa's natural beauty, cultural heritage, and agricultural assets to promote agro-tourism, rural entrepreneurship, and value-added agri-business opportunities.

By pursuing these strategic objectives with dedication, innovation, and collaboration, the Government of Goa is committed to realizing the vision of a thriving, sustainable, and inclusive agricultural sector that enriches Goans' lives and contributes to our state's prosperity and well-being.

9 **Policy recognizes Agriculture as Goa’s sacred heritage with its profound spiritual dimension**: -

Agriculture, with its deep-rooted significance in the cultural and ecological fabric of Goa, embodies more than a mere means of sustenance; it represents a sacred heritage that has sustained and enriched civilizations for over 5000 years. This age-old tradition, interwoven with the state's history, culture, and daily lives of its people, merits recognition and preservation as a sacred heritage within the Goa State Amritkal Agriculture Policy. The sacred dimension of agriculture in Goa transcends the physical act of farming, embodying a harmonious relationship between the land, its people, and the broader cosmos. This intrinsic connection has fostered a rich biodiversity, nurtured by generations of farmers through practices that are in concert with nature rather than in dominion over it. The reverence for agricultural lands as sacred spaces is evident in the traditional rituals, festivals, and farming practices that celebrate and honor the cycles of nature, the bounty of the earth, and the community's dependence on these rhythms for their well-being.

By acknowledging agriculture as a sacred heritage, the policy not only pays homage to the ancestral wisdom and practices that have contributed to the sustainability of Goa's agricultural landscape but also reinforces the imperative to protect and sustain these lands for future generations. It underscores the need for policies that respect and integrate traditional knowledge with modern agricultural practices, ensuring that the sacred bond between the land and its people is preserved and strengthened.

Recognizing agriculture as a sacred heritage within the Goa State Amritkal Agriculture Policy is a commitment to honoring the state's rich agricultural legacy, safeguarding its biodiversity, and ensuring the continuation of sustainable farming practices that have been the cornerstone of Goa's agricultural prosperity for millennia. This approach fosters a deeper appreciation and respect for the land, promoting sustainable and ethical stewardship that is essential for the holistic development of the agricultural sector and the well-being of its communities.

The Goa State Amritkal Agriculture Policy profoundly recognizes the spiritual dimension of agricultural activities, embracing an ethos that transcends the mere cultivation of land for sustenance. This recognition stems from an understanding that agriculture in Goa is not just an economic activity but a spiritual journey that connects the soul of the farmer to the land, the community, and the cosmos. This spiritual connection, often overlooked by policymakers and scientists, is the bedrock of sustainable and harmonious living, deeply ingrained in the fabric of Goan society for millennia.

Agriculture in Goa is imbued with rituals, traditions, and practices that celebrate the sacred relationship between humans and nature, reflecting a deep reverence for the life-giving forces of the earth. This spiritual bond fosters a sense of gratitude, respect, and stewardship for the land, guiding farming practices that are in harmony with natural cycles and the well-being of all living beings. By integrating the spiritual dimension into the policy framework, the Goa State Amritkal Agriculture Policy aims to revive and strengthen these age-old bonds, ensuring that agricultural practices nurture not only the body but also the spirit of the community.

Recognizing the spiritual dimension of agriculture enriches the policy with a holistic perspective, advocating for approaches that honor the sanctity of life and the interconnectedness of all forms of existence. It calls for the preservation of sacred groves, the celebration of traditional agricultural festivals, and the practice of farming methods that respect the rhythms of nature. This spiritual ethos is a guiding principle for policy decisions, promoting ecological balance, social cohesion, and a deeper sense of purpose and fulfillment in the agricultural way of life.

In acknowledging the spiritual dimension, the Goa State Amritkal Agriculture Policy sets a pioneering standard, emphasizing that true progress in agriculture is not measured solely by yield and economic gain but by the sustainability, harmony, and spiritual fulfillment it brings to the community. This policy aspires to cultivate a landscape where agriculture remains a sacred endeavor, enriching the land and its people in body, mind, and spirit.

9.1 Establishment of a Museum Of Goa’s Agricultural Heritage (MOGAH)

Consistent with 9 above the government would establish a Museum Of Goa's Agricultural Heritage (MOGAH) tracing and exhibiting the 5000 years of history of Agriculture in Goa and progress made after the liberation as future generations in the highly urbanized state need to have such learning facility and the visitors to the state could glimpse the strides made by Goa in the field

**10 Defining farming: -**

Farming, within the context of the Goa State Amritkal Agriculture Policy, encompasses various activities related to cultivating crops and rearing animals for food, fiber, biofuel, medicinal products, and other goods to sustain and enhance human life. This broad definition includes traditional and contemporary practices of soil cultivation, crop planting, care, and harvesting, as well as the management and production of livestock.

Beyond these activities, farming also includes the practice of organic farming, which refers to agriculturally sustainable systems that avoid the use of synthetic fertilizers, pesticides, and other artificial agents. Organic farming emphasizes the use of natural processes and materials to enhance ecological balance, biodiversity, and soil health. This encompasses a range of practices such as the use of compost, green manure, crop rotation, biological pest control, and organic certification processes to ensure that products meet strict organic standards.

The definition further extends to allied sectors integral to the agricultural landscape, including horticulture, poultry, dairy, apiculture (beekeeping), aquaculture, sericulture, vermiculture, and agroforestry, acknowledging the diverse contributions of these activities to the economy, food security, and rural development. It also embraces innovative and sustainable agricultural methodologies beyond traditional organic farming, such as hydroponics, aeroponics, aquaponics, urban agriculture, and vertical farming, recognizing the sector's evolution in response to technological advancements and environmental challenges.

Incorporated within this definition are both subsistence and commercial farming practices, from small-scale family farms to large-scale agricultural operations, each recognized for their contributions to the community and economy of Goa. This inclusive understanding of farming, with a special emphasis on organic farming and its variations, captures the essence of agricultural production in all its forms. It underscores the policy's commitment to holistically supporting and developing the agricultural sector, ensuring that all farming practices, particularly organic farming for its environmental and health benefits, are valued and fostered for their unique contributions to the state's economy, environment, and society.

**11 Definition of farmers: -**

Notwithstanding and without contradicting anything mentioned in any central or state statutes or policy or document, a farmer in the context of the Goa State Amritkal Agriculture Policy refers to any individual, including members of Scheduled Castes, Scheduled Tribes, Other Backward Classes, and other socially and economically marginalized sections, who is directly engaged in the agricultural production process. This comprehensive definition encompasses all individuals and entities, institutions , involved in cultivating land, and the planting, growing, harvesting, and post-harvest handling of any agricultural or horticultural commodities, regardless of land ownership status, scale of operation, or cultivation method. It includes tenant farmers, sharecroppers, and lessees cultivating leased land; owner-cultivators farming their land; and individuals engaged in innovative and sustainable agricultural practices such as mixed and multiple cropping, organic farming, agroforestry, vertical farming, hydroponics, and aquaponics. This definition aims to recognize the unique challenges and contributions of women farmers, youth, and members of Scheduled Castes, Scheduled Tribes, Other Backward Classes, and other marginalized agricultural communities. It ensures they have equitable access to resources, support systems, and benefits under the agriculture policy, emphasizing empowering these groups through targeted interventions, capacity building, and ensuring their participation in decision-making processes related to agricultural development and policy implementation.

This expanded definition ensures that the policy framework acknowledges the diverse and often marginalized voices within the agricultural sector, promoting equity, empowerment, and inclusivity. It aims

to provide a solid foundation for developing programs and initiatives that address these groups' specific needs and challenges, thereby contributing to a more equitable and productive agricultural sector in Goa.

**12 Alignment with the United Nations guidelines: -**

Integrating comprehensive UN-mandated guidelines, including those from the Sustainable Development Goals (SDGs), the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD), the Voluntary Guidelines on the Responsible Governance of Tenure (VGGT), and the Sendai Framework for Disaster Risk Reduction 2015-2030, the Goa State Amritkal Agriculture Policy is meticulously crafted to promote sustainable, inclusive, and resilient agricultural practices. Here's the incorporation of these guidelines under seamless headings:

12.1 Sustainable Agriculture Practices

The policy adopts practices that enhance food production and nutritional outcomes, ensuring efficient water use and soil health, contributing to climate action and combating land degradation. Conservation agriculture, agroforestry, and other sustainable techniques are emphasized for carbon sequestration and reducing greenhouse gas emissions, aligning with efforts to achieve land degradation neutrality.

12.2. Inclusivity and Equity in Agriculture

Prioritizing inclusivity and equity, the policy ensures equitable access to agricultural resources for all stakeholders, especially vulnerable and marginalized groups. Targeted programs support empowerment and participation in agricultural development, ensuring equitable land access and fostering community engagement.

12.3. Enhancing Food Security and Nutrition

Improving food security and nutrition by diversifying food production and reducing post-harvest losses aligns with the global agenda. Strategies include promoting nutrient-rich crops and sustainable food systems to ensure healthy food availability.

12.4. Market Access and Value Chain Integration

Key objectives include Developing infrastructure and providing market information to support farmers in accessing new markets and integrating them into value chains. This focuses on local and global market access, meeting market standards, and fostering value addition.

12.5. Resilience and Risk Management

Building resilience to climate change and other risks includes promoting adaptive and mitigative agricultural practices. Establishing early warning systems and developing insurance and social protection schemes safeguard farmers and their livelihoods.

12.6. Innovation and Technology Adoption

The policy encourages the adoption of innovative technologies and practices to improve productivity, sustainability, and resilience. This encompasses digital agriculture solutions, the introduction of improved seed varieties, and efficient irrigation techniques.

12.7. Capacity Building and Knowledge Exchange

Strengthening the capacities of farmers and agricultural institutions through training, extension services, and knowledge-sharing platforms is emphasized. The focus is on improving agricultural education and fostering research and development.

12.8. Policy Coherence and Collaborative Governance

Achieving policy coherence and fostering collaboration among various stakeholders is essential for sustainable agricultural development. The policy aligns with related areas such as water, environment, and

health to promote synergies and minimize conflicts.

12.9. Robust Monitoring and Evaluation

A dynamic monitoring and evaluation framework tracks the effectiveness of policy initiatives, allowing for data-driven adjustments. This ensures adaptability to evolving agricultural challenges and alignment with global sustainability goals.

By integrating these UN-mandated guidelines into the Goa State Amritkal Agriculture Policy, a commitment is made to foster a productive, sustainable, and resilient agricultural sector. This approach ensures the long-term well-being and prosperity of the farm sector and its communities in Goa.

**13. Alignment with Food And Agriculture Organization (FAO) guidelines**:

Incorporating FAO guidelines into the Goa State Amritkal Agriculture Policy, we detail specific strategies to transform Goa's agricultural landscape:

13.1. Sustainability

We commit to enhancing natural resource conservation through integrated pest management, which minimizes pesticide use while controlling pests effectively. Sustainable soil management practices, including crop rotation and cover cropping, are promoted to maintain soil health. Additionally, climate-smart agriculture practices are adopted to make farming systems more resilient to climate variability, focusing on water conservation techniques and the use of drought-resistant crop varieties.

13.2. Inclusivity and Equity

Our policy ensures that all agricultural stakeholders, particularly smallholder farmers, women, youth, and indigenous communities, have equal access to resources, training, and market opportunities. Special programs are designed to support these groups in agricultural entrepreneurship, leadership roles within farming cooperatives, and participation in decision-making processes.

13.3. Food Security and Nutrition

By encouraging the cultivation of diverse food crops, especially high-nutrient varieties, we aim to bolster food security and improve nutrition. Strategies to reduce post-harvest losses include developing better storage facilities and introducing efficient harvesting techniques, ensuring that a higher percentage of produce reaches the market.

13.4. Market Access and Value Chains

We focus on developing infrastructure such as roads and marketplaces to improve farmers' access to markets. Providing market information and supporting farmers to meet market standards are key to integrating them into value chains. Efforts include facilitating certifications and encouraging the formation of farmer associations to strengthen market negotiation capacities.

13.5. Resilience and Risk Management

Adaptive and mitigative practices against climate change are promoted, including the use of early warning systems for extreme weather events. Insurance and social protection schemes are developed to safeguard farmers from the financial risks associated with agriculture, ensuring stability and resilience of livelihoods.

13.6. Innovation and Technology

The policy promotes the adoption of innovative technologies and practices to improve agricultural productivity and sustainability. This encompasses digital agriculture solutions for precision farming, the introduction of improved seed varieties through biotechnology, and the adoption of efficient irrigation techniques to optimize water use.

13.7. Capacity Building and Knowledge Sharing

Strengthening the capacity of farmers and agricultural institutions is central to our policy. Training programs and extension services are offered widely, focusing on modern agricultural techniques, sustainable practices, and business management. Knowledge sharing platforms facilitate the exchange of information and best practices among farmers and stakeholders.

13.8. Policy Coherence and Collaboration

Our agriculture policy is aligned with other related policies, such as those concerning water, environment, and health, to ensure synergistic outcomes. Collaboration is fostered among government agencies, the private sector, NGOs, and international organizations to pool resources, knowledge, and expertise for the advancement of Goa's agriculture.

13.9. Monitoring and Evaluation

A robust monitoring and evaluation framework is established to track the effectiveness of policy initiatives, allowing for data-driven adjustments and improvements. This ensures that the policy remains adaptive to evolving agricultural challenges and stakeholder needs.

By detailing these strategies under each FAO guidelines, the Goa State Amritkal Agriculture Policy articulates a clear and specific roadmap towards sustainable, inclusive, and resilient agricultural development in Goa.

**14. Incorporation of other international instruments**: -

By incorporating other international instruments into the Goa State Amritkal Agriculture Policy, the government of Goa aligns its agricultural strategies with global standards and commitments to enhance sustainability, climate resilience, and biodiversity conservation within the agricultural sector.

14.1. Sustainable Agriculture Practices

Aligned with the Paris Agreement on Climate Change, the policy adopts farming practices to reduce emissions and enhance carbon sequestration. The Global Soil Partnership principles guide the adoption of soil health improvement practices, emphasizing soil erosion reduction and soil fertility enhancement.

14.2. Inclusivity and Equity in Agriculture

The Voluntary Guidelines for the Sustainable Management of Natural Resources and the Right to Food inform the policy’s approach to ensuring equitable land tenure systems and sustainable resource management, promoting secure land tenure rights as a foundation for sustainable agriculture.

14.3. Enhancing Food Security and Nutrition

The policy is informed by the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), focusing on the conservation and sustainable use of plant genetic resources, which are vital for food security, agricultural resilience, and the fair and equitable sharing of benefits derived from their use.

14.4. Market Access and Value Chain Integration

Under the guidance of CITES, the policy ensures that the cultivation and trade of specific plant species are conducted sustainably and legally, supporting biodiversity while facilitating access to international markets for agricultural products.

14.5. Resilience and Risk Management

Following the Ramsar Convention on Wetlands principles, the policy promotes sustainable water management practices that protect wetland ecosystems, critical for biodiversity, water purification, and flood control, thereby enhancing the resilience of agricultural landscapes.

14.6. Innovation and Technology Adoption

The 4 per 1000 Initiative guides the policy to encourage practices that increase soil carbon stocks, not only as a climate change mitigation strategy but also to improve soil health and agricultural productivity through innovative soil management practices.

14.7. Capacity Building and Knowledge Exchange

The policy emphasizes capacity building and knowledge exchange to ensure that farmers and agricultural institutions have access to the latest information and technologies for sustainable agriculture, in line with global best practices and innovations.

14.8. Policy Coherence and Collaborative Governance

In its commitment to policy coherence, the Government of Goa ensures that agricultural policies are aligned with related environmental, water, and health policies, promoting synergies and minimizing conflicts. This approach fosters collaboration among government agencies, the private sector, civil society, and international organizations, leveraging collective expertise and resources.

By integrating these principles from other international instruments into its agricultural policy, the Government of Goa commits to transforming its agricultural sector into one that is sustainable, resilient, and aligned with global efforts to combat climate change, conserve natural resources, and ensure food security.

**15. Integrating the Convention On Biological Diversity (CBD) guidelines**:

Integrating the Convention on Biological Diversity (CBD) guidelines into the Goa State Amritkal Agriculture Policy underscores our commitment to conserving biodiversity within agricultural landscapes. The CBD's strategic plan for biodiversity, including the Aichi Biodiversity Targets, provides a comprehensive framework for integrating biodiversity conservation with sustainable agriculture. Here are specific strategies reflecting CBD guidelines applicable to India and implemented through National Biodiversity Authority (NBA) are articulated within the scope of our policy and would be acted upon in cooperation with the statutory Goa State Biodiversity Board, Biodiversity Management Committees and under guidance from NBA:

15.1. Conservation of Agrobiodiversity

We pledge to conserve agricultural biodiversity by maintaining a variety of crops and livestock breeds within agricultural systems. This includes preserving traditional and indigenous varieties adapted to local conditions and contributing to the resilience of agricultural ecosystems. Conservation efforts are supported through the establishment of seed banks and gene banks, and the promotion of on-farm conservation practices.

15.2. Sustainable Use of Biodiversity

Our policy promotes the sustainable use of biological resources in agriculture to ensure that biodiversity continues to support food security, livelihoods, and ecosystem services. This involves adopting agroecological practices that mimic natural ecosystems, thereby enhancing biodiversity and ecosystem functionality. Practices such as crop rotation, intercropping, and the use of organic fertilizers are encouraged to maintain soil fertility and biodiversity.

15.3. Protection of Pollinators and Natural Pest Control

We recognize the critical role of pollinators and natural pest predators in agricultural productivity and biodiversity conservation. Measures to protect these essential species include creating habitats within agricultural landscapes, reducing the use of chemical pesticides through integrated pest management (IPM) practices, and encouraging organic farming methods that are friendly to pollinators and natural predators.

15.4. Integration of Biodiversity and Ecosystem Services in Agricultural Planning

Our policy ensures that the value of biodiversity and ecosystem services is integrated into agricultural planning and decision-making processes. This includes assessing the impacts of agricultural practices on biodiversity and ecosystem services and promoting land-use planning that conserves natural habitats and corridors. Incentives are provided for farming practices that enhance ecosystem services such as water filtration, carbon sequestration, and soil conservation.

15.5. Restoration of Degraded Agricultural Landscapes

Efforts to restore degraded agricultural landscapes to healthy ecosystems are a key component of our policy. Restoration activities include reforestation, wetland restoration, and the rehabilitation of degraded soils. These efforts not only improve agricultural productivity but also enhance biodiversity and ecosystem services.

15.6. Community Participation and Traditional Knowledge

The policy emphasizes the importance of community participation and the incorporation of traditional knowledge in biodiversity conservation. Indigenous and local communities are recognized as key stakeholders in conserving and sustainably using agricultural biodiversity. Programs to document, preserve, and promote the use of traditional agricultural knowledge and practices are supported.

15.7. Education, Awareness, and Capacity Building

Raising awareness about the importance of biodiversity in agriculture among farmers, policymakers, and the general public is crucial. Educational programs and campaigns are launched to increase understanding of biodiversity issues and promote best practices for conservation and sustainable use. Capacity-building initiatives are offered to enhance the ability of farmers and agricultural professionals to implement biodiversity-friendly practices.

15.8. International Cooperation and Access to Genetic Resources

In line with CBD objectives and under supervision of NBA , our policy facilitates international cooperation in conserving and sustainably using agricultural biodiversity. This includes complying with the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, ensuring that benefits derived from the use of genetic resources are shared fairly and equitably.

By weaving these CBD guidelines into the fabric of the Goa State Amritkal Agriculture Policy, we aim to foster an agricultural sector that is not only productive and sustainable but also rich in biodiversity, contributing to the overall ecological and socio-economic well-being of Goa.

**16. Alignment with the National guidelines and initiatives**: -

The Government of India has implemented various guidelines and initiatives that significantly influence state-level agricultural policies, promoting sustainability, modernization, inclusivity, and resilience in the agricultural sector. Incorporating these national guidelines into the Goa State Amritkal Agriculture Policy ensures coherence with national priorities while addressing local needs and opportunities. The policy seamlessly integrates the following:

16.1. National Policy for Farmers (NPF)

Aligned with the NPF, the policy aims to improve farmers' livelihoods, emphasizing the importance of increasing net farm income. It advocates for diversification into high-value crops, integrated farming systems, and the promotion of value-added products, enhancing the income security of farmers in Goa.

16.2. Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

In accordance with PMKSY, the policy prioritizes water use efficiency through micro-irrigation, rainwater harvesting, and the development of sustainable water management practices. This initiative supports the creation of irrigation infrastructure that is critical for water security in agriculture.

16.3. Paramparagat Krishi Vikas Yojana (PKVY)

Following PKVY guidelines, the policy encourages organic farming practices across Goa, supporting farmers in obtaining organic certification and accessing markets for organic products. This initiative aligns with efforts to promote sustainable agricultural practices and improve soil health.

16.4. Soil Health Card Scheme

The policy incorporates the Soil Health Card Scheme, focusing on sustainable and balanced use of fertilizers based on soil health assessments. This scheme guides farmers in Goa to enhance soil fertility and productivity through informed fertilizer application.

16.5. Pradhan Mantri Fasal Bima Yojana (PMFBY)

In line with PMFBY, the policy strengthens risk management through comprehensive crop insurance, offering protection against crop loss due to natural calamities, pests, and diseases. This initiative enhances resilience among farmers in Goa, ensuring financial stability.

16.6. Rashtriya Krishi Vikas Yojana (RKVY)

Adopting RKVY's approach, the policy supports holistic development and sustainable growth of the agriculture and allied sectors. It encourages investments in innovative and high-impact projects that drive agricultural modernization and competitiveness.

16.7. National Mission for Sustainable Agriculture (NMSA)

The NMSA guides the policy in promoting sustainable agriculture practices that are resilient to climate change. It emphasizes the adoption of climate-smart practices, conservation agriculture, and the sustainable management of natural resources.

16.8. National Food Security Mission (NFSM)

Following the objectives of NFSM, the policy aims to increase the production of key crops through technology-driven interventions, ensuring food security in Goa. It supports the enhancement of crop yields and the reduction of the yield gap.

16.9. Digital Agriculture

The policy adopts the vision for digital agriculture, leveraging technology to improve access to information, enhance transparency, and increase the efficiency of agricultural operations. It supports the development of digital platforms for market access, advisory services, and supply chain management.

By incorporating these guidelines from the Government of India, the Goa State Amritkal Agriculture Policy aligns with national agricultural priorities while tailoring its strategies to meet the unique challenges and opportunities in Goa. This harmonization ensures that the policy not only contributes to local agricultural development but also supports broader national goals for sustainability, modernization, and resilience in the agricultural sector.

**17. Legislative Reforms: -**

We solemnly commit to taking decisive actions to ensure the seamless integration of comprehensive legislative reforms into the Goa State Amritkal Agriculture Policy. Here are the proposed steps for legislative reforms aimed at creating a farmer-centric, sustainable, and simplified legal framework:

17.1. Review and Amend Existing Acts:

A detailed consultation paper will be sought from the Goa State Law Commission in the areas of proposed legislative reforms governing agricultural aspects and land related matters about agriculture so as to realize new dimensions of policy making vis a vis changing times and evolving situations.

Existing relevant and applicable state acts will be reviewed and amended to eliminate outdated provisions hindering agricultural productivity, land use efficiency, and fair tenancy practices.

A Legislative Review Committee will be established to oversee this process, comprising legal experts, agricultural economists, farmer representatives, and government officials.

Land use flexibility will be enhanced while protecting farmers' rights and interests.

17.2. Repealing Outdated Sections:

Redundant sections in state laws applicable to agriculture will be repealed to streamline legislation and reduce overlaps and conflicts.

An exhaustive review will identify and remove obsolete sections, ensuring the legal framework remains relevant and effective.

17.3 Comprehensive amendment of Plant nurseries act, 1995

A technical group would be appointed to suggest comprehensive amendments to The Goa Fruit and Ornamental Plant Nurseries (Regulation) Act, 1995 (Goa Act 13 of. 1997*)*in view of new threats of pests, pathogens and invasive species threatening local agroecosystem and crops and need to improve enforcement

17.4 Drafting New Farmer-Centric Legislations:

We pledge to draft new legislation, such as the proposed Goa Farmers Welfare Act, to provide guaranteed livelihood security and incorporate sustainable practices.

Simplified land leasing and tenancy procedures will facilitate agricultural activities and enhance farmers' access to land resources.

17.5. Simplifying Government Procedures for Farmers:

One-stop farmer Services centers will be established to provide all government-related agricultural services under one roof, ensuring convenience and efficiency for farmers.

Digitalization of Services will be promoted to enable farmers to access services, apply for schemes, and complete necessary documentation online, ensuring transparency and accessibility.

Fast-track Dispute Resolution Mechanisms will be established to swiftly address conflicts and grievances, providing farmers with timely redressal.

17.6. Implementation and monitoring

To ensure the effective implementation of these legislative reforms and to provide ongoing support to the agricultural sector, we will establish a dedicated Agricultural Legislative Monitoring Committee. This committee will oversee the implementation of reforms, address legal challenges, and ensure accountability and effectiveness in the agricultural legislative framework.

**18. Potential sources of finance and funding for the policy: -**

Implementation of the policy would be guided by following potential options of finance and funding, however, its acknowledged that many other sources exist and could be explored

18.1. National Level Financing Options

At the national level, the Goa State Amritkal Agriculture Policy would explore various sources of funding to support its initiatives:

18.2. Central Government Funding:

Various central government funding avenues, such as the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) and Rashtriya Krishi Vikas Yojana (RKVY), would be explored for agricultural development projects.

18.3. Collaboration with National Financial Institutions:

The possibility of accessing loans and grants from national financial institutions like NABARD (National Bank for Agriculture and Rural Development) would be explored to bolster agricultural infrastructure and initiatives.

18.4. Partnerships with Other States:

Exploration of partnerships with other states or regional development agencies would be considered to pool resources and jointly fund and implement agricultural projects.

18.5. International Level Financing Options

At the international level, the Goa State Amritkal Agriculture Policy would explore avenues for financial support and collaboration:

18.6. International Financial Institutions:

Exploration of loans and grants from international financial institutions such as the World Bank, Asian Development Bank (ADB), and International Fund for Agricultural Development (IFAD) for financing agricultural projects.

18.7. Bilateral Aid and Partnerships:

The possibility of bilateral aid and partnerships with countries having expertise in agriculture and rural development would be explored to access funding and technical assistance.

18.8. Collaboration with UN Bodies:

Exploration of collaboration with UN bodies like FAO (Food and Agriculture Organization), UNDP (United Nations Development Programme), and UNICEF (United Nations Children's Fund) for technical assistance, funding, and capacity-building programs.

18.9. Innovative Financing Models

In addition to traditional sources of funding, innovative financing models would be explored to mobilize additional resources:

18.10. Public-Private Partnerships (PPPs):

The potential for partnerships with the private sector to leverage additional funding and expertise for agricultural projects would be explored.

18.11. Corporate Social Responsibility (CSR) Funding:

The possibility of accessing CSR funding from private companies to support agricultural initiatives aligned with their corporate objectives would be explored.

18.12. Crowdfunding Platforms:

Exploration of crowdfunding platforms to engage the public and mobilize financial support for agricultural projects would be considered.

18.13. Long-Term Soft Loans and International Assistance

In addition to exploring international sources of financing, Goa's state government would consider accessing long-term soft loans and international assistance:

18.14. International Financial Institutions (IFIs):

The possibility of accessing long-term loans with favorable terms from IFIs such as the World Bank, Asian Development Bank (ADB), and International Fund for Agricultural Development (IFAD) would be explored.

18.15. Bilateral Aid and Partnerships:

Exploration of bilateral aid and partnerships with countries and organizations to access long-term soft loans and technical assistance would be considered.

18.16. Climate Funds and Specialized Financing Mechanisms:

Exploration of climate funds and specialized financing mechanisms to support agricultural projects that promote climate resilience and sustainability would be explored.

18.17. Leveraging Asian Development Bank (ADB) Support

The Asian Development Bank (ADB) could play a significant role in supporting various schemes of the State Agriculture Policy of Goa:

18.18. Financial Assistance:

Exploration of ADB's financial assistance through long-term soft loans with favorable terms for key agricultural projects and initiatives would be explored.

18.19. Technical Expertise:

The possibility of accessing ADB's technical assistance and capacity-building support to strengthen institutional capacity and enhance agricultural productivity would be explored.

18.20. Value Chain Development:

Exploration of ADB's support in developing agricultural value chains to improve market linkages and promote agribusiness development would be considered.

18.21. Climate Resilience and Sustainable Agriculture:

The potential for ADB's assistance in promoting climate-resilient agriculture practices and adaptation measures would be explored.

**19. Target groups and beneficiaries: -**

The Goa State Amritkal Agriculture Policy 2025 is conscientiously designed to inclusively cater to an expansive spectrum of stakeholders within the agricultural and allied sectors, ensuring equitable distribution of the policy's benefits. This policy identifies and commits to supporting the following target groups and beneficiaries, all domiciled in the state of Goa, in a comprehensive approach that leaves no one behind and embraces the full breadth of the agricultural community:

19.1 Smallholder Farmers: Central to the policy, aimed at enhancing their access to resources, technology, and markets to improve productivity and sustainability.
19.2 Women in Agriculture: Ensuring equal access to agricultural inputs, training, financial services, and land rights to empower women within the sector.
19.3 Youth: Promoting agri-entrepreneurship and innovative farming practices, along with providing education and skill development opportunities in modern agriculture technologies and business models.
19.4 Tribal Communities: Integrating traditional knowledge with scientific research to promote sustainable agriculture practices, ensuring active participation and benefit-sharing.
19.5 Tenant Farmers and Sharecroppers: Including them to ensure access to credit, inputs, and support services while advocating for their rights and security of tenure.
19.6 Organic Farmers: Supporting them through the certification process, market access, and premium pricing for organic products.
19.7 Agricultural Laborers: Aiming to improve their working conditions, wages, and access to social security and health care.
19.8 Agri-Entrepreneurs and Agribusinesses: Encouraging entrepreneurship and innovation within the agricultural sector by providing access to finance, technology, and markets.
19.9 Farmers' Producer Organizations (FPOs) and Cooperatives: Enhancing their bargaining power, reducing costs, and improving market access through support and capacity building.
19.10 Research and Academic Institutions: Key for developing and disseminating innovative technologies and practices.
19.11 Rural Communities: Aiming to enhance rural livelihoods, food security, and quality of life, acknowledging the interconnectedness with the agricultural sector.
19.12 Agro-Food Processors in the Organized and Unorganized Sector: Recognizing their role in adding value to agricultural produce and creating market opportunities for farmers.
19.13 Roadside Local Vendors of Local Crops and Informal Markets: Acknowledging their crucial role in the local food system, providing direct access to markets for farmers and local consumers.
19.14 Agro Exporters from Goa: Supporting them to access international markets, ensuring compliance with global quality standards, and promoting Goa's agricultural products globally.
19.15 Agricultural Scientists and Field Workers: Valuing their contributions to research, innovation, and the extension of scientific knowledge to the farming community.
19.16 Plant Nurserymen: Recognizing their role in preserving biodiversity and supplying quality planting materials to farmers and gardeners.
19.17 Mass Media and Social Media Platforms Educating Farmers: Acknowledging their impact on spreading knowledge about modern farming techniques, sustainable practices, and market trends.
19.18 Owners of Heirloom Plant Varieties: Supporting the conservation and promotion of heirloom varieties, recognizing their genetic value and cultural significance.
19.19 It is at the discretion of the government to enlarge the scope of the above and include more stakeholders on merit

By adopting this inclusive approach, the Goa State Amritkal Agriculture Policy 2025 aims to address the needs and aspirations of a diverse range of stakeholders, ensuring a holistic development of Goa's agricultural landscape. This strategy contributes to the state's overall prosperity and resilience, fostering an environment of growth, sustainability, and equity for the entire agricultural community.

**20 Adoption of Circular Agriculture principles**

Circular agriculture principles in the Goa State Amritkal Agriculture Policy are structured around strategic actions aimed at achieving sustainable food production, conserving soil health, preserving biodiversity, and safeguarding water and land resources. The core objective would be to align farming practices with nature, ensuring its harmonious coexistence. Key policy actions that would be undertaken to promote circular agriculture in Goa State may include:

20.1. Harmonizing Technological Advancements: Technological innovations and research would be harmonized to advance circular agriculture. This would incentivize smallholder farmers to adopt modern techniques such as drip irrigation, precision agriculture, rainwater harvesting, and sustainable crop

productivity methods. Additionally, efforts would be made towards developing technologies that facilitate water recycling at minimal energy costs and bridging the yield gap between organic and conventional farming through agricultural research.

20.2. Strengthening Institutional Frameworks and Incentive Structures: Robust institutions and incentive mechanisms would be established to encourage the adoption of circular agricultural practices among smallholder farmers. This would ensure secure water and land tenure rights, particularly for women.

20.3.Enhancing International Collaboration: Recognizing the global significance of circular agriculture, efforts would be made to foster international cooperation to promote its adoption. Technology transfer and capacity building for smallholder farmers would be facilitated through collaborative efforts. Norms and standards for waste management, sustainable procurement, and agricultural value chains would be harmonized to ensure consistency and sustainability under guidance of UN approved experts. Global partnerships would be strengthened to enhance infrastructure and skills development in agriculture, aligning with the evolving needs highlighted by events such as the COVID-19 pandemic, which underscore the importance of resilient and localized food systems.

**Part B**

**B.1. Core Areas of the policy: -**

1. Agriculture Development: The bedrock for all subsequent areas, focusing on overall strategies and programs for enhancing agricultural productivity and sustainability.
2. Soil: Understanding and improving soil health as a prerequisite for successful cultivation.
3. Seed & Planting Material: Ensuring the availability of high-quality seeds and planting materials as the basis for crop production.
4. Fertilizer & Nutrient Management: Managing soil fertility and plant nutrition for optimal crop yields.
5. Pesticide & Pest Management: Implementing integrated pest management practices to minimize crop losses.
6. Irrigation Water: Developing efficient water management and irrigation systems to ensure water availability.
7. Watershed Development: Enhancing water conservation and land management at the watershed level.
8. Land: Addressing land use, conservation, and management practices.
9. Khazan Land Development: Specific to Goa, improving agricultural practices in low-lying coastal lands.
10. Horticulture Development: Promoting the cultivation of fruits, vegetables, flowers, and other horticultural crops.
11. Integrated Farming: Encouraging the integration of crops, livestock, and fisheries to optimize resource use and income.
12. Farm Mechanization: Introducing and promoting the use of machinery to increase efficiency and reduce labor.
13. Modernization of Departmental Farms: Upgrading government farms to serve as models of best practices.
14. Precision Farming: Applying technology for more precise and efficient farming practices.
15. Contract Farming: Promoting agreements between farmers and buyers to ensure a consistent supply of farm products.
16. Organic Farming & Natural Farming: Encouraging practices that minimize chemical inputs and work in harmony with nature.
17. Renewable Energy in Agriculture: Incorporating solar, wind, and bioenergy solutions to power agricultural activities.
18. Climate & Environment: Addressing the impacts of climate change on agriculture and adopting environmentally friendly practices.

19. Human Wildlife Conflict: Developing strategies to mitigate conflicts between agricultural activities and wildlife.
20. Storage & Warehousing: Improving post-harvest storage facilities to reduce losses and stabilize prices.
21. Value Addition & Processing: Encouraging the processing of agricultural products to increase their market value.
22. Markets & Marketing: Developing markets and promoting effective marketing strategies for agricultural products.
23. Agriculture Credit: Ensuring access to credit for farmers to invest in improvements and expansion.
24. Income Assurance & Crop Insurance: Providing financial products to protect farmers against crop failures and income fluctuations.
25. Agriculture Export: Promoting the export of agricultural products to enhance earnings.
26. Farmer Welfare & Farm Labour: Addressing the well-being and rights of farmers and agricultural laborers.
27. FPO, Farmers Group/Societies/Association/SHG: Encouraging collective action and cooperation among farmers for better bargaining power and resource sharing.
28. Agro-Tourism: Linking agriculture with tourism to open new income streams for farmers.
29. Human Resource Development (HRD): Building capacity and skills among farmers and agricultural workers.
30. Extension Services: Providing advisory services to bring research and best practices to farmers.
31. Farm Information and Communication: Enhancing access to agricultural information through various communication channels.
32. ICT in Agriculture: Leveraging information and communication technology to improve agricultural productivity and management.
33. State Agriculture Research: Fostering research in agriculture tailored to the state's specific needs and conditions.
34. Planning & Budgeting: Ensuring effective planning and allocation of resources for agricultural development.
35. Agriculture in School Curriculum: Introducing agricultural education in schools to raise awareness and interest among young people.
36. Agricultural startups and innovations:- Agricultural startups and innovations are new ventures and technological advancements that aim to enhance agriculture. They focus on improving crop cultivation, livestock management, supply chain logistics, and sustainable farming practices. By leveraging technologies like AI, robotics, and biotechnology, these startups address challenges in agriculture, aiming for higher productivity, efficiency, and sustainability.

The order of the core areas in the Goa State Amritkal Agriculture Policy, 2025, is strategically arranged to reflect agricultural development's foundational principles and progressive nature.

At the forefront, Agriculture Development is prioritized as the bedrock for all subsequent areas. This strategic placement underscores the significance of overarching strategies and programs aimed at enhancing agricultural productivity and sustainability, setting the stage for comprehensive agricultural development.

Following closely is Soil, emphasizing the importance of understanding and improving soil health as a prerequisite for successful cultivation. With healthy soil, improving crop yields and sustainability is possible.

Ensuring the availability of high-quality Seed & Planting Material is paramount for crop production, hence its placement early in the list. Farmers would need access to reliable seeds and planting material to achieve successful harvests.

Fertilizer & Nutrient Management follows, highlighting the critical role of managing soil fertility and plant nutrition for optimal crop yields. Effective fertilizer and nutrient management practices are essential components of sustainable agriculture.

Integrated Pest & Pest Management practices come next, emphasizing the importance of minimizing crop losses through holistic pest management strategies. Addressing pest challenges early in the list reflects their significant impact on agricultural productivity.

Irrigation Water is then addressed to underscore the importance of efficient water management and irrigation systems in ensuring water availability for agriculture, particularly in water-stressed regions.

Watershed Development follows, focusing on enhancing water conservation and land management at the watershed level. This core area emphasizes the need for sustainable water resource management in agricultural landscapes.

Addressing Land use, conservation, and management practices is pivotal for sustainable agriculture, thus its placement early in the list. Effective land management is essential for maximizing agricultural productivity while preserving natural resources.

Specific to Goa, Khazan Land Development is highlighted to emphasize the importance of improving agricultural practices in low-lying coastal lands unique to the region. This core area reflects the state's specific agricultural challenges and opportunities.

Subsequent core areas, including Horticulture Development, Integrated Farming, Farm Mechanization, Modernization of Departmental Farms, and Precision Farming, build upon these foundational elements to promote diversified and technologically advanced agricultural practices.

The remaining core areas, ranging from Storage & Warehousing to Agriculture in School Curriculum, are strategically positioned to address various aspects of agricultural value chains, market development, financial support, human resource development, and knowledge dissemination, thereby ensuring a holistic approach to agricultural development in Goa.

B.1.1. Detail Policy recommendations of the Core areas: -

**Core Areas of the Policy**

**1. AGRICULTURE DEVELOPMENT**

PADDY

Paddy is the main staple food of Goa. However, the quantity and quality of rice produced fall significantly short of meeting the ever-rising demands of both the tourist and domestic populations of the state. Consequently, a large portion of the population relies on supplies from public distribution systems or open markets. Paddy is the only crop suitable for cultivation in Khazan lands and low-lying fields. The state predominantly produces coarse and bold type rice, while there is a higher demand for fine and raw rice. Additionally, there has been a growing demand for traditional khazan rice due to their nutritional and health benefits.

1.1.1 Enhancement of Production and Productivity of Paddy

Efforts will be made to boost paddy cultivation and production through the expansion of the area by reviving fallow fields, promoting high-yielding varieties, and providing mechanization to ease the cultivation process.

1.1.2 Revitalization of Khazan Paddy Fields

For khazan fields, the focus will be on promoting cultivation with improved varieties like Goa Dhan 1, Goa Dhan 2, Goa Dhan 3, and Goa Dhan 4. Additionally, new varieties will be introduced by the Central Coastal Agriculture Research Institute (CCARI) of ICAR. The present area under khazan with traditional varieties is proposed to be doubled with improved varieties in ten years. This produce shall be labelled as

healthy rice and will fetch a better remunerative rate in the market to make it a viable farming system. To promote better marketing, Farmer's Producer Organization (FPO) shall be created in khazan belts. Stress would be given to access heirloom salt resistant and flood tolerant varieties used for thousands of years and preserve these permanently and multiply the seeds as needed.

1.1.3 Promotion of Varieties for Production of Raw Rice

The paddy fields adjacent to khazan or those on upper levels and 'vaingan' areas which are not influenced by salinity shall be promoted for cultivation with tested high-yielding varieties for producing raw rice with slender grain.

1.1.4 Promotion of Farmers Producer Organization (FPO)

Farmers Producer Organizations shall be promoted. All transformations shall be done through FPOs which will provide services at cost regarding planting, harvesting, aftercare, and marketing etc.

1.1.5 Promotion of Community Farming for Cultivation of Fragmented Paddy Fields

The paddy lands have been transferred from generation to generation, and as per descendants, the same has been fragmented into small, economically unviable parcels. Efforts would be made for such fields to be brought under cultivation through Cooperative farming or community farming.

1.1.6 Promotion of Farmers Facilitation Centre

The establishment of farmers' facilitation centers by groups of unemployed youth who will take up cultivation on a contract basis will be promoted. This will generate agro-based employment in rural Goa for youths with lower educational levels. The Facilitation centers would be provided with one-time all the materials and equipment required by them.

1.1.7 Incentives for Paddy Farmers

Cultivation of paddy would be supported with appropriate subsidies considering the cost of cultivation of paddy, making it comparable to that of fruit crops.

1.2. PULSES

Pulses are a major source of protein supplements in the diet, and 'Alsando' (bold cowpea cultivar) is the predominant crop in pulses cultivated in Goa. It can be grown under irrigated conditions or residual soil moisture. Government would put in all the efforts to promote pulses cultivation for enhancing nutritional security of Goa.

1.2.1 Enhancement of Production and Productivity of Alsando

CCARI-ICAR has identified some types of alsando cultivar with high-yielding capacities. The state will promote these varieties for large-scale cultivation and introduce new varieties through the ICAR institute. It is envisaged that an area of 3600 Ha existing at present would be increased to 7200 ha in a period of 10 years with a production of 7200 tons. All efforts would be made to survey, acquire validated samples and preserve and propagate traditional varieties of pulses and save these from extinction.

1.3. GROUNDNUT

Next to the coconut, which is the perennial oil crop, groundnut is the seasonal oilseed crop of the state. It is mainly cultivated in coastal plains, specifically in north Goa. The crop is generally grown in the Rabi season with residual soil moisture or in summer under irrigation. The yields are on par with traditional groundnut areas and therefore must be promoted.

1.3.1. Promotion of Groundnut Cultivation in the State

It is proposed to promote the cultivation of this crop on larger areas with high-yielding varieties. The machinery for facilitating cultivation shall be made available to farmers at very concessional prices. The farmers cultivating groundnut shall be motivated to form their own producer's organization to facilitate procurement, processing, and marketing to ensure economic viability. Groundnut oil cake shall be utilized as a protein supplement to dairy animals.

1.4. MILLETS

Millets have been gaining importance since the declaration of 2023 as the Year of Millets by the United Nations. This group of crops thrives even under drought-like stress conditions and in poor-quality soils too. Being nutritionally richer, they are important as health food also.

1.4.1 Promotion of Cultivation of Millets

Among the various types of millets cultivated in the country, Ragi or locally known as 'Nachni' is the most popular and acceptable crop in Goa. The crop is cultivated in an area of 20 ha and it is proposed to extend this area to 500 ha in a period of ten years with improved high-yielding varieties. Systematic efforts would be made to catalogue traditional local cultivars of millets and conserve these for posterity.

1.4.2 Promotion of Mechanization in Millets Cultivation

Efforts shall be made to promote machinery suitable for cultivation, harvesting, and further processing and value addition of ragi within the state. This will ensure the availability of this important millet and its products within the state.

1.4.3 Promotion of Farmers Producers Organization for Better Marketing of Millets

Farmers Producers Organization of ragi shall be created in the state to make cultivation and processing an economically viable activity.

1.5. SUGARCANE

This was the safest crop for the farmers of Goa due to its ease in cultivation and direct linkage to processing. The present sugarcane area is about 450 ha and is likely to be phased off by the growers due to the closure of the cooperative sugar factory, which is a nonprofit enterprise.

1.5.1. Promotion of Sugarcane Cultivation

The new concept of using sugarcane as feedstock for processing multiple products like sugar, ethanol, organic chemicals, manures, fire bricks, etc., would be examined. If feasible, the same shall be adopted with the revival in sugarcane cultivation. Sugarcane shall be promoted in areas with assured irrigation. The needed assistance shall be extended to such growers.

**2. Soil**

Soil management and health are pivotal to sustainable agriculture and ensuring food security. To this end, the following policy recommendations aim to significantly enhance soil health and management practices, drawing upon best practices globally while integrating the agriculture department's existing efforts of soil classification.

2.1. Integrated Soil Health Management: An integrated soil health management system will be established, emphasizing the restoration of soil biodiversity, enhancing organic matter, and promoting practices such as crop rotation, cover cropping, and reduced tillage to maintain soil structure and fertility.

2.2. Soil Health Cards and Online Access: Building on the Agriculture Department's completion of soil classification with recommendations for different soil types, Soil Health Cards will provide farmers with detailed information on their soil's health, including nutrient status and improvement recommendations. These cards and the soil classification reports will be made available online, ensuring wide accessibility. Furthermore, each Zonal Agricultural Office will feature a station/kiosk where farmers can access these details by entering their respective survey numbers, facilitating tailored soil management guidance.

2.3. Community-Based Soil Testing Labs: Establishing community-based soil testing laboratories will offer accessible and affordable soil testing services. Collaborations with agricultural universities, NGOs, and farmer cooperatives will ensure these services are within reach of all farming communities.

2.4. Conservation Agriculture Practices: Conservation agriculture practices that contribute to soil health, such as minimum tillage and maintaining soil cover, will be promoted. These methods are crucial for reducing erosion, improving water retention, and enhancing soil organic matter.

2.5. Organic Farming Incentives: Incentives for organic farming practices will be provided, recognizing their role in improving soil health. Support will encompass subsidies for organic inputs and technical assistance for transitioning to organic farming methods.

2.6. Soil Health Awareness and Education Programs: Awareness and education programs will be launched to highlight the importance of soil health, targeting farmers, agricultural extension workers, and the academic community. These initiatives will disseminate knowledge on best soil management practices and the latest soil science research.

2.7. Legislation for Soil Protection: Legislation to protect and conserve soil resources will be introduced. Measures will be designed to prevent soil degradation, control pollution, and manage land use effectively to preserve soil health.

2.8. Monitoring and Evaluation of Soil Health: A robust monitoring and evaluation system will assess soil health changes, utilizing indicators like organic carbon levels and nutrient availability. This system will gauge the impact of agricultural practices on soil health across Goa.

2.9. Technology in Soil Management: Adopting technology, including remote sensing and GIS, will offer real-time information on soil conditions. This approach will support precision agriculture practices by mapping soil health variations within fields and providing targeted management recommendations.

By integrating these comprehensive policy recommendations with the existing soil classification efforts, the goal is to foster a sustainable, productive, and resilient agricultural sector in Goa. The focus on soil health and the adoption of globally recognized best practices ensures the long-term viability of agriculture, benefiting farming communities and the environment alike.

## 3. SEED AND PLANTING MATERIAL

3.1 Seeds of Paddy, Pulses, Groundnut, Millets, and Vegetables

The unique coastal humid climate of Goa necessitates meticulous planning for seed production programs. Humidity significantly influences the viability and susceptibility to diseases in seeds.

3.1.1 Procurement and Supply of Quality Seeds to Farmers

To ensure the availability of quality seeds to farmers, seeds such as those for paddy and groundnut, sourced from other states at reasonable rates, shall be procured. These seeds will be obtained from reputable agencies such as the National Seed Corporation, Karnataka State Seed Corporation, and Maharashtra State Seed Corporation. Distribution channels including departmental outlets, ICAR, cooperatives, and Farmers Producer Organizations will facilitate the dissemination of seeds to farmers.

3.1.2 Production of Quality Seeds of Local and Improved High-Yielding Varieties

Local production of specific paddy seeds, like Goa Dhan 1, 2, 3, 4, Korgut, and others, is imperative. Furthermore, seeds of crop varieties recommended by ICAR and the Department of Agriculture, not readily available from seed corporations, shall be promoted for production. Incentives or assured buy-back mechanisms will encourage local growers to produce these seeds. Additionally, after systematic surveys and validation of disease free conditions healthy seeds of local vegetables such as red amaranthus, seven lobe bhendi, long beans, local cucumber, ridge gourd, and others, will be produced and procured from local producers, including Government farms.

3.1.3 Protection and Conservation of Local Germplasm

Preservation of local germplasm is crucial and will be overseen either directly by the government or by nominated growers, incentivized appropriately. Rare and genetically important varieties will be safeguarded in advanced seed banks, with stringent regulations governing all storage parameters.

3.2 Planting Material

High-quality planting material is essential for ensuring yields and quality. Given the significant investment required for plantation crops, maintaining local agrobiodiversity is paramount. CBD guidelines and NBA advice would be followed with the active participation of local biodiversity management committees in identifying the diverse cultivars.

3.2.1 Supply of Planting Material for Area Expansion and Departmental Programs

Planting material for departmental programs will be sourced exclusively from registered nurseries. In cases where local scion or grafted material is insufficient, material from Government or Government-recognized nurseries outside the state will be permitted, subject to quarantine clearance.

3.2.2 Registration of Nurseries for Multiplication and Supply of Quality Planting Materials

Legislative reforms have been mentioned in Part A, 17.4 above which would take care of many areas of biosecurity and bio invasion concerns. It is a mandatory requirement that all the plant nurseries must be registered with the Department of Agriculture, ensuring the purity of materials through seed sources, scions, disease, and pest control. Approved varieties will be produced and sold, with new varieties introduced only with the consent of the Department of Agriculture. Ornamental plants will be exempt from nursery regulations. Agriculture graduates will be incentivized to engage in the nursery business through capital investment subsidies. Nursery owners must operate within a minimum area of 4000 square meters.

3.2.3 Regulation of Planting Material Quality

Ensuring the quality of planting material is essential for maintaining agricultural productivity. Regulations will be implemented to monitor and enforce quality standards, including checks on genetic purity, disease resistance, and propagation methods. Government would apply the best international scientific standards and practices for the same and ensure DNA Bar coding of all important planting material.

3.2.4 Research and Development in Planting Material

Investment in research and development initiatives will be prioritized to enhance the quality and availability of planting material. Collaborations with research institutions and agricultural experts will be encouraged to develop improved varieties and propagation techniques suited to local conditions.

3.2.5 Promotion of Sustainable Nursery Practices

Efforts will be made to promote sustainable nursery practices, including water conservation, integrated pest management, and use of organic fertilizers. Training programs and incentives will be provided to nursery operators to adopt eco-friendly practices and reduce environmental impact.

## 4. FERTILIZER AND NUTRIENT MANAGEMENT

Despite regular trainings and farmers meetings, fertilizers are used indiscriminately, irrespective of crop or soil needs. This must stop both, to reduce wastage and to improve production from available fertilizers. The adverse effect of chemical fertilizers on soil and consumer health must also be attended. National issue of regulating import of expensive chemical fertilizers also needs to be protected.

### 4.1 Promotion of Use of Balanced Nutrient Application for Sustained Agriculture Growth and Production

Government will promote balanced use of chemical and organic manure to maintain steady production and income for farmers.

### 4.2 Promotion of Soil Testing and Soil Testing Report Based Nutrient Application for Increasing Food Production

Soil testing reports and recommendations shall be made mandatory to purchase chemical fertilizers for large scale use in agriculture. The soil testing reports shall be simplified, and it will give crop wise recommendations with geo-specific tagging. The recommendations shall include major, secondary, and micronutrients and with relevance to market availability. The soil test data will also be available on the portal. Recommendations shall generally be provided on straight fertilizers.

### 4.3 Promotion of Bio-Manure Production and Its Use to be Enhanced for Reviving Soil Health

Use of organic and animal-based manures shall be encouraged, and at least 50% of crop nutrient requirement shall be derived from organic resources. The use of organic growth boosters and cultures such as Jeevamrut, panchagavya, biofertilizer, decomposing cultures shall be promoted. The organic boosters will be produced locally under guidance from the government and through local self-help groups in villages to make villages self-sustainable. The package of practices for organic manure shall be standardized cropwise and demonstrated. The self-help groups shall be provided a helping hand in initial years through soft loans.

### 4.4 Integration of Precision Agriculture Techniques

Adoption of precision agriculture techniques, including the use of sensor technologies, drones, and satellite imagery, will be encouraged for precise application of fertilizers and nutrients. These technologies will enable farmers to monitor soil conditions and crop health in real-time, allowing for targeted and efficient fertilizer management. Training programs and subsidies will be provided to facilitate the adoption of precision agriculture practices, ultimately optimizing fertilizer use and improving crop yields while minimizing environmental impact.

### 4.5 Development of Smart Fertilizers

Investment in research and development will focus on the development of smart fertilizers that release nutrients in response to specific soil conditions and crop requirements. These innovative fertilizers will enhance nutrient use efficiency, minimize nutrient runoff, and reduce environmental pollution. Collaboration with biotechnology companies and academic institutions will drive the development and commercialization of smart fertilizer technologies, positioning agriculture for sustainable growth and resilience in the coming decade.

## 5. PEST MANAGEMENT

Pesticides are essential for control of insects and diseases that cause economic losses. Indiscriminate use of these chemical pesticides is dangerous as their residues in plant parts are toxic to human beings. The continuous training on safe use of pest control chemicals, biological methods, and integrated approach is the only solution.

5.1 Promotion of Integrated Pest Management System to Protect the Crops from Pests and Diseases

Integrated approach for pest control shall be promoted. Pest control advisory system shall be introduced through media and other sources with specific pesticides. Weather based disease and pest forecasting shall be introduced. Use of traditional pesticides shall be encouraged by providing incentives. Need based use of pesticides and minimum use shall be promoted. Promotion of pesticides having least residual effect.

5.2 Thorough Enforcement of Pesticides Act to Regulate Sale of Pesticide in the State

Sale of pesticides shall be permitted in a staggered manner only on recommendation of Agri expert. Pesticide dealers should be made aware of the properties of the products they sell.

5.3 Implementation of Sustainable Pest Management Practices

Introduction of sustainable pest management practices, including crop rotation, habitat manipulation, and biological control methods, will be emphasized to minimize reliance on chemical pesticides and promote ecosystem health.

5.4 Development of Resistant Crop Varieties

Investment in research and development of resistant crop varieties with built-in resistance to common pests and diseases will be prioritized. Breeding programs aimed at developing pest-resistant crops will reduce the need for pesticide application and enhance crop resilience.

5.5 Support for Farmer Education and Training

Enhancement of farmer education and training programs on pest identification, monitoring, and management strategies will be undertaken. Extension services and farmer field schools will provide hands-on training and technical assistance to farmers, empowering them to make informed decisions regarding pest control.

5.6 Promotion of Biological and Eco-Friendly Pest Control

Promotion of biological pest control methods such as natural enemies, biopesticides, and pheromone traps will be encouraged to reduce reliance on chemical pesticides. Research and development initiatives will focus on optimizing the efficacy and scalability of biological control measures. In addition to traditional biological pest control methods, promotion of eco-friendly pesticides, biopesticides, and botanical pesticides will be encouraged to reduce reliance on chemical pesticides. Research and development initiatives will focus on optimizing the efficacy and safety of these alternative pest control agents.

5.6.1 Eco-Friendly Pesticides and Biopesticides

Encouragement of the use of eco-friendly pesticides and biopesticides derived from natural sources such as plants, microbes, and beneficial insects. These products offer effective pest control while minimizing environmental impact and preserving beneficial organisms.

5.6.2 Botanical Pesticides

Promotion of botanical pesticides derived from plant extracts, essential oils, and other natural compounds known for their pest-repelling and insecticidal properties. Integration of botanical pesticides into pest

management programs will provide farmers with sustainable alternatives to synthetic chemicals.

5.6.3 Bionematicides and Biomycocides

Exploration of bionematicides and biomycocides for the control of nematodes and fungal pathogens, respectively. Development and adoption of these bio-based alternatives will contribute to integrated pest management strategies aimed at reducing pesticide residues and promoting soil health.

5.7 Collaboration with Research Institutions and Industry Partners

Collaboration with research institutions, agricultural universities, and industry partners will be fostered to support innovation and technology transfer in pest management. Joint research projects and knowledge-sharing initiatives will accelerate developing and adopting sustainable pest control strategies.

5.8 Monitoring and Evaluation of Pest Management Programs

Establishment of monitoring and evaluation mechanisms will be prioritized to assess the effectiveness of pest management programs. Regular surveys and data collection efforts will enable continuous improvement and adaptation of pest control strategies to evolving pest pressures and environmental conditions.

5.9 Incentives for Eco-Friendly Pest Management Practices

Incentives such as subsidies, grants, and certification programs will be provided to farmers adopting eco-friendly pest management practices. Recognition of farmers implementing sustainable pest control measures will incentivize broader adoption and contribute to environmental stewardship.

5.10. All Goa inventory of soil based plant pathogens

By systematically screening samples of soils from cropped areas a database of all culturable microbial plant pathogens would be created for reference and to monitor crop diseases attributable to soil-borne pathogens

5.11 Public Awareness and Consumer Education

Public awareness campaigns and consumer education initiatives will be launched to raise awareness about the importance of sustainable pest management practices and the potential risks associated with chemical pesticides. Empowering consumers to make informed choices will drive demand for sustainably produced agricultural products.

**6. IRRIGATION**

The Water Resource Department will provide the list of all major and minor irrigation projects, lift irrigation projects, and the inventory of village-wise Tollens (irrigation tanks) with survey numbers of the common areas irrigated to the revenue department for the collection of water taxes or imposition of penalties.

Water Resource Department will oversee the maintenance and operation of all canals, sluice gates for Tollens, and lift irrigation schemes in consultation with village development clubs and water users associations.

6.1 Subsidy Enhancement for Open Wells Construction

To promote sustainable irrigation practices, the subsidy for the construction of open wells will be increased to 90% of the actual cost. Recognizing that agriculture without irrigation is not economically viable, this

measure aims to facilitate greater access to reliable water sources for farmers.

6.2 Promotion of Sustainable Irrigation Practices

Discouragement of bore well sinking to mitigate groundwater depletion and promote sustainable water management practices. Alternative irrigation methods such as drip, sprinkler, and rainwater harvesting will be encouraged to optimize water use efficiency and reduce reliance on groundwater.

6.3 Regulation of Commercial Water Use

Strict regulations will be enforced to prohibit irrigation wells on farmland from drawing water for commercial use. This measure aims to prioritize agricultural water use for food production and safeguard against overexploitation of groundwater resources for non-agricultural purposes.

6.4 Community-Led Water Management Initiatives

Encourage community-led water management initiatives by establishing village development clubs and water user associations. These grassroots organizations will play a vital role in participatory decision-making processes and the sustainable management of irrigation infrastructure.

6.5 Integration of Modern Technologies

Integrating modern technologies such as remote sensing, Geographic Information Systems (GIS), and Internet of Things (IoT) devices to optimize irrigation scheduling and water distribution. Real-time monitoring and data-driven decision-making will enhance water resource management efficiency and resilience to climate variability.

6.6 Capacity Building and Training

Investment in capacity building and training programs to equip farmers, water resource professionals, and community stakeholders with the knowledge and skills necessary for effective water management. Training workshops, demonstrations, and extension services will promote best irrigation and water conservation practices.

6.7 Research and Innovation

Support for research and innovation in irrigation technologies and water management strategies to address emerging challenges and enhance agricultural productivity. Collaboration with research institutions, academia, and industry partners will foster innovation and technology transfer to the farm sector.

6.8 Monitoring and Enforcement

Establishment of robust monitoring and enforcement mechanisms to ensure compliance with water management regulations and sustainability standards. Regular inspections, audits, and enforcement actions will deter unauthorized water extraction and promote responsible water use practices.

**7. WATERSHED DEVELOPMENT**

The entire state of Goa will be brought under the Watershed Development program funded by the central government.

Goa has been divided into 422 micro watersheds, and all residents of the micro-watershed will be included in planning and development processes.

7.1 Priority on Soil and Water Conservation

Priority will be given to soil and water conservation efforts to maximize the utilization of Goa's annual rainfall of 3000 mm. Measures such as ponds, check dams, crescent-shaped structures, gabion structures, desilting of drains, drainage, and planting of fruit-bearing trees on hill slopes will be undertaken. Local farmers and laborers will be involved in these activities under the MNREGA Scheme.

7.2 Inclusive Development of All Lands

All lands belonging to Communidade, the forest department, temples, churches, and private lands will be developed under the watershed program to ensure holistic watershed management.

A concerted effort would be made to develop village water resources comprehensively. This initiative includes the modernization of traditional water bodies, adoption of rainwater harvesting systems, and sustainable water management practices. Support would be provided to establish and empower water user groups, leading community-driven water resource management efforts. These groups are envisioned to play a crucial role in efficiently and equitably managing water resources to meet agricultural demands.

7.3 Establishment of Village Watershed Development Clubs

Stakeholders will be organized into "village watershed development clubs" by an Agriculture officer designated for each revenue village/micro watershed. The formation of 40 such clubs annually will facilitate the completion of the process within 10 years.

7.4 Annual Budget Preparation and Inclusion in State Budget

An annual budget for village-wise agricultural development will be prepared by involving all stakeholders by January. This budget will be included in the State budget for activities not funded under the Central scheme for Watershed, ensuring adequate financial resources for watershed development initiatives.

7.5 Maintenance of ecologically fragile coastal Sand Dunes

The Water Resources Department will undertake efforts to maintain and re-establish coastal sand dunes to prevent soil erosion, contributing to the overall sustainability of watershed ecosystems.

7.6 Promotion of Sustainable Agriculture Practices

Integration of sustainable agriculture practices such as agroforestry, contour farming, and rainwater harvesting into watershed development initiatives. These practices will enhance soil health, water retention, and biodiversity, fostering long-term resilience in agricultural landscapes.

7.7 Climate-Resilient Infrastructure

Incorporation of climate-resilient infrastructure such as green infrastructure, natural drainage systems, and erosion control measures into watershed development projects. These initiatives will mitigate the impacts of climate change, including increased frequency and intensity of rainfall events.

7.8 Participatory Monitoring and Evaluation

Implementation of participatory monitoring and evaluation mechanisms involving local communities and stakeholders. Regular assessments of watershed development outcomes will ensure accountability, transparency, and adaptive management of project interventions.

7.9 Knowledge Sharing and Capacity Building

Promotion of knowledge sharing and capacity building initiatives to empower local communities with the skills and knowledge necessary for sustainable watershed management. Training programs, workshops, and

information dissemination campaigns will facilitate the adoption of best practices and innovative approaches.

7.10 Integration of Technology

Integration of technology such as Geographic Information Systems (GIS), remote sensing, and mobile applications for data collection, analysis, and decision support in watershed planning and management. These tools will enhance the efficiency and effectiveness of watershed development efforts.

**8. LAND**

The following agriculture lands should be banned from being converted to non-agricultural use:

- Area under commands of major, medium, and minor irrigation projects.
- Area under lift irrigation project schemes.
- Area irrigated by Tollens or lakes, government open wells, bore wells, and springs.
- All fields designated as rice, morad, kher, and Khazans in the form I & XIV.
- Erstwhile tenanted lands and tenanted lands.
- All Agriculture Lands developed by obtaining government subsidies.

Illegal filling of low-lying lands should be reported to the mamlatdar by the concerned talaties without waiting for complaints to restore such lands to agricultural use.

The Town and Country Planning department will insist on the submission of a krishi card along with conversion applications to verify the subsidies obtained for the development of agriculture on such land.

8.1 Amendment and Policy Enhancement
All cases of tenancy, including all such pending claims shall be settled as early as possible as per the provision of Agriculture Tenancy Act.

8.2 Encouragement of Cultivation and Preservation

The crop Inspectors/previously roles discharged by talaties should ascertain the cultivated area, production, etc., as specified under the act on an annual basis and record the same in the records of right.

8.3 Revenue Collection and Utilization

Command Area Development Authority (CADA) act should be implemented earnestly to collect water tax and penalties for wasting and non-utilization of irrigation water.

Revenue recoveries like water tax, penalties, etc., including CADA act recoveries/contribution for Khazan bunding, should be brought under the revenue department.

8.4 Sustainable Development Practices

Government projects like roads, bridges, etc., should prioritize avoiding and saving good fertile agricultural land, considering financial investment as not the sole criteria in choosing sites.
Land belonging to Communidade, Temples, Churches, and societies to be considered for granting subsidies for agriculture activities.

8.5 Infrastructure and Legislation

Proper access for moving machineries to the field may be provided by the respective panchayats/Municipalities.

Legislation for arresting fragmentation of agriculture land to areas less than 1000 sq.mt is the need today.

8.6 Environmental Protection and Restoration

Pollution with sewerage release, etc., in the agriculture land/water bodies to be penalized by pollution control board.

Areas designated as salt pans are to be revived and encouraged with subsidies to re-establish the almost extinct activity. This area is today under the industries department which may be brought under agriculture department.

Best Practices and Innovations

- Implementing precision agriculture techniques to optimize resource utilization and minimize environmental impact.
- Adoption of agroecological farming practices to enhance soil health, biodiversity, and resilience to climate change.
- Promote agroforestry systems for integrated land use management, carbon sequestration, and sustainable production.
- Incorporation of blockchain technology for transparent land management and property rights verification.
- Establish agri-tech parks to foster innovation, research, and entrepreneurship in the agricultural sector.

8.7 Safeguarding Agricultural Lands from Urbanization

Due to the expansion of urbanization, there is increasing pressure on the existing 145,000 hectares of agricultural land. To prevent the diversion of fertile lands for urbanization, especially outside the cities, the following policy points will be implemented:

- Implementation of stringent land use regulations and zoning laws to protect agricultural lands from non-agricultural development.
- Establishment of green belts or buffer zones around urban areas to serve as a protective barrier against encroachment into agricultural areas.
- Incentivizing the conversion of non-arable or marginal lands for urban development while preserving prime agricultural lands.
- Integration of land use planning and urban development strategies to ensure sustainable growth and minimize land conflicts.
- Promotion of compact urban development and infill projects to maximize land efficiency and minimize sprawl onto agricultural lands.
- Provision of financial incentives or tax breaks for landowners who voluntarily commit to preserving their agricultural lands for farming purposes.
- Development of land trust programs or conservation easements to permanently protect agricultural lands from conversion to non-agricultural uses.
- Strengthening enforcement mechanisms to penalize unauthorized land conversion and illegal encroachments on agricultural lands.

**9. KHAZAN LAND DEVELOPMENT**

The development of Khazan lands will be integrated into Watershed Development programs to ensure sustainable management and utilization.

Drains and poins ( backwaters) in the Khazan lands will be prioritized for desilting, with the involvement of all villagers as envisioned in Watershed Programs. Consultation with the respective Mamlatdar will guide the execution of these initiatives.

The operations of sluice gates will be controlled and regularly inspected by Mamlatdars of the respective talukas to optimize water management and prevent flooding or waterlogging. The Zonal agriculture officer in each taluka with Khazan lands would inspect these areas regularly and hear the grievances of the farmers and submit report for further action.

The Soil Conservation Division of the Directorate of Agriculture will submit a plan for repairs/construction of exterior bunds to protect Khazan lands, committed to completing these efforts within the next 10 years.

9.1 Seasonal Cultivation Practices

In the Kharif season, Khazans will be cultivated with paddy crops, promoting traditional agricultural practices and enhancing soil fertility.

The upper ridges of Khazan lands will be utilized for cultivating vegetables and pulses in the Rabi season, promoting crop diversification and enhancing food security.

9.2 Regulation and Monitoring

The respective Mamlatdar will closely monitor the regulation of saltwater intake in the Rabi season to prevent pollution or damage to neighboring fields, village wells, and ecosystems. Sustainable water management practices will be enforced to safeguard Khazan lands and surrounding areas.

The Fisheries Department will monitor regulation of shellfish harvesting to ensure sustainable practices and allow for multiplication during breeding seasons. Preserving biodiversity and ecosystem health will guide regulatory efforts in shellfish harvesting activities.

By integrating Khazan land development into Watershed Development programs and implementing sustainable cultivation practices, the policy aims to enhance agricultural productivity, promote environmental sustainability, and improve the resilience of coastal ecosystems.

9.3 Strengthening Protective Measures for Khazan Lands

Given the ecologically fragile nature of the Khazan land agroecosystem and the increased risk posed by sea-level rise and higher tidal amplitudes, comprehensive protective measures are essential to safeguard these lands. The following policy measures will be implemented to strengthen external and internal embankments, enhance the drainage system, and prevent colonization of flooded Khazan lands by mangroves:

9.3.1 Strengthening External and Internal Embankments

- Implement infrastructure upgrades and reinforcement of external embankments to withstand rising sea levels and higher tidal amplitudes. This will involve the use of resilient materials and engineering solutions tailored to the local coastal environment.
- Regular maintenance and repair of internal embankments to prevent breaches and ensure effective flood control within Khazan lands. Community-based initiatives to involve local farmers in embankment maintenance activities will be encouraged.

9.3.2 Enhancement of Drainage Infrastructure

- Rehabilitation and expansion of the full drainage system, including creeks, rivulets, and small channels, to improve water flow and prevent waterlogging during high tides and heavy rainfall events. Incorporation of nature-based solutions such as vegetated buffer strips and constructed wetlands to enhance water retention and filtration capacity.

- Integration of modern technologies such as remote sensing and Geographic Information Systems (GIS) for monitoring and managing the drainage network effectively. Real-time data collection and analysis will facilitate timely decision-making and adaptive management of drainage infrastructure.

9.3.3 Prevention of Mangrove Colonization

- Implement measures to prevent the colonization of flooded Khazan lands by mangroves, which can impede agricultural activities and disrupt traditional farming practices. This will involve the strategic planting of suitable vegetation to outcompete mangroves and maintain the integrity of agricultural land.
- Promoting community-led mangrove management initiatives to raise awareness about preserving Khazan lands for agricultural livelihoods and ecological sustainability. Collaboration with local stakeholders, including farmers, fisherfolk, and conservation organizations like GSBB , will be essential for successful mangrove control efforts.

9.3.4 Ecosystem Services and Food Security

- Recognition of the invaluable ecosystem services provided by Khazan lands, including flood regulation, water purification, and biodiversity conservation. Sustainable management practices will be prioritized to maintain these ecosystem functions and enhance the resilience of coastal communities.
- Ensuring food security for farmers dependent on Khazan lands by preserving agricultural productivity and livelihood opportunities. Capacity-building programs and financial incentives will be provided to support adaptive farming practices and diversification of agricultural production.

By implementing these measures, the policy aims to enhance the ecological security and food security of farmers dependent on Khazan lands while preserving the unique agroecosystem and ecosystem services these coastal landscapes provide.

**10. DEVELOPMENT OF HORTICULTURE**

**COCONUT**

Coconut is state tree and a major horticultural crop next to cashew in area . It occupies an area of 26683Ha.with estimated production of 163.10 million nuts . Crop is grown either under rainfed or irrigated conditions . Tender coconuts provide a healthy drink besides providing various other nutritious products. Tender coconuts are more important to support tourism industry.

10.1 : Management of existing coconut plantation for improving the productivity and better returns. The major approaches for the promotion of the coconut crops shall be a rejuvenation of old gardens, improving irrigation facilities, fertilizer management, and intercropping with spices, bananas, pineapples, etc.

10.2: Promotion of coconut cultivation for tender coconut to meet growing requirement of state. Dwarf types and hybrids shall be promoted for production of tender coconut water. Liberal assistance shall be provided for cultivation and creating infrastructure like drip irrigation for cultivation.

10.3: Promotion of Farmers Producer Organization for better marketing, processing and value addition. Coconut Farmers Producer Organizations shall be established to promote value addition, and multiple processing like copra, virgin coconut oil, coco peat, coconut sap, coir products, etc.

10.4: Farmers supported with appropriate incentive for coconut cultivation. Cultivation of coconut shall be supported with appropriate subsidy considering the cost of cultivation of coconut.

**CASHEWNUT**

It is the cash crop of rural Goa. New varieties promise higher yields, better nut size and better returns. Being the most promising dryland crop, govt shall provide assistance to its large scale cultivation.

10.5: Legal protection of GI tagged cashew.

Goa cashew has been bestowed with G I tag for their unique taste. To protect this uniqueness and to ensure better returns for this character, legal protection would be provided under Food and Drugs acts by checking spurious material. The system of recording traceability shall be introduced. This will ensure premium rate to Goa cashew. DNA bar coding of all local cashew cultivars would be done.

10.6: Area expansion of cashew.

It is proposed to increase the present area of 56934 ha existing now to 70000 ha in a period of ten years by planting grafts of high yielding varieties recommended by Agriculture Department and ICAR-CCARI.

10.7: Protection and preservation of cashew germplasm.

Goa has rich biodiverse germplasm in cashewnuts. This is a treasure for the researchers and breeders for developing new varieties. It is proposed to protect and preserve this germplasm on some isolated location like some inactive mining area or abandoned mining dumps or some communidade lands. It is also proposed that CCARI -ICAR would launch research projects to select promising lines with better quality produce.

10.8: Improvement of production and productivity of existing cashew plantation

Cashew is cultivated on hill slope. To ensure better survival and to increase yields, contiguous contour trenches or staggered trenches shall be promoted among the growers. This will reduce surface runoff of soil and water, recharge groundwater, maintain soil moisture and improve cashew yield and quality. This will also help in fighting climatic aberrations. Replanting of cashew grafts of high yielding varieties for filling of gap in cashew plantation. Improving managemental practices such as nutrient application, providing supplementary irrigation, pests management, etc

**MANGO**

Goa has a rich mango biodiversity, whiche than 100 varieties and this was nurtured by parishioners during Portuguese rule. State has more than one hundred named varieties in mango besides innumerable heterozygous material, some with very promising characteristics. This needs to be preserved and studied upon. This heterozygous material shall be searched for exploitation for specific purposes. CCARI -ICAR shall be entrusted with this task. The germplasm shall be preserved like cashew at isolated places and in communidade land . Government shall associate with these organizations for this purpose. DNA barcoding of all the varieties and sub varieties would be done within two years of notification of the policy.

10.9 : promotion of commercial cultivation of mango

Though Mancurad mango is very good in taste and colour, it has low keeping quality and that limits its trade ability. Cardozo cultivar selected by CCARI -ICAR shall be promoted for this purpose. Similarly Salcete Musaratt variety is suitable for jams and pickles and therefore shall be promoted for processing . Though Keshar variety is introduced in Goa from Gujarat, it performs well under local conditions and therefore shall be promoted in compact areas for exports. The mango plantations on laterite rocky areas, respond to management and provide better quality produce and therefore stress shall be more on such areas . If required agencies shall be identified to take up planting in odd terrains and develop compact mango orchards with assistance from Government. Water harvesting structures and irrigation shall be promoted in such areas. It is proposed to increase mango area from the present 5071 ha to 7500 ha in a period of ten years . This will create employment in farm sector and add values to the farm produce.

10.10 : Promotion of Farmers Producer Organization for better marketing, processing and value addition in mango.

Farmers Producer Organizations shall also be promoted to help local growers to generate marketable volumes and processing.

**ARECANUT**

Though arecanut is highly remunerative crop, it is neither a food crop nor any important industrial raw material. Being a perennial plantation crop caution need to be exercised to support it . The industrial uses of this produce are in nascent stage. The growers may therefore use their own wisdom in expanding the area. However arecanut provides best microclimate for multi-storeyed and multiple cropping to tap full natural resources like sun, soil ,humidity.

10.11 : Productivity improvement in arecanut

To promote better yields in arecanut government efforts shall be limited to providing seedlings of high yielding variety, support on mechanization to reduce dependence on labour, and support for pest control and soil improvement besides infrastructure development .

10.12 : promotion of Intercropping and mixed cropping in arecanut for better returns

Arecanut plantations shall accommodate spices like black pepper, nutmeg besides bananas, amorphophyllus, coffee, etc. as mixed crops . The cultivation of these mixed crops shall be subsidized by government.

**JACKFRUIT**

Jackfruit has been gaining importance in recent years due to its health benefits. Traditionally it was no a cultivated crop and seedlings grew as stay trees . But it is now a cultivated crop, and the Government of India has identified it for promotion in the North Goa district with an emphasis on processing and value addition.

10.13 : Promotion of commercial cultivation of jackfruit.

Large-scale plantations shall, therefore, be promoted by providing quality grafts and creation of Farmer's Producers Organizations and self-help groups. These FPOs shall promote processing to support growing tourism industry of the state It is proposed to cover an area of two hundred hectares under jackfruit crop in next ten years .

**KOKUM**

Kokum is emerging as a new perennial crop with multpuroseuses and wide scope for processing to Heath products .

10.14 : Promotion of kokum cultivation.

The crop will be promoted for use as kokum rind, kokum syrup, kokum butter, and as health supplements. Like jackfruit , kokum cultivation shall be also linked to FPOs and Self Help Groups to tap economies of scale .

**INTRODUCTION OF NEW CROPS**

State of Goa continues to be a prominent tourist destination. Along with traditional crops tourism needs new or exotic horticultural products.

10.15 : promotion of new fruit crops

To support this demand, new crops like avocado, rambutan, grapefruit, pomelo, etc. shall be promoted for cultivation by the government . With the help of experts a full list of new crop varieties suitable for soil and climate of Goa would be prepared. The elite type of planting material shall be identified by ICAR and Department of Agriculture and made available to interested farmers. Being new crops , liberal financial support shall be provided by government to interested growers .

**VEGETABLES**

Nearly 400 tonnes of vegetables are required per day to feed local as well as floating population of the state. This is going to go up with rising population and tourist inflow. But all needed vegetables cannot be grown economically in the state due to agro climatic reasons and state has to depend on vegetables from Belgavi and other areas. Goa has more congenial environment for cucubits, bhendi ,chillies and leafy vegetables.

10.16 : Promotion of off season cultivation of vegetables.

Off season cultivation of cucurbits, bhendi, chillies, and leafy vegetables shall be promoted in Goa, so as to have reduced cost of cultivation and scope for surplus marketing outside Goa.

10.17 : Promotion of vegetable seedlings nurseries.

The vegetable seedlings nurseries will be promoted among local youth to cater to the needs of farmers to save their time on seedling raising and to have uniform marketable produce . Appropriate skill development training shall be imparted to rural youth for this purpose both in nursery management and in field cultivation.

10.18 : promotion of cultivation of vegetable in urban area.

Simultaneously training for urban people shall be organised in terrace, balcony , and vertical gardening. These seedling nurseries shall supply seedlings to these dwellers for terrace cultivation or vertical farming in urban areas. Section 10.33 provides detail steps for vertical farming.

10.19 : Promotion of leafy vegetables

Special efforts shall be done to promote leafy vegetables due to their nutritional value and to make available fresh produce to the needy . Vegetables, specially the leafy types quickly absorb the heavy metals from water and soil which have disastrous effects on human health . The local promotion shall be beneficial to overcome these hazards . Along with the identified vegetable type other vegetables shall also be promoted through assured pricing system .

10.20 : promotion of cultivation of local brinjal cultivars

Brinjal cultivation on commercial scale is difficult due to wilt problem. But to promote the selected types precisely the Agassaim type, which has been granted GI tag, the grafted brinjal programme shall be promoted to overcome problem of wilt.

10.21 : Creation of facilities for better marketing of vegetables

In general marketing of local vegetables is roadside vending or through weekly markets or through Goa State Horticultural Corporation. To add to this Goa Agriculture and livestock marketing Board shall be prompted to organize wholesale vegetable auction in selected yards to induce marketing system for vegetable where local vendors can come and buy the produce for retail sale .

10.22 : protection and preservation of local germplasm of vegetables

Goa is rich in vegetable biodiversity . This is treasure for breeders to develop new varieties. A full database of all the species , varieties, and subvarieties would be created, and DNA barcoding would be done to characterize these at the molecular level. This germplasm will be preserved by providing incentives to farmers cultivating them. The advanced cold storage facilities for maintaining seed bank will also be explored. Special attention would be given to local Cucurbitaceae and more than 30 local traditional Capsicum varieties.

**SPICES**

Though a large number of spices can be cultivated in Goa due to favourable climatic conditions, very few are really remunerative. Black pepper is the most promising and provides substantial returns though cultivated as intercrop in coconut or arecanut plantations .

10.23 : Promotion of Black pepper cultivation in the state.

This crop will be further promoted to cover maximum available support trees. New high yielding types , grafted types etc shall be identified with support from CCARI-ICAR and spices research stations and promoted to take the state output from present level of 418 tonnes to 800 tonnes . The bush pepper grafts shall be simultaneously promoted for urban dwellers . The area expansion programme shall be substantially funded by the state government .

10.24 : Promotion of Nutmeg cultivation in the state.

Similar to the black pepper programme nutmeg cultivation shall be promoted for mace ,nutmeg and nutmeg rind. The varieties producing bigger size fruits shall be promoted. The nutmeg candy which is highly demanded in tourism sector shall be promoted through Self Help Groups. To improve upon the quality of these spices multicrop driers shall be provided at nominal rate so that the quality product so produced can be marketed as souvenir item to the visiting tourists .

10.25 : promotion of other tree spices

Other tree spices like cinnamon , allspice, cloves shall be promoted but with caution due to their low output.

10.26 : Promotion of Turmeric cultivation.

Turmeric is another traditional spice that is cultivated with ease and yields good. However, the cost of processing and the market rates do not permit its large-scale cultivation. Efforts therefore shall be more focused on promoting varieties that have more curcumin content and suitable for pharmaceutical industries for processing. The government shall also try to develop simpler systems of converting to turmeric powder. It is observed that turmeric can reduce surface soil and water runoff on hill slopes and therefore could be a very a potent intercrop in cashew.

10.27: Promotion of cultivation of ginger

Ginger is cultivated on limited scale due to high cost of seed material. The produce suffers from erratic market rates and sometimes do not meet the cost of seed invested in cultivating it. Government therefore shall promote its cultivation under covered conditions. The standard package of practices shall be developed for covered cultivation by CCARI-ICAR. This is expected to improve the yields and the return’s multiple times.

**TUBER CROPS**

Goa has tremendous diversity of plant storage organs- tubers, bulbils, rhizomes etc. A scientific database of all these plant storage organs of economic importance would be created and all the accessions would be identified at the molecular level and subjected to permanent DNA Bar coding. The major tuber crop which can be economically cultivated in Goa are elephant foot yam, sweet potato, Diascorea species (Kate Kangana , and karande)and calocasia. Among all these elephant foot yam is most in demand round the year

10.28 : Policies for promotion of tubers in the state

Government would expand the cultivation of elephant foot yam with high yielding varieties like Gajendra in association with Goa state horticulture corporation. Import and provide free seed to growers for two years thereafter promote local seed. Local germplasm of sweet potatoes red and white would be preserved by providing grants to registered growers. Diascorea (Kate Kangana, Chirko and karande) and Colocasia shall be promoted by providing assistance on cropped area.

**Medicinal plants cultivation**

State being located amidst western ghats , has rich source of medicinal plants. This will be promoted for preservation in farmers field and forest lands and protected from undue exploitation .

10.29 : cultivation of medicinal plants in the state.

Medicinal crop cultivation shall be promoted only with buy back arrangements of produce in association with state medicinal plant board.

**Bamboo cultivation.**

Bamboo cultivation is promoted through Goa State Bamboo Mission operated by Forest Department.

10.30 : promotion of bamboo cultivation

Bamboo cultivation will be promoted in farmers fields as per the priorities fixed by state bamboo mission and best of the bamboo cultivars including species used for interior decoration and landscaping and used in handicrafts would be promoted.

10.30.1. Systematic cultivation Bamboos for harvesting edible shoots

Based on research and suitability specific species of bamboos with low toxic phytochemicals would be promote as dedicated sources of marketable edible bamboo shoots locally known as “quills” and marketed during the monsoon.

**Floriculture**

Several success stories and failures are reported. The major problem in flower cultivation is the assured market and remunerative prices. Quality seedlings, crop management and market studies shall be given preference.

10.31 : Promotion of cultivation of flowers in the state.

Seasonal or perennial type of open cultivable type of flower cultivation would be promoted by individual new farmer initially with small areas of 500 sq. meters. Subsequently, once farmers get acquainted with cultivation and marketing, additional area shall be considered for financial assistance by government. Preference shall be given to farmers planning to cultivate flowers round the year to maintain continuous availability of local flowers.

The seed or seedling material of identified type of flower shall be made available from registered private nurseries that would be promoted for this purpose.

Polyhouse floriculture will be promoted by individuals in an area of 1000 sq. meters initially with one identified type of flower. preference shall be given to group polyhouses with four members to ensure regular supply.

Marketing of flower produce shall preferably be done through farmer producers organization.

Polyhouses with crop specific approved designs shall be considered for Government assistance. Polyhouses being the basic infrastructure for high value crop cultivation, shall be provided with substantial financial assistance by government to cover costs of structure, cladding material ,irrigation systems and planting material.

Damage caused to polyhouses after any calamity or normal aging shall be incentivized for revival by providing financial assistance in same scale as that provided for new ones to the extent of damage caused.

The garland making and knitting of flowers is an art and transferred from generation to generation. It is also adding to the employment to disabled , old people and the unemployed. This art would be preserved and incentivized with help of stakeholders and NGOs. The persons engaged in this activity shall be provided with incentives.

Government would survey and identify all traditional local varieties of flowers and identify these at molecular level, apply DNA Bar coding and prepare nurseries to multiply these cultivars. Natural wild habitats of precious wildflowers would be conserved with help of local BMCs.

10.32: Outlook and Strategic Direction for Horticulture Development in Goa

Looking ahead, the horticulture sector in Goa is poised for significant advancements and transformations over the next decade. Building upon the foundation laid out in the preceding sections , it's imperative to outline strategic directions that align with the unique characteristics and challenges of horticultural development in the state. Here are specific areas of focus:

1. **Climate-Resilient Farming Practices:** Given Goa's susceptibility to climate variability, future strategies must prioritize the adoption of climate-resilient horticultural practices. This includes promoting the cultivation of drought-tolerant crop varieties, investing in water-efficient irrigation systems, and implementing soil conservation techniques tailored to the local landscape.
2. **Technology Integration:** Harnessing agricultural technology can significantly enhance productivity and sustainability in horticulture. Strategies should support the adoption of precision farming techniques, satellite imaging for crop monitoring, and the development of mobile applications for farm management. Additionally, incentivizing the use of drones for pest surveillance and soil analysis can optimize resource utilization and minimize environmental impacts.
3. **Market Diversification:** To capitalize on emerging market opportunities, strategies should encourage diversification of horticultural products. This involves identifying high-value crops with export potential, facilitating market linkages through agri-tourism initiatives, and supporting farmers in obtaining quality certifications for niche products such as organic fruits and spices.
4. **Sustainable Farming Practices:** Promoting organic farming methods and reducing reliance on chemical inputs are central to sustainable horticulture development. Strategies should incentivize organic certification, provide training in eco-friendly pest management techniques, and facilitate access to organic inputs such as biofertilizers and compost.
5. **Value Addition and Processing:** Enhancing value addition infrastructure is critical for maximizing returns from horticultural produce. Strategies should prioritize establishing food processing units, cold storage facilities, and packaging centers in horticulture clusters. Furthermore, promoting

branding and marketing initiatives for value-added products like dried fruits, fruit preserves, and essential oils can create added value along the supply chain.

6. **Community Engagement and Capacity Building:** Strengthening community participation and capacity-building initiatives is essential for sustainable horticulture development. Strategies should empower farmer cooperatives, provide technical training in modern farming practices, and facilitate knowledge exchange through farmer field schools and demonstration plots.
7. **Flexibility and Adaptation:** Recognizing the dynamic nature of the horticulture sector, strategies should be flexible and adaptive to changing circumstances. Regular reviews and consultations with stakeholders will ensure that strategic interventions remain relevant and responsive to emerging challenges and opportunities in the sector.

10.33 Promotion of Vertical farming

Vertical farming is a method of growing crops in vertically stacked layers or structures, often indoors, using controlled environment agriculture techniques such as hydroponics, aeroponics, or aquaponics. It aims to maximize production efficiency and space utilization while minimizing resource consumption, making it a sustainable approach to agriculture in urban and limited-space environments.

10.33.1 Financial Grants for Infrastructure Setup: Substantial financial grants would be provided to vertical farming ventures to support the establishment of infrastructure, including vertical farming structures, automated systems, and climate control technologies.

10.33.2 Land Lease Subsidies: Discounted or subsidized land lease rates would be offered for vertical farming activities within designated urban agricultural zones, making it more financially feasible for entrepreneurs to initiate such ventures.

10.33.3 Tax Exemptions for Vertical Farming Businesses: Tax exemptions and reduced rates would be granted for vertical farming businesses, aiming to incentivize investment and create a favorable economic environment for the industry.

10.33.4 Customized Loan Schemes: Collaborations with financial institutions would be established to create customized loan schemes with low-interest rates tailored specifically for vertical farming startups, alleviating financial constraints on entrepreneurs.

10.33.5 Fast-Track Approval Process: The approval process for permits and licenses related to vertical farming would be streamlined to ensure quick and efficient clearance, expediting project implementation and reducing administrative hurdles.

10.33.6 Research and Development Grants: A state-level fund would be established to provide research and development grants for innovative vertical farming projects, encouraging experimentation and the adoption of cutting-edge technologies.

10.33.7 Recognition and Awards: State-level awards and recognition programs would be introduced to acknowledge outstanding achievements in vertical farming, motivating farmers and entrepreneurs to excel in the field.

10.33.8 Collaboration with Educational Institutions: Collaboration between the state government and educational institutions would be encouraged to promote research, development, and education in vertical farming practices, fostering innovation and knowledge exchange.

10.33.9 Government Procurement Support: The procurement of produce from vertical farms would be prioritized for government institutions, ensuring a steady market and income for farmers engaged in vertical farming activities.

10.33.10 Public-Private Partnerships: Public-private partnerships would be encouraged for large-scale vertical farming projects, leveraging government resources and private sector expertise for successful implementation and sustainable growth of the industry.

10.34 Formation of Goa State Coconut, Cashew and Mango development boards

10.34.1. Coconut, Cashew and Mango cover more than 60 percent of total cropped area in Goa. In consultation with stakeholders, the government would take steps in a time-bound manner to constitute either a composite board called "Goa State Coconut, Cashew and Mango Development Board" or three different boards to be designated as "Goa State Coconut Development Board", "Goa State Cashew Development Board" and "Goa State Development Board state. This would be a strategic move towards revolutionizing the production, processing, and marketing of these pivotal crops. The structure, objectives, functions, funding sources, and operational strategies for the Goa State Coconut Development Board, Goa State Cashew Development Board, and Goa State Mango Development Board would be as follows:

10.34.2. Structure of the boards

Each Board would have a similar structure for consistency and efficiency:

- Governing Body: Comprising government officials, agricultural experts, farmer representatives, and industry stakeholders to oversee strategic decisions.

- Executive Committee: Tasked with day-to-day operations, program implementation, and coordination among various departments.

- Advisory Panels: Consisting of scientists, agronomists, market experts, and international trade specialists to provide expert advice on specific issues.

- Regional Offices: Established in key production zones for close interaction with farmers and local stakeholders.

10.34.3. Objectives of the boards

Common objectives for each Board might include:

- Enhance the quality and quantity of crop production through sustainable practices.

- Promote research and development (R&D) in crop improvement, pest management, and climate resilience.

- Develop and upgrade processing infrastructure to add value to the primary produce.

- Expand domestic and international markets for these crops.

- Ensure fair prices and income security for farmers engaged in cultivating these crops.

- Foster skill development and employment opportunities in the respective crop sectors.

10.34.4. Functions of the boards

- R&D and Extension Services: Conduct and promote research on high-yielding varieties, pest and disease management, and sustainable cultivation practices. Organize extension services to disseminate this knowledge to farmers.

- Quality Assurance: Establish standards for quality, packaging, and grading to improve marketability and ensure higher returns for farmers.

- Infrastructure Development: Invest in processing units, cold storage facilities, and logistics to reduce post-harvest losses and enhance product value.

- Marketing and Promotion: Develop branding and marketing strategies for each crop, including geographical indications (GIs) where applicable. Organize trade fairs and participate in international expos

to find new markets.

- Financial Support and Insurance: Provide financial assistance, subsidies, and insurance schemes to protect farmers against crop failure and market volatility.

- Training and Capacity Building: Conduct training programs for farmers on modern cultivation techniques, post-harvest management, and entrepreneurship.

10.34.5. Funding Sources of the board

- State Government Allocation: Primary funding through budgetary allocations by the state government.

- Central Government Schemes: Leverage central government schemes and funds dedicated to agricultural development and export promotion.

- Grants and Donations: Seek grants from national and international agricultural development agencies, NGOs, and the private sector.

- Public-Private Partnerships (PPPs): Collaborate with private companies for investments in processing infrastructure, R&D, and marketing initiatives.

- Revenue Generation: Income through services provided by the boards, such as quality certification, training programs, and consultancy services.

10.34.6. Operational Strategies for Effective Functioning

- Stakeholder Engagement: Regular interaction with farmers, traders, processors, and exporters to understand their needs and challenges.

- Adaptive and Responsive Governance: Quick adaptation to market changes, technological advancements, and environmental challenges.

- Transparency and Accountability: Ensure transparency in operations and accountability towards stakeholders to build trust and credibility.

- Collaboration with boards under ICAR, Research Institutions and Universities: Partner with Coconut, Cashew boards or research centres under ICAR, agricultural universities and research institutions for cutting-edge R&D.

- International Partnerships: Forge partnerships with international boards and organizations for knowledge exchange, market access, and technological collaborations.

By structuring the Goa State Coconut Development Board, Goa State Cashew Development Board, and Goa State Mango Development Board with clear objectives, comprehensive functions, diversified funding sources, and strategic operational approaches, Goa can significantly enhance the production, processing, and marketing of these key crops which cover more than 60 percent of total cropped area. This holistic approach will not only give Goa a leading edge in these sectors but also contribute to the state's overall economic development, ensuring prosperity for its farming communities.

10.35. Incentives for cultivation of plants for Matoli decorations

Matoli, or traditional sacred display of seasonal plant species, including many from the wild, is an age-old ecotheological practice during the Chavath or Ganesh festival of Goa. However, considering the growing demand and heavy pressure on wild natural habitats of many plant species used for matoli, the government would encourage their cultivation in association with the forest department and Goa State Biodiversity Board. A full ‘matoli plants cultivation package” would be prepared.

## 11. INTEGRATED FARMING

The success in farming and economic returns depends on generating maximum income from available land. The integrated approach with dairy farming, goat rearing, fish farming, etc not only supplement the income from available land but also help in boosting the yields of the main crops. The dairy farming directly helps in providing organic manure to the crops. It also helps in providing raw material for preparation of 'jivamrut' and 'amrut pani. It helps in preparation of biological pesticides. The cow dung also produces cooking gas for use by farmer family. Goat rearing and poultry farming generate droppings which are rich organic manures that restore soil health and boost crop growth. Though these core activities supplement agriculture income, it requires skill in management. However associated activities like fodder farming and utilizing the available water sources for inland fish farming can be adopted.

### 11.1 Promotion of Cultivation of Green Fodder

Green fodder cultivation shall be promoted on agriculture farms on similar lines as that of any commercial crop. The fodder will be made available to needy dairy farmers that ultimately will help in increasing milk production of state. All infrastructure subsidies as applicable to any agri crop shall be made available for fodder crop in addition to cultivation subsidies.

### 11.2 Promotion of Pisciculture for Supplementary Income

The farmers having large water storage facilities like ponds, tanks, big wells etc would be encouraged on a case by case basis to adopt fresh water pisciculture of appropriate varieties certified by FSI and ICAR and fisheries department while taking care of prevention of invasive species of fish or shellfish. Beneficiaries would have to take necessary training and obtain all licenses and permits.

### 11.3 Desilting of Poins in Khazan Fields

Drainage lines traditionally known as 'poin' in khazan fields which are heavily silted shall be promoted for desilting simultaneously strengthening the bunds on sides to protect the adjoining fields. In consultation with experts and with concurrence of the local gramsabha the potential for pisciculture of such backwaters would be determined if economic benefits outweigh ecological costs.

### 11.4 Promotion of Agroforestry

#### 11.4.1 Agroforestry Development Program:

Implementing a state-wide Agroforestry Development Program would provide farmers in Goa with technical guidance, financial incentives, and access to quality planting materials to support their adoption of agroforestry practices.

#### 11.4.2 Incentives for Agroforestry Adoption:

Providing financial incentives such as subsidies for tree saplings, equipment, and inputs, along with tax exemptions or reductions for agricultural income derived from agroforestry practices, would encourage more farmers to adopt these systems.

#### 11.4.3 Agroforestry Education and Training:

Collaborating with agricultural universities and research institutions to develop agroforestry curricula and organizing workshops, field demonstrations, and farm visits would educate and train farmers on successful agroforestry models and best practices.

#### 11.4.4 Research and Development:

Supporting research on local agroforestry systems and encouraging the development of new models resilient to climate change would enhance the sustainability and effectiveness of agroforestry practices in Goa.

11.4.5 Market Development for Agroforestry Products:

Promoting markets for agroforestry products and supporting value addition and processing facilities would ensure farmers have access to profitable markets, increasing their incomes.

11.4.6 Legal and Regulatory Support:

Reviewing and amending land-use policies, simplifying registration processes, and implementing clear guidelines for sustainable management would facilitate agroforestry practices while conserving natural resources.

11.4.7 Community-Based Agroforestry Initiatives:

Encouraging farmer cooperatives, supporting community-based projects, and facilitating knowledge exchange would strengthen agroforestry initiatives and rural livelihoods.

11.4.8 Integration with Environmental Conservation Efforts:

Aligning agroforestry policies with conservation goals and offering incentives for environmental contributions would enhance ecological sustainability.

11.4.9 Infrastructure and Access to Finance:

Improving rural infrastructure and facilitating access to finance through loans and grants would support farmers in adopting agroforestry practices.

11.4.10 Monitoring and Evaluation:

Establishing a monitoring and evaluation system to assess impacts and using feedback to improve policies would ensure effective implementation and continuous improvement of agroforestry initiatives in Goa.

11.5 Promotion of Apiculture

The establishment of beekeeping units in integrated farming systems will be facilitated. Bees play a crucial role in pollination, thereby increasing the yield and quality of crops. Additionally, beekeeping can serve as an alternative source of income for farmers, particularly during lean agricultural seasons.

11.6 Encouragement of Vermicomposting and spirulina cultivation

The adoption of vermicomposting practices will be promoted to efficiently manage organic waste generated from agricultural activities. Vermicompost serves as a nutrient-rich organic fertilizer, improving soil fertility and crop productivity. Additionally, vermiculture can provide an additional income stream for farmers through the sale of vermicompost and earthworms.

Spirulina cultivation farms would be encouraged and demonstration farms would be established.

11.7 Integrated Pest Management (IPM) Training

Training and extension services on Integrated Pest Management (IPM) techniques will be provided to farmers practicing integrated farming. IPM emphasizes the use of environmentally friendly pest control methods such as biological control, cultural practices, and the judicious use of pesticides. Training farmers

in IPM can reduce their dependence on chemical pesticides, promote ecological balance, and safeguard human health.

11.8 Promotion of Solar Energy in Integrated Farming

The adoption of solar energy solutions in integrated farming systems, such as solar-powered water pumps for irrigation and solar dryers for post-harvest processing, will be encouraged. Solar energy can reduce farmers' reliance on conventional energy sources, mitigate greenhouse gas emissions, and enhance energy resilience in rural areas. Additionally, promoting solar energy can contribute to Goa's goal of achieving energy sustainability and reducing carbon footprint in agriculture.

11.9 Support for Farmer Cooperatives and Producer Organizations

The formation and strengthening of farmer cooperatives and producer organizations among practitioners of integrated farming will be facilitated. These collective entities can enable farmers to pool resources, access markets more effectively, negotiate better prices for their produce, and collectively invest in shared infrastructure such as processing units and marketing facilities. Supporting farmer cooperatives can enhance the socio-economic well-being of farming communities and promote inclusive agricultural development in Goa.

**12. FARM MECHANIZATION:**

Tradition of physical labour for farm operations is disappearing and mechanization is gradually increasing. Mechanization is essential to reduce labour dependency, reduce cost of production, to reduce drudgery of labour and promote ease in cultivation. It is one sector which can create large skilled employment opportunities for unemployed youth. The following policies are proposed in this sector.

12.1 Promotion of Taluka and Village Level Agriculture Machinery Banks

Taluka and village level agriculture machinery banks will be established to provide agricultural machinery for custom hiring. These banks will own or pool agricultural machinery, skilled operators, spares, and services, which will be made available to needy farmers at market cost. Agriculture machinery banks will preferably be operated by agriculture graduates, unemployed individuals, or agriculture cooperative societies. Soft loans at lower interest rates will be made available to these centers for acquiring or replacing machinery. The hire charges for agricultural machinery will be determined by a committee nominated by the Government.

12.2 Farm Roads

To resolve disputes arising from the movement of machines through other farms to remotely located farm owners, local village panchayats and the mamlatdar will examine the cases and issue amicable solutions. A taluka wise action plan based on accurate surveys, mapping would be prepared , discussed with local authorities and stakeholders and accesses to farms would be streamlined and improved.

12.3 Skill Development for Operation and Maintenance & Repair of Agricultural Machinery

Skill development programs will be promoted through regular training for operators and repair teams by the Government and manufacturers.

12.4 Promotion of Local Dealers for Supply of Agricultural Machinery

To promote local dealers in machinery and spares as an employment avenue, a maximum of 15% price over and above prices in adjoining states will be allowed for consideration for subsidy on equipment.

12.5 Financial Support for Purchase of Agricultural Machinery

Financial assistance will be provided to individuals and institutions for the promotion of locally specific designs and talents in agricultural machinery. Environmentally friendly agricultural machinery will be promoted as much as possible.

12.6 Subsidized Rental of Small-Scale Mechanized Equipment

Subsidized rental schemes for small-scale mechanized equipment, suitable for small landholdings, would be implemented to make mechanization more accessible to small-scale farmers in Goa.

12.7 Mobile Mechanization Units

Mobile mechanization units would be introduced to provide on-demand mechanization services to farmers in remote or inaccessible areas, reducing the need for individual ownership of machinery.

12.8 Technology Adoption Assistance

Assistance programs for technology adoption, including GPS-guided equipment and precision agriculture technologies, would be facilitated to improve efficiency and productivity on small farms in Goa.

**13. Modernization and development of departmental farms**

Department of agriculture has seven farms located all over state. These farms would be upgraded to make them Centers of excellence, agri models, and resource centers.

13.1 Production of Quality Planting Material and Seeds for Supply to Farmers for Cultivation

Mass multiplication of quality planting material and seeds of specific crops and varieties would be undertaken for supply to farmers.

13.2 Demonstration of Improved Production Technologies for Promotion of Technology in Agriculture

Trials and demonstrations of latest crop production technologies would be conducted for adoption in the state. Trials and testing of new agriculture machinery before releasing to farmers would be facilitated. Integrated farming models, pisciculture models, organic farming models, etc., would be created for adoption by farmers. Production of farm requisites like jeevamrut, panchagavya, organic pesticides, decomposing cultures, Trichograma cultures, etc., would be supplied to farmers.

13.3 Protection and Preservation/Conservation of Local Germplasm

As outlined in previous sections under horticulture, production, storage, and sale of seeds of ethnic and local crops and germplasm would be ensured and full validation of heirloom varieties would be done by DNA Bar coding.

13.4 Human Resource Development

Farmers would be trained in local languages, Konkani and Marathi on crop production, use of agricultural machinery, pest control, and crop management. Skill development trainings for unemployed youth would be organized. Exhibitions and public programs for the promotion of agriculture and allied occupations would be conducted.

13.5 Infrastructure Development of Government Farms

Improvement of infrastructure including farm buildings, irrigation systems, storage facilities, and transportation would be prioritized. State-of-the-art research and testing laboratories would be established to support innovation and experimentation. Facilities for farmer training and extension services would be

expanded and modernized to enhance outreach and effectiveness. Investment in renewable energy sources such as solar panels and bioenergy systems would be explored to reduce reliance on conventional energy sources and promote sustainability. Collaboration with research institutions and universities would be fostered to leverage expertise and resources for continuous improvement and innovation in farm practices. Regular monitoring and evaluation of farm operations and performance would be conducted to ensure efficiency, productivity, and alignment with agricultural goals and objectives.

13.6 Innovative and Income-Generating Activities

1. Eco-tourism initiatives: Government farms would be opened up for eco-tourism activities such as nature trails, bird watching, farm stays, and agri-tourism experiences to attract visitors and generate additional income.
2. Agro-processing units: Small-scale agro-processing units would be established on government farms for value addition to agricultural produce, such as fruit pulping, juice extraction, jam making, and spice grinding, to create marketable products and generate revenue.
3. Farmer's markets: Regular farmer's markets or haats would be organized within government farm premises to facilitate direct sales of fresh produce to consumers, promoting local agriculture, and providing an additional source of income for farmers.
4. Training and consultancy services: Specialized training programs, workshops, and consultancy services on sustainable farming practices, organic agriculture, and agribusiness management would be offered to external stakeholders, generating revenue through service fees and expertise sharing.
5. Contract farming agreements: Government farms would enter into contract farming agreements with private companies or cooperatives to cultivate specific crops or produce niche agricultural products on government farm land, ensuring a steady income stream and fostering partnerships with the private sector.
6. Agri-tourism accommodations: Agri-tourism accommodations such as farmhouses, guesthouses, or eco-lodges would be developed on government farm premises for overnight stays or rural retreats, providing a unique experience for visitors and generating additional revenue through hospitality services.
7. Research and development partnerships: Collaborations with research institutions, universities, and private companies for joint research projects, technology transfer, and product development initiatives would be pursued, leveraging government farm resources and expertise to generate intellectual property and commercialize innovations.
8. Renewable energy production: Renewable energy infrastructure such as solar panels, wind turbines, or biogas digesters would be installed on government farm land to generate clean energy for on-site consumption or sale to the grid, diversifying revenue streams and promoting environmental sustainability.

**14. Precision Farming**

**Definition of Precision Farming:**

Precision farming, also known as precision agriculture or smart farming, refers to the use of advanced technologies, data analytics, and management practices to optimize agricultural production systems for increased efficiency, productivity, and sustainability. It involves the precise and targeted application of inputs such as water, fertilizers, pesticides, and seeds, tailored to the specific requirements of individual plants or small sections of fields.

At its core, precision farming relies on the collection and analysis of data from various sources, including satellite imagery, drones, sensors, GPS technology, and weather stations. This data is used to create detailed maps and models of the farm environment, allowing farmers to make informed decisions and take precise actions to maximize yields while minimizing resource use and environmental impact.

Precision farming encompasses a wide range of practices and techniques, including:

1. **Variable Rate Technology (VRT):** Adjusting input application rates based on spatial variability within fields, such as soil fertility, moisture levels, and crop health.
2. **Remote Sensing:** Using satellite or drone imagery to monitor crop health, detect pests and diseases, and assess environmental conditions.
3. **Automated Machinery:** Utilizing GPS-guided tractors, planters, and harvesters to optimize field operations and reduce overlaps and skips.
4. **Data Analytics:** Analyzing farm data to identify patterns, trends, and correlations that can inform decision-making and improve management practices.
5. **Site-Specific Crop Management (SSCM):** Tailoring agronomic practices to specific areas within fields, optimizing planting, irrigation, fertilization, and pest control strategies.
6. **Real-Time Monitoring:** Continuous monitoring of field conditions and crop performance, allowing for timely interventions and adjustments to optimize outcomes.
7. **Integration of Information Systems:** Connecting various farm management software, sensors, and devices to streamline data collection, analysis, and decision support processes.

Precision farming aims to enhance resource use efficiency, minimize environmental impacts, reduce input costs, and increase farm profitability. By empowering farmers with actionable insights and decision-support tools, precision farming represents a transformative approach to agriculture that is essential for meeting the challenges of feeding a growing global population while safeguarding natural resources and ecosystems.

14.1 Promotion of Precision Farming in the State

For precise use of available crop inputs like water, fertilizers, etc, and to avoid wastage of these inputs with ever-increasing costs, modern agriculture relies on precision farming. Various methods like drip irrigation, fertigation through water-soluble fertilizers, digitally controlled irrigation, weather-based pest control measures, and soil moisture-based irrigation systems are adopted. In Goa state, the government provides subsidy for such installations to the extent of 90% of the standard cost, which is shared by the state as well as the Government of India.

- State of Goa will fix the actual cost of installation of drip irrigation systems crop-wise through a state-nominated committee, and a subsidy of 90% shall be provided as per crop based on these costs.
- Precision irrigation shall be made mandatory within a period of ten years to help farmers combat climatic aberrations and make use of diminishing resources in areas promoted under the government crop expansion program.
- To reduce the cost of labor and the leaching losses of expensive fertilizers, precisely required fertilizers shall be promoted for use through the drip system.
- Concentrated water-soluble fertilizers shall be promoted for use with special incentives.

14.2 Implementation of Precision Farming Technology

Implementing precision farming technology in Goa requires concerted efforts and a clear roadmap. Here are some practical steps that would be undertaken over a period of ten years:

14.2.1 Establishment of Demonstration Farms:

Demonstration farms showcasing precision farming techniques will be established across different agro-climatic zones in Goa. These farms will serve as learning centers for farmers and facilitate hands-on training sessions.

14.2.2 Farmer Training Programs:

Comprehensive training programs on precision farming practices will be conducted regularly for farmers. These programs will cover topics such as soil health management, crop-specific requirements, irrigation

scheduling, and pest management using precision techniques.

14.2.3 Subsidized Access to Precision Farming Equipment:

To encourage adoption, the government will provide subsidies for the purchase of precision farming equipment such as soil sensors, weather stations, drones, and automated irrigation systems. Financial support will also be extended for the installation and maintenance of these systems.

14.2.4 Research and Development Initiatives:

Research institutions and agricultural universities will be engaged in conducting research on precision farming tailored to the specific needs of Goan agriculture. This will include developing localized precision farming models, optimizing crop-water management strategies, and evaluating the efficacy of precision technologies in local conditions.

14.2.5 Collaboration with Private Sector:

Partnerships with private companies specializing in precision farming technologies will be forged to facilitate technology transfer, access to advanced equipment, and ongoing technical support for farmers.

14.2.6 Creation of Farmer Support Networks:

Farmer support networks will be established to provide ongoing guidance and assistance to farmers adopting precision farming practices. These networks will facilitate knowledge-sharing, troubleshooting, and collective problem-solving among farmers.

14.2.7 Incentives for Adoption:

Incentive schemes will be introduced to reward farmers who successfully implement precision farming practices. These incentives may include financial rewards, recognition, and preferential access to agricultural support programs and resources.

14.2.8 Regulatory Framework Development:

A regulatory framework for precision farming will be developed to ensure the responsible and sustainable implementation of precision technologies. This framework will address issues such as data privacy, environmental impact assessment, and adherence to best practices.

14.2.9 Monitoring and Evaluation Mechanisms:

Robust monitoring and evaluation mechanisms will be put in place to track the progress of precision farming initiatives, assess their impact on agricultural productivity, resource efficiency, and farmer income, and identify areas for improvement and further investment.

14.2.10 Scaling Up and Replication:

Successful pilot initiatives will be scaled up and replicated across different regions of Goa, leveraging lessons learned and best practices identified during the initial implementation phase. This iterative approach will ensure continuous improvement and widespread adoption of precision farming technologies throughout the state.

**15. CONTRACT FARMING**

Contract farming is a mutually beneficial arrangement between small farmers or absentee landowners and neighbouring farmers or local individuals interested in agriculture. It enables landowners to utilize their

land effectively while ensuring that it is not left fallow. Key aspects of contract farming include:

15.1. Contractual Agreements:

Contract farming agreements will be facilitated through a standardized proforma designed by the government. This proforma will provide clarity and transparency to both parties involved in the contract, alleviating concerns about land ownership and rights under existing tenancy laws.

15.2. Duration and Renewal:

Contracts can be established for a minimum period of 5 years, with the option for renewal based on the preferences of both landowners and tenants. This ensures long-term stability and commitment in agricultural operations.

15.3. Subsidy Support:

Farmers engaging in contract farming will be eligible to receive subsidies, providing financial assistance and incentivizing participation in these arrangements. However, land cultivated under contract farming should not be mortgaged for any type of loan to maintain the integrity of the agreement.

15.4. Eligibility Criteria:

Bonafide owners of non-tenanted lands registered under Form I & XIV are eligible to lease their lands for contract farming. This ensures that only legitimate landowners can participate in contract farming arrangements.

15.5. Legislation Drafting:

The Government of Goa will draft comprehensive legislation to regulate contract farming, safeguarding the rights of both landowners and tenants and with regard to beneficial legislations holding the forte. This legislation will establish clear guidelines for contract farming agreements, ensuring fair treatment, dispute resolution mechanisms, and legal recourse for both parties.

15.6. Farmers' Rights Protection:

The legislation will include provisions to protect farmers' rights, including guaranteed minimum prices for produce, access to markets, and prohibition of unfair practices by contracting parties. It will also mandate the inclusion of clauses in contracts to safeguard farmers' interests and ensure equitable sharing of risks and benefits.

15.7. Dispute Resolution Mechanisms:

The legislation will establish efficient and accessible dispute resolution mechanisms for resolving conflicts arising from contract farming agreements. Mediation boards or tribunals will be set up to address grievances promptly and impartially, ensuring quick resolution and preventing prolonged legal battles.

15.8. Monitoring and Enforcement:

The government will implement robust monitoring and enforcement mechanisms to ensure compliance with contract farming regulations. Regular inspections, audits, and reviews will be conducted to assess adherence to contractual terms and prevent exploitation or coercion of farmers.

15.9. Capacity Building:

The government will invest in capacity building initiatives to educate farmers about their rights and responsibilities under contract farming agreements. Training programs, workshops, and awareness campaigns will be conducted to empower farmers with knowledge and skills to negotiate fair contracts and protect their interests.

By enacting comprehensive legislation and implementing supportive measures, the Government of Goa aims to promote transparent, equitable, and sustainable contract farming practices that benefit all stakeholders involved in agricultural production.

**16. Organic Farming and natural farming:**

Organic farming is an agricultural approach that uses natural inputs and techniques to cultivate crops and raise livestock. It avoids using synthetic chemicals such as fertilizers, pesticides, and herbicides. Instead, it relies on crop rotation, composting, and biological pest control to maintain soil health, biodiversity, and environmental sustainability. Natural farming, also known as zero-budget farming or indigenous farming, is a holistic agricultural method that mimics natural ecosystems and processes. It emphasizes minimal human intervention and relies on the soil's inherent fertility, the use of indigenous microorganisms, and the recycling of organic matter to nourish crops. Natural farming aims to create self-sustaining agricultural systems that are resilient to environmental stresses and promote biodiversity.

Measures to promote Organic Farming and Natural Farming

16.1. Cluster Development:

Emphasis will be placed on revitalizing all clusters formed under PKVY. The process for PGS certification will be streamlined to make it simpler and more user-friendly.

16.2. Marketing Facilities:

Separate marketing facilities will be provided for organic produce, enabling farmers to obtain premium rates higher than those for conventional agricultural produce.

16.3. Sustainable Farming Practices:

Farmers will be encouraged to adopt various sustainable farming practices such as mixed/intercropping, crop rotation, soil and water conservation, mulching, and the use of bio-fertilizers and biodynamic preparations like Jeevamrut and Bijamrut. Full standardization of processes to produce these and the products would be attempted.

16.4. Establishment of Testing Labs:

The establishment of organic input testing labs will be undertaken, and reports from these labs will be made available immediately to applicants.

16.5. Local Production of Organic Inputs:

Efforts will be made to facilitate the production of organic farm inputs at the village or farm level, with a focus on encouraging farmers to produce their own organic inputs.

16.6. Area Coverage Targets:

Targets will be set for maximizing the area under organic or natural farming, with specific crop-wise coverage goals.

16.7. Disincentivizing Synthetic Inputs:

Assistance schemes for the purchase and use of synthetic chemical inputs such as insecticides, fungicides, herbicides, and fertilizers will be discouraged.

16.8. Integrated Pest and Disease Management:

Integrated pest and disease management measures will be promoted to reduce the use of synthetic pesticides.

16.9. Role of Farmer Producer Organizations (FPOs):

The role of FPOs in dealing with organic inputs will be emphasized to support farmers in adopting organic farming practices.

16.10. Promotion of Organic Enterprises:

Enterprises involved in the preparation and marketing of organic products will be encouraged, with priority given to Goan entrepreneurs.

16.11. Consumer Awareness:

Efforts will be made to increase consumer awareness about organically produced agricultural products, with assistance from private agencies as needed.

16.12. Standardization of Organic Farming Practices:

Package of Practices for organic farming for major crops will be standardized to provide farmers with clear guidelines.

16.13. Carbon Sequestration:

Farmers will be educated about various methods of carbon sequestration and encouraged to implement these practices.

16.14. Green Manure Trees:

Green manure trees will be maintained and pruned properly to facilitate parallel crop growth, with assistance from the forest department.

16.15. Popularization of Charsutri Paddy Cultivation:

Charsutri paddy cultivation will be popularized to minimize the use of synthetic fertilizers.

16.16. Utilization of Stray Cattle:

The utilization of stray cattle for organic matter production will be encouraged to increase the availability of organic inputs.

16.17. Conservation of Traditional Seeds:

Traditionally available seeds of locally grown crops will be collected and multiplied, as they are climate-resilient and responsive to organic/natural farming practices. Biodiversity Management Committees will be encouraged to undertake this task.

16.18. Documentation of Traditional Knowledge:

Traditional knowledge related to organic/natural farming will be documented, validated, and communicated to farmers on a priority basis to enable them to utilize locally available input materials and lower the cost of production.

16.19. Biodiversity Conservation:

Biodiversity with reference to crops and domestic animals will be conserved at the farm level, with efforts also made at the central level to support conservation initiatives.

16.20 Promotion of Agroecology:

Agroecological principles will be promoted to enhance the sustainability and resilience of organic and natural farming systems. This includes the integration of ecological concepts into agricultural practices, such as agroforestry, conservation agriculture, and polyculture.

16.21 Support for Farmer Training and Extension Services:

Comprehensive training programs will be organized to educate farmers about the principles and practices of organic and natural farming. Extension services will be strengthened to provide ongoing support and guidance to farmers in adopting and implementing sustainable farming methods.

16.22 Encouragement of Indigenous Knowledge Systems:

Indigenous knowledge and traditional farming practices will be recognized and integrated into organic and natural farming initiatives. Efforts will be made to document, preserve, and disseminate traditional farming knowledge to ensure its continuity and relevance.

16.23 Research and Development:

Robust research and development efforts will be undertaken to innovate and improve organic and natural farming techniques. This includes research on organic inputs, pest and disease management strategies, and crop varieties adapted to organic farming conditions.

16.24 Market Linkages and Value Addition:

Mechanisms will be established to facilitate market linkages for organic and naturally grown produce. Value addition initiatives, such as processing and packaging facilities, will be promoted to enhance the market competitiveness of organic products and increase farmer incomes.

16.25 Financial Incentives:

Financial incentives and subsidies will be provided to farmers to encourage the adoption of organic and natural farming practices. This may include subsidies for organic inputs, certification costs, and infrastructure development for organic farming.

16.26 Awareness and Consumer Education:

Public awareness campaigns will be conducted to educate consumers about the benefits of organic and natural farming. Consumer education initiatives will highlight the environmental, health, and social advantages of consuming organic and naturally grown products.

16.27 Integration with Climate Change Mitigation:

Organic and natural farming practices will be aligned with climate change mitigation efforts. Strategies will be developed to enhance carbon sequestration, improve soil health, and reduce greenhouse gas

emissions through sustainable agricultural practices.

16.28 Collaboration and Partnerships:

Collaborative partnerships will be forged with research institutions, NGOs, and international organizations to leverage expertise and resources for the advancement of organic and natural farming. Public-private partnerships will be encouraged to promote innovation and investment in sustainable agriculture.

16.29 Policy Advocacy and Regulation:

Advocacy efforts will be undertaken to promote supportive policies and regulations for organic and natural farming. Regulatory frameworks will be developed to ensure the integrity of organic certification and labeling standards, as well as to address challenges related to land tenure, water management, and input availability.

**17. Renewable Energy in Agriculture**

The energy in agriculture is needed for activities such as mechanization, water pumping, irrigation, fertilizer production, transport, and food processing and storage.

Renewable energy, mainly solar, wind, and biomass energy, can be harvested forever, providing farmers with a long-term solution to their requirements of energy for irrigation, drying, and processing food, etc.

The use of solar energy can be a revolutionary advancement for the agricultural sector, adding value in many ways including saving precious water resources, reducing dependency on the grid, saving power costs in the long run, and even becoming an additional revenue stream.

Although solar energy implementation in the agricultural sector has been practiced since the beginning of civilization, there is a surge in demand for the use of this energy source in wider applications across different functions.

The cost of implementing and managing solar energy setup has decreased due to advancements in the industry, enabling more installations across different applications in the agricultural sector. Some policy steps include the following:-

17.1 Solar Energy-Powered Water Pumps

Solar pumps would be installed to efficiently pump water from reservoirs and canals to farms, thereby saving time and resources for farmers. Solar panels would be utilized to harness solar energy, providing power to pumps efficiently, either directly to the grid or stored in batteries for later use.

17.2 Water and Space Heating

Solar-powered heating systems would be implemented to manage temperature and air quality in livestock and dairy operations throughout the year. By utilizing solar panels to power temperature control systems, farmers would significantly reduce electricity costs.

17.3 Crop and Grain Drying

Advanced solar dryers would be employed to harness maximum solar energy for drying crops and grains efficiently in closed containers. These systems would accelerate the drying process while minimizing exposure to contaminants like wind and rodents.

17.4 Greenhouse Heating

Solar greenhouses would be developed to collect and store solar energy, providing both lighting and heating essential for proper crop growth. Insulation would be utilized to retain heat during colder periods, reducing reliance on oil and gases for heating.

17.5 Remote Supply of Electricity

Remote areas would be equipped with solar PV systems to produce electricity, stored in batteries for consistent use. This initiative would reduce dependency on limited grid electricity, ensuring uninterrupted power supply for farm operations.

17.6 Solar-powered Cooling Systems

Solar-powered cooling systems would be deployed to offer refrigeration solutions for farms, ensuring proper storage of produce. These systems would utilize solar energy to power refrigeration systems, minimizing losses due to power outages.

17.7 Biogas Energy

Agricultural biogas plants would be established to convert organic materials into biogas, a renewable fuel source for power generation. This initiative would provide a reliable energy source for farms, reducing dependence on conventional energy sources.

17.8 Establishment of Renewable Energy Training Center

A Renewable Energy Training Center would be established to train farmers on the use of renewable energy. Research conducted in this center would facilitate the incubation of ideas for additional farm activities utilizing renewable energy.

17.9 Conversion of Agriculture Waste into Energy

Efforts would be made to convert agricultural waste, such as crop stubbles, cow dung, and kitchen waste, into biogas for energy production. This biogas would be utilized for agricultural activities, reducing reliance on conventional energy sources.

17.10 Use of Wind Power

Windmills would be installed to generate energy for agricultural activities, harnessing wind power as a renewable energy source.

17.11 Solar and Wind Hybrid Power Generation

Hybrid power generating systems, combining solar and wind energy, would be established to reduce the overall power requirement for agriculture.

17.12 Promotion of Biogas Energy

The promotion of biogas production from farm and animal waste would be encouraged as an energy source for various farm and household needs, reducing expenses on electricity.

17.13 Incentives on Use of Renewable Energy Production and Use

Incentives would be provided for farmers operating Energy Smart Farms, promoting the adoption of renewable energy solutions in agriculture.

17.14 Research and Development in Renewable Energy Technologies

Ongoing research and development initiatives would be supported to explore innovative renewable energy technologies tailored to the agricultural sector's specific needs. This would involve collaboration with academic institutions, research organizations, and industry partners to drive advancements in solar, wind, biomass, and other renewable energy sources.

17.15 Integration of Smart Grid Technology

Smart grid technology would be integrated into renewable energy systems to enhance efficiency, reliability, and resilience. This would involve the deployment of smart meters, sensors, and control systems to optimize energy production, distribution, and consumption on agricultural farms.

17.16 Expansion of Microgrid Infrastructure

Microgrid infrastructure would be expanded to enable decentralized energy generation and distribution within agricultural communities. This would involve the establishment of community-based microgrids powered by renewable energy sources, providing reliable electricity access to remote farming areas.

17.17 Promotion of Energy Storage Solutions

Energy storage solutions, such as battery storage systems and pumped hydro storage, would be promoted to overcome intermittency challenges associated with renewable energy sources. This would facilitate the storage of surplus energy during periods of high generation for use during periods of low generation, ensuring continuous power supply for agricultural operations.

17.18 Adoption of Precision Agriculture Technologies

The adoption of precision agriculture technologies would be encouraged to optimize energy use in farming practices. This would involve the integration of renewable energy systems with precision irrigation, automated machinery, and data analytics to minimize energy inputs while maximizing crop yields.

17.19 Implementation of Agrovoltaics

Agrovoltaics, which involves the co-location of solar photovoltaic panels with agricultural activities, would be implemented to maximize land use efficiency and resource productivity. This would enable farmers to generate renewable energy while simultaneously cultivating crops, providing dual benefits of electricity generation and agricultural production.

17.20 Facilitation of Energy Crop Cultivation

The cultivation of dedicated energy crops for bioenergy production would be facilitated to enhance the availability of biomass feedstock for renewable energy generation. This would involve incentivizing farmers to grow high-yielding energy crops such as switchgrass, miscanthus, and willow, thereby diversifying agricultural income streams and promoting sustainable bioenergy production.

17.21 Integration of Internet of Things (IoT) in Energy Management

The integration of Internet of Things (IoT) technology would be promoted to optimize energy management and efficiency on agricultural farms. This would involve the deployment of IoT-enabled sensors and actuators to monitor energy consumption, automate energy-intensive processes, and optimize renewable energy utilization in real-time.

17.22 Development of Renewable Energy Financing Mechanisms

Innovative financing mechanisms would be developed to facilitate the adoption of renewable energy technologies by agricultural stakeholders. This would include the establishment of green financing schemes, low-interest loans, and subsidy programs to incentivize investments in renewable energy infrastructure and systems.

17.23 Capacity Building and Training Programs

Capacity building and training programs would be conducted to enhance awareness and technical skills among farmers and agricultural stakeholders regarding the adoption and management of renewable energy technologies. This would involve organizing workshops, seminars, and vocational training courses on renewable energy systems, maintenance, and operation.

17.24 Promotion of Public-Private Partnerships

Public-private partnerships would be promoted to leverage private sector expertise and resources for the deployment of renewable energy solutions in agriculture. This would involve collaborating with energy companies, technology providers, and financial institutions to develop and implement innovative renewable energy projects tailored to the agricultural sector's needs.

**18. Climate & Environment**

Climate encompasses atmospheric conditions over time, including solar radiation, temperature, humidity, precipitation, atmospheric pressure, and wind. It plays a crucial role in shaping agricultural productivity and environmental stability.

Environment encompasses all aspects influencing human life, from living organisms like animals, plants, forests, fisheries, and birds, to non-living elements such as water, land, sunlight, rocks, and air. The interplay between these elements is vital for ecosystem health and human sustenance.

Climate change poses significant challenges to agriculture, impacting temperature regimes, precipitation patterns, and the timing of frost events. These changes can disrupt crop growth cycles, reduce yields, and affect water availability, thereby threatening food security and livelihoods.

Fossil fuel combustion, notably coal, oil, and gas, is the primary driver of global climate change, responsible for a substantial portion of greenhouse gas emissions. These emissions, including carbon dioxide (CO2), methane, and nitrous oxide, contribute to the greenhouse effect, trapping heat in the Earth's atmosphere and causing global warming.

Human activities have significantly increased the concentrations of greenhouse gases in the atmosphere, particularly CO2, which has risen to alarming levels compared to pre-industrial times. Methane and nitrous oxide, though emitted in smaller quantities, also contribute to global warming and environmental degradation.

Mitigating climate change and preserving the environment are paramount for sustainable agriculture and human well-being. Efforts to reduce greenhouse gas emissions, promote renewable energy sources, and enhance environmental stewardship are critical for addressing the challenges posed by climate change and ensuring a resilient future for agriculture and ecosystems.

18.1. Establishment of Meteorological Observatories
Meteorological observatories would be established at strategic locations to collect data on weather parameters. This data will facilitate the study of weather pattern changes and their correlation with crop yield reduction, rainfall pattern changes, and water table reduction.

18.2. Establishment of Research & Development Units
Research & Development units will be established to investigate the correlation between weather

parameters and various agricultural factors. This includes studying the impact of weather on crop yield, rainfall patterns, water tables, pest and disease prevalence, invasive species, and the growth of new plants and crops.

18.3. Carbon Sequestering and Corporate Social Responsibility
Research cells will be established to determine the carbon footprints of industries. Green cess will be levied on industries emitting greenhouse gases, with the funds allocated for afforestation and tree planting initiatives. These research cells will explore innovative methods of utilizing carbon for product manufacturing.

18.4. Incentives for Carbon Sequestering
Farmers, environmentalists, and individuals engaged in afforestation will be incentivized for carbon sequestering efforts. This includes growing trees over large areas using funds generated from the green cess.

18.5. Climate-Resilient Crop Insurance Schemes
Climate-resilient crop insurance schemes will be developed to provide financial protection to farmers against climate-related risks, such as droughts, floods, and extreme weather events. This includes designing insurance products that are tailored to the specific needs and vulnerabilities of farmers in Goa, incorporating climate risk assessments and early warning systems to enhance the accuracy of insurance payouts.

18.6. Coastal Erosion Mitigation Strategies
Coastal erosion mitigation strategies will be implemented to protect agricultural land and infrastructure from the impacts of sea-level rise and storm surges. This includes implementing nature-based solutions, such as beach nourishment, dune restoration, and mangrove rehabilitation, to enhance coastal resilience and reduce erosion rates. Additionally, land-use planning measures will be adopted to minimize development in vulnerable coastal areas and preserve natural buffers against erosion.

18.7. Climate-Resilient Livestock Management Practices
Climate-resilient livestock management practices will be promoted to enhance the adaptive capacity of livestock farmers to climate change impacts. This includes promoting heat stress mitigation strategies, such as improved ventilation and shading in livestock shelters, as well as providing training and extension services on climate-smart feeding and breeding practices to improve livestock productivity and resilience.

18.8. Community-Based Climate Adaptation Programs
Community-based climate adaptation programs will be implemented to empower local communities to address climate change impacts and build resilience at the grassroots level. This includes supporting community-led initiatives, such as farmer field schools, women's self-help groups, and youth climate action networks, to promote knowledge sharing, innovation, and collective action for climate resilience in agriculture and natural resource management.

18.9. Research and Innovation in Climate-Smart Agriculture
Research and innovation in climate-smart agriculture will be prioritized to develop and disseminate cutting-edge technologies and practices that enhance the adaptive capacity and sustainability of agricultural systems in Goa. This includes investing in research institutions, agricultural universities, and innovation hubs to conduct applied research, develop climate-resilient crop varieties, and promote the adoption of digital technologies, such as remote sensing, precision agriculture, and climate information services, to support evidence-based decision-making and adaptive management in agriculture.

**19. Human-Wildlife Conflict**

Human-wildlife conflict encounters between humans and wildlife lead to loss of agricultural produce such as crops and fruits, property damage, and disruption of livelihoods. Collaboration among the forest

department, agriculture department, and NGOs is crucial to mitigate these conflicts effectively. Various strategies would be established to address this issue.

19.1 Strategies for Mitigation

19.1.1 Establishment of Chain Link Fencing

Chain link fencing using 10-gauge chain link with a mesh size of 6.25 cm x 6.25 cm and a minimum height of two metres would be provided around agricultural land to prevent terrestrial animals from damaging crops.

19.1.2 Population Control of Male Monkeys

Humane methods, such as relocation or non-lethal deterrents, would be considered to manage the population of male black and red-faced monkeys to mitigate farm damage.

19.1.3 Implementation of Animal Sterilization Projects

Initiating projects for the sterilization of wild animals by the forest departments would be undertaken to manage their population and reduce crop losses and conflicts with humans.

19.1.4 Establishment of Waterholes

Strategic placement of waterholes in forest areas would be undertaken to provide water sources for animals, thereby discouraging their entry into agricultural areas.

19.1.5 Promotion of Fruit-Bearing Tree Plantation

Large-scale planting of horticultural and fruit-bearing trees in forest areas would be promoted to attract monkeys, squirrels, and other wild animals, diverting their attention from agricultural fields.

19.1.6 Deployment of Revolving Lights

Revolving lights with long-distance high-intensity focus would be installed to create a deterrent effect on wild animals, discouraging their entry into cultivated areas.

19.1.7 Implementation of Non-Lethal Deterrents

Non-lethal deterrents such as noise-making devices, motion-activated sprinkler systems, and predator scent repellents would be utilized to discourage wildlife from entering agricultural areas.

19.1.8 Habitat Restoration and Management

Habitat restoration projects and habitat management practices such as vegetation buffers, natural barriers, and wildlife corridors would be implemented to minimize human-wildlife interactions.

19.1.9 Community Education and Awareness

Educational campaigns and workshops would be organized to raise awareness among farmers and local communities about coexistence with wildlife, understanding animal behavior, and implementing effective conflict mitigation strategies.

19.1.10 Compensation and Insurance Schemes

Compensation schemes or insurance programs would be established to provide financial support to farmers who incur losses due to wildlife damage, thus reducing the incentive for retaliatory killings of wild animals.

19.2 Farmer Advocacy and Government Support

Local farmers, frustrated by continuous farm damage caused by wildlife, advocate for government intervention. They propose reallocating agriculture subsidies towards wildlife-friendly farming practices and non-lethal mitigation methods. Under the constitutional right to protect property, farmers seek government support in implementing effective measures to mitigate human-wildlife conflicts in Goa.

19.3 Emphasizing Humane and Ethical Practices

19.3.1 Adoption of Wildlife-Friendly Farming Practices

Wildlife-friendly farming practices such as crop diversification, intercropping, and agroforestry would be encouraged to reduce conflicts and provide alternative food sources for wildlife.

19.3.2 Use of Non-Lethal Wildlife Deterrents

Non-lethal wildlife deterrents such as scarecrows, visual deterrents, and sound devices would be deployed to deter wildlife from agricultural areas without causing harm.

19.3.3 Community-Based Wildlife Monitoring Programs

Engagement of local communities in wildlife monitoring programs would be facilitated to track wildlife movements, identify conflict hotspots, and implement proactive measures to prevent conflicts.

19.3.4 Training and Capacity Building

Training and capacity-building programs for farmers, forest department staff, and wildlife rescue teams would be provided on humane wildlife handling techniques, conflict resolution, and non-lethal management strategies.

19.3.5 Research and Innovation

Investment in research and innovation to develop new technologies and methods for mitigating human-wildlife conflicts in a humane and ethical manner, while ensuring the conservation of wildlife populations, would be prioritized.

**20. Storage and Warehousing**

Storage facilities are essential for cost-effective marketing, minimizing post-harvest losses, and reducing health risks.

20.1 Storage Infrastructure Development

20.1.1 Establishment of Storage Facilities

Infrastructure like cold storage, cool chambers, and supporting reefer trucks would be set up. Concrete floors for fruits and vegetable handling facilities would be established. Cool rooms/controlled atmospheric storage systems for vegetables, flowers, and other perishable agricultural produce would be provided to farmers at free or nominal prices if production is in excess. Small warehouses would be established in each village to cater to the needs of small and marginal farmers across the state. Modern storage facilities for farmers would be built in villages to store both perishable and non-perishable food items. Integrated pack houses and ripening chambers would be set up, along with drying yards at the village level.

20.1.2 Implementation of Goa Logistics and Warehouse Policy 2023

The Goa Logistics and Warehouse Policy 2023, formed by the Directorate of Industries, Trade, and Commerce, would be considered for guiding the development and management of storage and warehousing infrastructure in the state.

20.2 Promotion of State-Subsidized Central Cold Storage Units

20.2.1 Establishment of Central Cold Storage Units in Each Taluka

At least one state-subsidized central cold storage unit would be established in each of the 12 talukas of Goa. Farmers can book space in these units to store their produce at affordable rates. Additionally, the government can utilize these facilities to store large quantities of essential commodities for market intervention during scarcity of fruits, vegetables, etc.

20.3 Integration of Technology in Storage Solutions

20.3.1 Adoption of IoT-enabled Monitoring Systems

Implementation of Internet of Things (IoT) technology for real-time monitoring of temperature, humidity, and other environmental conditions in storage facilities to ensure optimal preservation of agricultural produce.

20.3.2 Utilization of RFID Technology

Integration of Radio Frequency Identification (RFID) technology for inventory management and tracking of goods, improving efficiency and transparency in warehouse operations.

20.4 Encouraging Private Sector Participation

20.4.1 Public-Private Partnerships (PPPs) for Infrastructure Development

Promotion of partnerships between the government and private sector entities for the construction and management of storage and warehousing facilities, leveraging private sector expertise and investment.

20.4.2 Incentives for Private Investors

Offering tax incentives, subsidies, and land lease agreements to attract private investors to establish storage and warehousing facilities, particularly in underserved rural areas.

20.5 Capacity Building and Training Programs

20.5.1 Skill Development Initiatives

Implementation of training programs and skill development initiatives for warehouse staff and farmers on proper storage techniques, handling procedures, and maintenance of storage equipment.

20.5.2 Knowledge Sharing Platforms

Establishment of knowledge sharing platforms and workshops to disseminate best practices in storage management and technology adoption among stakeholders in the agriculture supply chain.

20.6 Taluka Level Subsidized Cold Storage Units and Market Intervention

20.6.1 Provision of Affordable Storage Space

In each of the 12 talukas of Goa, state-subsidized central cold storage units would be established, providing affordable storage space for farmers to store their produce.

20.6.2 Market Intervention Measures

These cold storage units would also serve as strategic reserves for the government to store large quantities of essential commodities. This facilitates market intervention during times of scarcity, ensuring food security and stabilizing prices for fruits, vegetables, and other perishable goods.

**21. Value Addition and Processing**

Value addition in horticulture is the process in which a high price is realized for the same volume of a primary product, by means of processing, packing, and upgrading the quality. Food processing and value addition are key steps in the food value chain. Developing food processing technologies that are environmentally friendly and efficient can substantially contribute to the food value chain.

21.1 Establishment of Agro-Techno Park

An agro-techno park would be established for an integrated clustering model, which combines different agro-production chains and maximizes operational synergies, economies of scale, and income generation activities. The following components would comprise the agro-techno park:

Research and Development: Establishment of Research and Development facilities.

Production: Production of vegetables, fruits, and field crops with modern technology. Production of seeds, hybrid seeds, flowers. Manufacturing of bio-formulations. Tissue culture labs.

Poly house/Shade net cultivation: Production of vegetables, flowers.

Urban Farming, Hydroponics, Aquaculture.

Cold storage.

Marketing chain.

21.2 Enhancement of Income for Farmers Through Value Addition

The income of farmers would be enhanced through value addition to agricultural produce, agricultural diversification, and entrepreneurship development.

21.3 Creation of a Food Chain

A food chain would be created starting from the farm gate to retail outlets to sell their agriculture and value-added products for better marketability and income.

21.4 Creation of Farmer-Processor Linkage

A farmer-processor linkage would be established for processing and value addition to agricultural produce as per consumers' demand.

21.5 Creation of Cold Storage Facilities

Cold storage and handling technologies would be established to minimize losses and retain the quality of agricultural produce.

21.6 Linking to the National Mission on Food Processing (NMFP)

The provision of the National Mission on Food Processing (NMFP) would be linked for the development of the food processing sector.

21.7 Formation of Consortium of Small Farmers Agri-business and SHGs

A consortium of Small Farmers Agri-business and Self-Help Groups (SHGs) would be formed to support their small scale industries for value addition to products and their better marketability.

21.8 Promotion of Value-Added Products

Encouragement and support would be provided for the development and marketing of value-added agricultural products such as jams, pickles, juices, and processed foods, enhancing the income opportunities for farmers.

21.9 Technology Adoption and Innovation

Efforts would be made to facilitate the adoption of innovative technologies such as blockchain for traceability, artificial intelligence for quality control, and biotechnology for product enhancement, fostering efficiency and competitiveness in the value addition process.

21.10 Capacity Building and Training Programs

Capacity building initiatives and training programs would be organized to empower farmers and entrepreneurs with the necessary skills and knowledge in value addition techniques, food safety standards, and market access strategies, ensuring sustainable growth in the sector.

**22. Markets and Marketing**

Keys of market and marketing, Market is always dynamic. Increase in growth in trade will increase the production. Also, Consumer-farmer relationship will enhance the trading opportunities. According to Food and Agricultural Organisation, Agricultural marketing includes: Performance of physical and institutional infrastructure to transfer farm products from farmers to consumers. The discovery of prices at different stages of marketing The transmission of price signals in the marketing chain specially from consumers to farmers. Therefore, the policies are aimed at improving market infrastructure and assuring better marketing channels with an intelligence system in the state.

22.1 Efficient Marketing Infrastructure

Efficient marketing infrastructure such as wholesale, retail, assembly markets, and e-market platforms would be established with the participation of the private sector for the establishment of proper supply chains.

22.1.1 Retail Market Development

Retail markets would be set up for direct marketing of produce. Additionally, Agri-marketplaces and e-platforms for small farmers in urban areas would be established. Weekly markets/special evening markets would be initiated, governed by the Horticulture Corporation. Market hubs would be created to collect, store, process, and market produce. Local farmers would be provided prime areas or locations to sell their locally cultivated produce in municipal market areas. Local produce selling counters would be set up in every village to support farmers in marketing their agricultural produce.

22.1.2 Public-Private Partnership (PPP)

Induction of Public-Private Partnership (PPP) would be encouraged to improve infrastructure development. Marketing boards and private sector agencies would be involved in storage to enhance supply chain management.

22.1.3 Strengthening of Supply Chain Management

Efforts would be made to smoothen and strengthen the supply chain management system for bringing agricultural products/farm produce from farmers to consumers. Collection vans would be deployed for the collection of vegetables from village-level collection points. Procurement of vegetables by agencies at pre-designated locations in each major vegetable growing locality would be promoted.

22.2 Promotion of Agricultural Products

Promotion/publicity/awareness related to agricultural products would be a main focus. Publicity and promotion of local authentic Goan produce would be emphasized through various channels such as 5-star hotels, airports, railway stations, and digital platforms. Promotion of coconut oil for cooking and other uses in urban areas would be promoted. Farmers would be trained for proper packaging and effective marketing of their produce, highlighting the nutritional aspects of local products and food items.

22.3 Ensuring Fair Pricing for Farmers and Consumers

The twin goal of ensuring justice to farmers in terms of a remunerative price for their produce and to consumers in terms of a fair and affordable price for food would be achieved through various interventions, including the establishment of Farmer Retail Outlets (FROs) and the promotion of farmer-producer organizations/agencies.

22.4 Establishment of Agri. Marketing Wing

A separate Agri. Marketing wing under the Dept. of Agriculture would be established for better infrastructure development and marketing of agricultural products. This wing would focus on marketing board roles, authentication of Goan agricultural produce, setting quality standards, and promoting agricultural exports.

22.5 Establishment of Market Intelligence System

A strong market intelligence system would be established with the help of ICT (Information and Communication Technology) to provide farmers, traders, processors, and consumers with vital market-related information. This system would include an ICT-based marketing system, a regional atlas of agricultural markets, and a marketing app for all crops.

22.6 Facilitation of Farmer Cooperatives

Encouragement and support would be provided for the formation and strengthening of farmer cooperatives. These cooperatives would empower farmers by enabling collective bargaining power, efficient marketing, and access to better market opportunities.

22.7 Development of Agri-Tourism

Efforts would be made to promote agri-tourism as a means of enhancing the marketability of agricultural products. This would involve creating facilities such as farm stays, farm tours, and agricultural festivals to attract tourists and showcase local agricultural practices and products.

22.8 Promotion of Organic Farming

Initiatives would be taken to promote organic farming practices and certify organic products. This would involve providing training and incentives for farmers to adopt organic methods, as well as creating marketing channels specifically for organic produce to cater to the growing demand for organic products.

22.9 Encouragement of Value-Added Products

Incentives and support would be provided for developing and marketing value-added agricultural products. This would involve promoting processing and packaging facilities, as well as creating branding and marketing campaigns to highlight the value-added features of these products.

22.10 Integration of Technology in Marketing

Efforts would be made to leverage technology for marketing agricultural products more effectively. This would involve the development of online platforms for direct farmer-consumer transactions, as well as the use of data analytics and digital marketing techniques to identify market trends and target consumer segments more efficiently.

22.11 Promotion of Export Opportunities

Initiatives would be taken to explore and promote export opportunities for agricultural products. This would involve facilitating access to international markets, complying with export regulations and standards, and promoting Goan agricultural products as high-quality and unique offerings in the global market.

22.12 Strengthening Market Linkages

Efforts would be made to strengthen market linkages between farmers and other stakeholders in the agricultural value chain. This would involve facilitating networking opportunities, establishing farmer-producer organizations, and creating platforms for information exchange and collaboration.

22.13 Encouragement of Diversification

Encouragement and support would be provided for diversification into non-traditional and high-value agricultural products. This would involve promoting research and development in new crop varieties and value chains, as well as creating incentives for farmers to explore alternative crops and products with higher market potential.

**23. Agriculture Credit**

23.1 Credit Support to All Stakeholders

Credit support would be provided to all stakeholders involved in the supply chain from producers to consumers.

23.1.1 Implementation of Single Window System

A single window system would be implemented at the district level for the settlement of claims of interest subsidy of Kisan Credit card loans. The process for availing Kisan Credit card loans would be made farmer-friendly with simplified procedures, preferably requiring minimal documentation and without the need for collaterals.

23.1.2 Credit Support to Producers, Processors, and Traders

Credit support would be extended to producers such as farmers, Self-Help Groups (SHGs), and Farmer Producer Organizations (FPOs), as well as processors like cashew processors, coconut processors, and traders including societies engaged in agriculture produce.

23.1.3 Micro Financing Facilities

Micro financing and microcredit facilities would be made accessible to all farmers through village-level delivery systems, ensuring that credit reaches even the smallest farmers and marginalized communities.

23.2 Promotion of Credit Literacy and Financial Inclusion

Efforts would be made to promote credit literacy among farmers and other stakeholders in the agricultural sector. This would involve conducting financial literacy programs and workshops to educate farmers about various credit schemes, interest rates, repayment terms, and financial management practices. Additionally, measures would be taken to enhance financial inclusion by ensuring that all farmers, including women and marginalized communities, have access to formal banking services and credit facilities.

23.3 Strengthening of Cooperative Credit Institutions

Cooperative credit institutions would be strengthened to better serve the credit needs of farmers and rural communities. This would involve providing financial assistance and capacity-building support to

cooperative banks, credit societies, and other cooperative institutions, as well as promoting cooperative farming models to improve access to credit and financial services for small and marginal farmers.

23.4 Enhancing Access to Institutional Credit

Efforts would be made to enhance access to institutional credit for farmers by streamlining the loan application and approval process, reducing paperwork and bureaucratic hurdles, and ensuring timely disbursement of credit. Special attention would be given to addressing the credit needs of small and marginal farmers, women farmers, and other vulnerable groups by introducing targeted credit schemes and subsidies.

23.5 Promotion of Collateral-free Loans

Measures would be taken to promote collateral-free loans for farmers, especially small and marginal farmers who may not have sufficient assets to offer as collateral. This would involve introducing innovative credit products such as joint liability groups (JLGs), self-help groups (SHGs), and crop-specific credit schemes that do not require traditional collateral but instead rely on group-based guarantees and social collateral.

23.6 Expansion of Digital Credit Services

The use of digital technology would be expanded to facilitate access to credit for farmers in remote and underserved areas. This would involve leveraging mobile banking, digital payment platforms, and other fintech solutions to provide convenient and cost-effective credit services to farmers, allowing them to access credit anytime, anywhere, without the need for physical visits to bank branches.

23.7 Promotion of Credit Guarantee Schemes

Credit guarantee schemes would be promoted to mitigate the risks associated with lending to agriculture and allied sectors. This would involve partnering with credit guarantee funds and insurance providers to offer credit guarantees and insurance coverage to financial institutions, encouraging them to extend credit to farmers and rural entrepreneurs with greater confidence and reduced risk.

23.8 Integration of Climate-smart Financing

Efforts would be made to integrate climate-smart financing into agricultural credit programs to support climate-resilient farming practices and adaptation measures. This would involve offering incentives and concessional loans to farmers who adopt sustainable agriculture practices, invest in climate-resilient infrastructure, and implement measures to mitigate the impacts of climate change on agriculture.

**24. Income Assurance and Crop Insurance**

24.1 Safeguarding Farmers through Income Assurance and Crop Insurance

Farmers would be safeguarded through income assurance and crop insurance programs.

24.1.1 Implementation of Income Guarantee Programs

The government would adopt 'Income Guarantee' programs for farmers engaged in full-time agriculture as a profession. Legislation in this regard would be enforced to ensure farmers receive a guaranteed income. Additionally, assured prices would be fixed for all horticulture and agriculture crops grown in Goa to provide income stability to farmers.

24.1.2 Comprehensive Crop Insurance Coverage

Insurance coverage would be extended to all crops, including horticulture and agriculture crops, with the government bearing all the insurance premiums. Efforts would be made to make farmers aware of crop

insurance policies, with emphasis on easy and quick procedures for claiming insurance benefits.

24.1.3 Utilization of Advanced Technologies

Advanced technologies such as Expert systems, remote sensing, and Artificial Intelligence (AI) tools would be utilized to assist in decision-making by insurance authorities. These technologies would help in drawing definite conclusions, especially through the implementation of Weather-based crop insurance, enhancing the efficiency and accuracy of crop insurance schemes.

24.2 Promotion of Risk Mitigation Measures

Efforts would be made to promote risk mitigation measures among farmers to reduce their vulnerability to crop losses. This would include promoting practices such as crop diversification, intercropping, agroforestry, and the adoption of drought-tolerant and pest-resistant crop varieties. Additionally, training and extension services would be provided to educate farmers on sustainable agricultural practices that can help mitigate risks associated with adverse weather conditions and pest outbreaks.

24.3 Strengthening Extension Services

Extension services would be strengthened to provide farmers with timely information and guidance on crop insurance schemes, risk management strategies, and best agricultural practices. This would involve conducting awareness campaigns, training programs, and workshops at the grassroots level to empower farmers with the knowledge and skills needed to effectively manage risks and access insurance benefits.

24.4 Improving Accessibility of Crop Insurance

Efforts would be made to improve the accessibility of crop insurance for small and marginal farmers, women farmers, and other vulnerable groups. This would include simplifying the insurance application process, reducing paperwork and bureaucratic hurdles, and ensuring that insurance products are affordable and tailored to the needs of different farming communities. Mobile-based insurance platforms and digital payment systems would also be promoted to enhance accessibility and convenience for farmers.

24.5 Strengthening Institutional Mechanisms

Institutional mechanisms for the implementation and monitoring of crop insurance schemes would be strengthened to ensure effective and transparent delivery of insurance services. This would involve enhancing the capacity of government agencies, insurance companies, and financial institutions involved in the administration of crop insurance programs. Regular monitoring and evaluation would be conducted to assess the performance of insurance schemes and identify areas for improvement.

24.6 Promotion of Public-Private Partnerships

Public-private partnerships (PPPs) would be promoted to enhance the effectiveness and sustainability of crop insurance programs. This would involve collaboration between government agencies, insurance companies, agribusinesses, and other stakeholders to leverage their respective strengths and resources for the implementation of crop insurance schemes. PPPs can help improve the reach, coverage, and affordability of crop insurance, as well as enhance the quality of services provided to farmers.

24.7 Research and Development in Crop Insurance

Investments would be made in research and development to innovate and improve crop insurance products and services. This would involve conducting research on emerging risks and vulnerabilities faced by farmers, developing new insurance products tailored to specific crops and regions, and leveraging technology and data analytics to enhance the accuracy and reliability of insurance assessments and payouts. Collaboration between research institutions, insurance companies, and agricultural stakeholders would be encouraged to foster innovation and knowledge sharing in the field of crop insurance.

**25. Agriculture Export**

25.1 Establishment of APEDA Office and APEDA-Approved Warehouse

An APEDA (Agricultural and Processed Food Products Export Development Authority) office would be set up in the state to facilitate and promote agricultural exports. Additionally, APEDA-approved warehouses would be established to ensure the quality and safety of exported agricultural products. These facilities would adhere to international standards and regulations, enhancing the credibility and competitiveness of agricultural exports from the state.

25.2 Implementation of Agricultural Export Policy

An Agricultural Export Policy (AEP) specific to the state of Goa, formulated by the Directorate of Agriculture, Government of Goa, was gazetted under reference number 3/4/P&E/49/Agri-Export/2022-23/D.Agri/37 on May 5, 2022. The AEP outlines comprehensive strategies and initiatives aimed at promoting and facilitating agricultural exports from the state. Key components of the Agriculture Export Policy include:

25.2.1. Market Access Enhancement: The policy focuses on enhancing market access for Goan agricultural products in domestic and international markets. This involves initiatives such as trade promotion activities, market research, and participation in trade fairs and exhibitions to showcase Goan produce to potential buyers.

25.2.2. Infrastructure Development: Efforts are directed towards improving infrastructure related to agricultural exports, including cold storage facilities, packaging units, transportation networks, and ports. The establishment of APEDA-approved warehouses is part of this initiative to ensure compliance with international quality standards.

25.2.3. Trade Facilitation: The policy aims to streamline export procedures and facilitate trade by reducing bureaucratic hurdles and paperwork. This includes simplifying documentation requirements, enhancing customs clearance processes, and providing export incentives and subsidies to eligible exporters.

25.2.4. Value Addition and Quality Enhancement: Emphasis is placed on promoting value addition and enhancing the quality of Goan agricultural products to meet the preferences and standards of international markets. This involves supporting farmers and agribusinesses in adopting post-harvest technologies, processing techniques, and quality control measures.

25.2.5. Regulatory Compliance: The policy emphasizes compliance with regulatory requirements and standards governing agricultural exports, both domestically and internationally. This includes adherence to phytosanitary regulations, food safety standards, labeling requirements, and certification procedures.

25.2.6. Capacity Building and Skill Development: Efforts are made to build the capacity and skills of farmers, exporters, and other stakeholders involved in the agricultural export value chain. Training programs, workshops, and skill development initiatives are organized to enhance the capabilities of farmers in production, post-harvest management, and export marketing.

25.2.7. Promotion of Export Consortia: The policy encourages the formation of export consortia and alliances among farmers, exporters, and agribusinesses to leverage collective strengths and resources for export promotion. These consortia facilitate collaboration, networking, and joint marketing efforts to access new markets and increase export volumes.

25.3 Synergy between Goa State Amritkal Agriculture Policy and Agriculture Export Policy (AEP)

The Goa State Amritkal Agriculture Policy, 2025, and the Agriculture Export Policy (AEP) for Goa State of the Directorate of Agriculture would be harmonized to maximize their collective impact on agricultural exports and sustainable agricultural development. To ensure effective collaboration between these policies, the following mechanisms would be implemented:

25.3.1. Alignment of Objectives: The goals and objectives of both policies would be aligned to ensure consistency and coherence in their implementation. This involves identifying areas of mutual benefit and integrating them into a unified strategic framework for agricultural development and export promotion.

25.3.2 Integrated Planning and Implementation: Integrated planning and coordination mechanisms would be established to facilitate seamless implementation of both policies. This could entail the formation of a joint task force or coordinating committee comprising representatives from relevant government departments, agricultural research institutions, industry associations, and other stakeholders. This body would oversee the execution of key initiatives outlined in both policies, monitor progress, resolve issues, and promote effective collaboration across sectors.

25.3.3. Value Chain Approach: A value chain approach would be adopted to maximize the impact of agricultural exports under the AEP while advancing the objectives of the Goa State Amritkal Agriculture Policy. This includes identifying high-potential value chains such as horticulture, spices, cashew, coconut, and fisheries, and implementing targeted interventions to enhance productivity, quality, and market access. Emphasis would be placed on value addition, post-harvest management, quality certification, branding, and market linkages to ensure compliance with international standards.

25.3.4. Capacity Building and Skill Development: Strengthening the capacity and skills of farmers, exporters, and other stakeholders would be essential for the successful implementation of both policies. Tailored training programs, workshops, and skill development initiatives would be conducted to address the specific needs of agricultural exporters, focusing on export marketing, quality assurance, packaging, labeling, documentation, and compliance with international standards.

25.3.5. Promotion of Public-Private Partnerships: Public-private partnerships (PPPs) would be promoted to harness the strengths and resources of both government and private sector entities in driving agricultural exports and value chain development. Collaborative initiatives could include joint investment projects, technology transfer programs, market development activities, and the formation of export consortia. By fostering greater collaboration and partnership between public and private stakeholders, the synergies between the Goa State Amritkal Agriculture Policy and the Agriculture Export Policy would be effectively leveraged to accelerate agricultural growth and export competitiveness in the state.

**26. Farmer Welfare and Farm Labour**

26.1 Establishment of Farmer Welfare Fund Board:

A Farmer Welfare Fund Board would be established to address the welfare needs of farmers primarily engaged in agriculture, with preference given to small and marginal farmers.

The Goa Farmers Welfare Fund Board would be formed under the act of the same name, encompassing horticultural and medicinal crop producers, nursery managers, and landholders engaged in agricultural purposes.

The board would receive operational capital in the form of a cess from contributions by trade houses and export houses, ensuring financial sustainability.

Welfare measures would include personal and family pensions, health and life insurance coverage, education and marriage loan facilities, and provisions for on-the-job accidents.

Village-level organizations/committees would be involved in decentralized funding mechanisms to ensure local participation and accountability.

26.2 Implementation of Scheme for Farmers in financial distress:

The government would create a special Distressed Farmers Welfare Fund and nominate a powered board to manage it and would survey, identify and support such farmers facing severe economic distress and would provide them with monthly subsistence allowance for a period to be determined by the board after getting a

favourable recommendation from the board and such allowance may not be less than Rs. 5000 per month. The Minister would provide discretionary grants for Agriculture in cases of emergency subject to a maximum limit of Rs. One lakh as a one-time relief. The government would also allocate sufficient funds to the board for providing medical assistance, etc, for farmers meeting with accidents and injuries.

Disability benefits would be extended to physically disabled farmers and their dependent children due to illness or accidents, as determined by the board.

26.3 Promotion of Comprehensive Health Insurance Schemes:

Comprehensive health insurance schemes tailored to the needs of farmers and farm labourers would be promoted to provide them with essential healthcare coverage.

Access to the Dayanand Social Security Scheme of the Social Department would be extended to all farmers.

Comprehensive accidental insurance covering work-related incidents such as tree falls, machine and equipment injuries, and snake bites would be provided to ensure the safety of farmers and farm labourers.

26.4 Weightage for children of farmers in Professional Courses:

Admission rules would be modified suitably based on best available practices in the country to incentivize the children of farmers by giving them certain weightage in metric used to decide the admissions to fixed number of seats. The weightage so given for the children of farmers would enhance their social status and encourage the continuation of farming as a profession.

By providing such weightage in admissions in agricultural educational courses, farming would be perceived as an attractive profession, contributing to the retention of farmers in agriculture and attracting others to the sector.

26.5 Strengthening Social Security Measures for Farm Labourers:

Efforts would be directed towards enhancing social security measures for farm laborers, including access to healthcare, insurance, and pension schemes, with particular attention to seasonal and migrant workers.

Collaborative initiatives with government bodies, NGOs, and civil society organizations would be pursued to address the welfare and working conditions of farm labourers effectively.

**27**. **Formation and Strengthening of FPOs, Farmers Groups/ Societies/ Associations/SHGs**:

27.1 Guidance and Support for Formation:

The Department would provide guidance and support for the formation and functioning of FPOs, ensuring their sustainability and effectiveness in promoting agricultural activities.

27.2 Large-Scale Formation Initiatives:

Large-scale formation of FPOs would be undertaken through centrally sponsored and state-financed programs and schemes, fostering their growth and outreach across the agricultural landscape.

27.3 Structured Organization of FPOs:

FPOs would be structured as registered bodies administered by farmers, focusing on activities spanning agriculture, agro-processing, agro-mechanization, and contract farming.

27.4 End-to-End Services Provision:

Emphasis would be placed on providing 'end-to-end' services to FPO members, encompassing various aspects of agricultural value chains, from production to marketing and beyond.

27.5 Collaboration with SHGs and Farmer Groups:

Efforts would be made to establish links between FPOs and active SHGs, farmer groups, and clubs, encouraging collaborative initiatives for mutual development and benefit.

27.6 Strengthening Cooperative Societies:

Farmers' cooperative societies would be strengthened through financial assistance for infrastructure development and provision of soft loans, facilitating their engagement in agricultural activities and fostering a conducive environment for collective action and growth. Primary Agriculture Cooperative Societies (PACS) would be promoted to take up activities related to agriculture development.

27.7 Capacity Building and Training Programs:

Comprehensive capacity building and training programs would be implemented to equip members of FPOs, farmers' groups, and cooperative societies with the necessary skills and knowledge for effective agricultural management, marketing strategies, and financial literacy.

27.8 Access to Market Information and Technology:

Mechanisms would be established to provide FPOs and farmer groups with access to market information, technological advancements, and innovative farming practices, enabling them to make informed decisions and enhance productivity and profitability.

27.9 Financial Assistance and Credit Facilities:

Provision of financial assistance and credit facilities would be ensured for FPOs and farmers' groups to facilitate investment in infrastructure, equipment, and technology upgrades, fostering their growth and sustainability.

27.10 Collaborative Partnerships with Agribusinesses:

Collaborative partnerships would be forged with agribusinesses, corporate entities, and research institutions to leverage resources, expertise, and market linkages for the benefit of FPOs and farmer groups, promoting inclusive agricultural development and value addition.

27.11 Promotion of Sustainable Agriculture Practices:

Promotion of sustainable agriculture practices, organic farming, and environmental conservation measures would be encouraged among FPOs and farmer groups, fostering resilience to climate change and ensuring long-term agricultural sustainability.

27.12 Policy Advocacy and Representation:

FPOs and farmer groups would be empowered to engage in policy advocacy and representation at local, regional, and national levels, advocating for their interests, rights, and welfare within the agricultural sector.

27.13 Innovation and Research Collaboration:

Collaboration with research institutions, agricultural universities, and innovation hubs would be facilitated to promote research and development initiatives tailored to the needs and challenges faced by FPOs and farmer groups, fostering innovation and technology adoption in agriculture.

**28**. **Agro-Tourism**

Agrotourism in Goa entails a unique blend of tourism and agriculture, allowing visitors to immerse themselves in the region's rich agricultural heritage and rural life. It involves visiting operational farms, plantations, and agricultural areas to engage in various farming activities, such as harvesting fruits, tending to crops, or participating in traditional agricultural practices. Additionally, agrotourism experiences in Goa may include exploring rural landscapes, learning about local farming techniques, sampling fresh produce, and engaging with local farmers and communities to gain insights into their way of life. Through agrotourism, visitors can appreciate the natural beauty and cultural diversity of Goa while supporting sustainable agricultural practices and rural livelihoods.

28.1 Eligibility Criteria for Agro-Tourism:

Farmers who own land of 4000 sq. metres or more would be eligible to apply for agro-tourism activities on their respective farms, subject to certain conditions and regulations.

28.2 Approved Land Use for Agro-Tourism:

Agro-tourism activities would be allowed only on garden or dry crop land, ensuring compatibility with agricultural practices and land usage.

28.3 Proposal Submission and Approval Process:

Farmers intending to engage in agro-tourism would be required to submit a model proposal for the development of their agricultural land to the Directorate of Agriculture for approval, outlining the proposed activities and infrastructure.

28.4 Development and Certification Requirements:

Upon developing 90% of the agricultural land as approved by the Director of Agriculture and obtaining a certificate confirming the development, farmers could apply for tourism activities on the remaining 10% of the land, ensuring gradual and sustainable development.

28.5 Limitations on Tourism Area and Capacity:

The total area allocated for tourism activities per farmer would not exceed 5000 square meters, ensuring appropriate land use and management. Additionally, the carrying capacity would be determined, and an Environmental Impact Assessment (EIA) would be conducted prior to the proposal.

28.6 Infrastructure Guidelines for Agro-Tourism:

Housing structures allowed for agro-tourism purposes should adhere to specific guidelines, such as being constructed of wood, mud, or tents, with the height at the middle ridge not exceeding 5 meters, ensuring compatibility with the rural landscape.

28.7 Compliance and Monitoring:

Farmers engaging in agro-tourism activities would be required to adhere to all relevant rules and regulations, with strict monitoring by the pollution control board to ensure compliance and mitigate any adverse environmental impacts resulting from tourism activities.

28.8. Specific policy Steps for Sustainable Agrotourism Development

28.8.1. Zoning and Land Use Regulations
Strict zoning laws would be implemented to designate specific zones for agrotourism activities, prohibiting the conversion of agricultural land to non-agricultural uses. These laws would be rigorously enforced to preserve agricultural land. Clear guidelines for agrotourism projects would be developed to limit the size and scale of infrastructure developments, maintaining the rural and natural character of the area.

28.8.2. Agrotourism Certification Program
A certification program for agrotourism operations meeting sustainability criteria would be introduced. This program would focus on maintaining agricultural production, conserving biodiversity, and minimizing environmental impact. Incentives such as tax breaks, marketing support, and priority in tourism promotion would be provided for certified agrotourism operations.

28.8.3. Incentives for Farmers
Financial incentives, grants, and low-interest loans would be offered to farmers diversifying into agrotourism while continuing agricultural activities. Technical assistance would be provided to help develop agrotourism attractions. Training programs would be organized for farmers and rural entrepreneurs on sustainable agrotourism practices, hospitality management, marketing, and sustainable farming techniques.

28.8.4. Infrastructure and Accessibility
Investments would be made to improve rural infrastructure like roads, signage, and internet connectivity to enhance access to agrotourism sites without compromising landscape integrity. Sustainable transportation modes like electric vehicles, bicycles, and walking trails would be promoted within agrotourism areas.

28.8.5. Marketing and Promotion
Targeted marketing campaigns would be launched nationally and internationally, emphasizing unique experiences of staying on working farms or orchards. An online platform serving as a one-stop-shop for tourists to discover and book agrotourism experiences in Goa would be developed.

28.8.6 Community Engagement and Participation
Local communities would be actively involved in agrotourism planning and development to garner support and participation. Mechanisms for equitable revenue sharing with local communities and farmers would be implemented to ensure direct benefits from tourism activities.

28.8.7. Environmental Conservation Measures
Eco-friendly practices such as rainwater harvesting, solar energy, organic farming, and waste recycling would be encouraged among agrotourism operators. Support would be provided for initiatives protecting and restoring local ecosystems, wildlife, and cultural heritage as part of agrotourism development.

28.8.8 Regulation and Monitoring
A system for regular monitoring of agrotourism sites would be established to ensure compliance with regulations, environmental standards, and quality tourist experiences. Mechanisms for tourist and community feedback and grievance redressal would be set up to ensure continuous improvement in agrotourism operations.

**29**. **Human Resource Development (HRD)**

29.1 Skill Development for Farm Workers Implementing skill development programs tailored to the needs of farm workers, incorporating specific subjects relevant to agricultural practices.

29.2 Fundamental Agriculture Education Promoting agriculture as a fundamental subject in educational curricula to ensure a strong foundation in agricultural knowledge.

29.3 Popularization of Service Provider Concept Encouraging the popularization of the service provider concept to facilitate access to agricultural expertise and services.

29.4 Introduction of Crop-Wise Education Introducing crop-wise education modules in the formal education system to equip students with knowledge specific to different agricultural crops.

29.5 Setting Targets for Human Resource Development Establishing targets for human resource development in agriculture, such as the number of coconut harvesters and machine operators required over the next decade.

29.6 Promotion of Start-ups and Job Fairs Introducing initiatives such as start-ups and job fairs focused on agriculture to foster entrepreneurship and employment opportunities in the sector.

29.7 Development of Agriculture Skills Education Packs Developing agriculture skills education packs tailored to the specific agricultural context and needs of Goa.

29.8 Assessment of Requirements for Start-ups Conducting assessments to determine the requirements and potential for start-ups in the agriculture sector, facilitating informed decision-making and resource allocation.

29.9 Integration of Practical Training Integrating practical training components into agricultural education programs to provide hands-on experience and skill development opportunities.

29.10 Collaboration with Agricultural Industries Establishing collaborations with agricultural industries to offer internships, apprenticeships, and on-the-job training for students and aspiring professionals.

29.11 Specialized Training Centers Setting up specialized training centers equipped with modern facilities and equipment to provide advanced training in agricultural practices and technologies.

29.12 Research and Development Grants Offering grants and incentives for research and development projects aimed at enhancing agricultural skills and innovation in Goa.

29.13. Skill-based education from the secondary level through to higher education, incorporating Bachelor of Vocation (B.Voc.) and Master of Vocation (M.Voc.) degrees in agriculture, animal husbandry, dairy, and fisheries, would be emphasized. Grants would be allocated to support these vital streams, with Skill Qualification Packs developed or adapted as necessary to meet the state's unique requirements.

29.14. Research-based education in agriculture and allied fields would be significantly promoted, involving collaborations with agricultural universities, research institutions, and the private sector to nurture a culture of inquiry and innovation. Dedicated research centers would be established, focusing on areas like climate resilience and organic farming, to keep Goa at the forefront of agricultural science and technology.

29.15. Agriculture Tinkering Laboratories would be introduced in selected educational institutions to foster student creativity and innovation. Equipped with state-of-the-art tools and technologies, these labs would encourage students to explore new ideas and technologies in agriculture, supported by workshops, competitions, and mentorship programs.

29.16. Recognizing the integral connection between animal husbandry, dairy, and cropping, a special committee would address related challenges and opportunities, contributing significantly to Goa's agricultural development.

**30**. **Extension services**

Extension services in agriculture refer to the systematic dissemination of agricultural knowledge, information, and technologies to farmers, to improve their productivity, income, and livelihoods. These services involve the delivery of timely advice, technical assistance, and training to farmers by extension agents, experts, and agricultural institutions. Extension services are crucial in bridging the gap between scientific research and practical farming applications, facilitating adopting sustainable and innovative farming practices, and empowering farmers with the skills and resources needed to enhance agricultural productivity and resilience.

30.1 Aggressive Extension Activities would be implemented to ensure that new agricultural techniques are repeatedly communicated to farmers through various methods.

30.2 Continuity in Agriculture Information

Efforts would be made to maintain continuity in agriculture information dissemination to provide farmers with consistent and reliable guidance.

30.3 Establishment of Agriculture Tinkering Labs

Agriculture tinkering labs would be established to facilitate the development of farmer-friendly equipment and technology, fostering innovation in agricultural practices.

30.4 Involvement of NGOs and FPOs

NGOs and FPOs would be actively involved in extension-related activities to enhance outreach and effectiveness in delivering agricultural information and services.

30.5 Extension of Agriculture Development

The scope of agriculture development efforts would be extended up to the processing consumer point, ensuring a comprehensive approach to agricultural growth and sustainability.

30.6 Helpline and Photo Uploading Facility

Helpline numbers with photo uploading facility would be introduced for farmers and users to seek assistance and share visual information related to agricultural issues.

30.7 Promotion of Innovations in Agriculture

Initiatives would be undertaken to promote innovations in agriculture, encouraging the adoption of new technologies and practices to improve productivity and sustainability.

30.8 Collaboration with Agricultural Universities and Research Institutes

Collaboration would be established with agricultural universities and research institutes to leverage their expertise in developing and disseminating innovative agricultural practices tailored to the local conditions in Goa.

30.9 Farmer Training Programs

Regular farmer training programs would be conducted to enhance their knowledge and skills in modern agricultural techniques, crop management, and sustainable farming practices.

30.10 Mobile Extension Units would be deployed to reach remote and inaccessible areas, providing on-the-spot guidance and support to farmers regarding crop cultivation, pest management, and other agricultural activities.

30.11 Demonstration Farms

Demonstration farms would be set up across Goa to showcase best practices in agriculture, allowing farmers to observe and learn from successful models firsthand.

30.12 Farmer Field Schools

Establishment of farmer field schools would be prioritized, where farmers can participate in hands-on learning sessions and field demonstrations conducted by agricultural experts.

30.13 Information Technology in Extension

Utilization of information technology tools such as mobile apps, online portals, and interactive platforms would be promoted to enhance the reach and effectiveness of extension services, providing farmers with access to timely information and advisory services.

30.14 Extension Workshops and Seminars

Regular extension workshops and seminars would be organized to facilitate knowledge sharing, capacity building, and networking among farmers, extension agents, and agricultural stakeholders.

30.15 Agri-Entrepreneurship Development

Initiatives would be undertaken to promote agri-entrepreneurship development by providing training, mentoring, and financial support to aspiring farmers and rural entrepreneurs, fostering innovation and economic empowerment in the agriculture sector.

**31. Farm information and communication**

31.1. Enhancing Online Access to Agricultural Information

Efforts would be made to link various informative videos and media articles available on different platforms to the departmental website or social media channels. This initiative aims to provide farmers with easy access to valuable agricultural knowledge, updates, and best practices, thereby enhancing their capacity to make informed decisions and improve farm productivity.

31.2. Establishment of Taluka-Level Expert Committees

Taluka-level committees comprising experts from various domains, including scientists from ICAR/KVK, scheme in-charges, concerned ZAO officials, technical officers, and experienced farmers or subject matter experts, would be established. These committees would be tasked with addressing queries and concerns raised by citizen farmers. By leveraging the expertise of these committees, farmers can receive accurate and timely advice tailored to their specific agricultural needs, fostering better decision-making and problem-s 31.3. Mobile Application for Farm Information

A mobile application dedicated to farm information and communication would be developed and launched. This app would serve as a comprehensive platform for farmers to access agricultural news, weather forecasts, pest and disease management information, market prices, and expert advice. By leveraging the widespread use of smartphones, this initiative aims to provide farmers with convenient and real-time access to crucial agricultural information, empowering them to make informed decisions.

31.4. Interactive Workshops and Training Sessions

Interactive workshops and training sessions would be conducted at the taluka level to facilitate knowledge exchange and skill development among farmers. These sessions would cover various topics such as modern farming techniques, sustainable practices, crop management strategies, and the use of technology in agriculture. By fostering direct engagement between experts and farmers, these workshops aim to enhance farmers' understanding and adoption of best practices, ultimately leading to improved farm productivity and sustainability.

31.5. Farmer Helpline with Image Sharing Feature

A dedicated farmer helpline with an image-sharing feature would be established to provide immediate assistance to farmers facing agricultural challenges. Farmers would be able to call the helpline and upload images of their crops, pests, or other agricultural issues for expert analysis and guidance. This initiative aims to offer timely support to farmers, enabling them to diagnose problems accurately and implement effective solutions, thereby minimizing crop losses and enhancing yields.

31.6. Farmer Information Centers

Farmer information centers would be set up at strategic locations across different talukas to serve as hubs for agricultural knowledge dissemination. These centers would be equipped with computers, internet access, and agricultural literature, providing farmers with resources to access information independently.

Trained personnel would be available at these centers to assist farmers in navigating online resources and answering their queries. By establishing accessible and well-equipped information centers, this initiative aims to promote self-directed learning and empower farmers with valuable agricultural knowledge.

31.7. Collaborative Partnerships with Agricultural Experts

Collaborative partnerships would be forged with agricultural experts, research institutions, and universities to facilitate the exchange of knowledge and expertise. These partnerships would involve organizing seminars, conferences, and field visits where farmers can interact directly with experts and learn about the latest advancements in agriculture. By leveraging the collective wisdom of agricultural professionals, this initiative aims to provide farmers with cutting-edge insights and innovative solutions to address their evolving needs and challenges.

31.8. Farmer Feedback Mechanism

A farmer feedback mechanism would be implemented to gather input and suggestions from farmers regarding the effectiveness of farm information and communication initiatives. Surveys, focus group discussions, and feedback forms would be used to collect insights on the relevance, accessibility, and usefulness of agricultural information services. The feedback received would be analyzed to identify areas for improvement and guide future interventions, ensuring that farm information and communication efforts remain responsive to farmers' needs and preferences.

**32. ICT in Agriculture**

32.1. Online Scheme Application Portal

An online portal would be developed to enable farmers to apply for agricultural schemes and subsidies conveniently from their homes or mobile devices. This portal would provide a user-friendly interface for farmers to browse available schemes, submit applications, and track the progress of their applications in real-time. By streamlining the application process and reducing paperwork, this initiative aims to improve access to agricultural benefits and enhance transparency in scheme implementation.

32.2. Mobile Application for Agricultural Services

A mobile application dedicated to agricultural services would be developed and launched, offering a range of features to assist farmers in various aspects of farming. This app would provide access to weather forecasts, market prices, pest and disease management information, agricultural news, and expert advice. Additionally, it would allow farmers to receive alerts and notifications regarding important events such as subsidy disbursements, training programs, and crop advisories. By harnessing the power of mobile technology, this initiative aims to empower farmers with timely and relevant information, enabling them to make informed decisions and improve farm productivity.

32.3. Farmer Training through E-Learning Platforms

E-learning platforms would be utilized to deliver agricultural training and extension services to farmers remotely. These platforms would host a variety of multimedia learning resources, including videos, tutorials, presentations, and interactive modules covering topics such as crop cultivation, pest management, soil health, and sustainable farming practices. Farmers would be able to access these resources at their convenience, allowing them to learn at their own pace and adapt new techniques to their farming operations. By leveraging ICT tools for farmer education, this initiative aims to enhance the knowledge and skills of farmers, ultimately leading to improved agricultural productivity and livelihoods.

32.4. Digital Agricultural Advisory Services

Digital agricultural advisory services would be established to provide personalized guidance and recommendations to farmers based on their specific needs and circumstances. These services would

leverage technologies such as artificial intelligence, data analytics, and machine learning to analyze farm data, assess crop performance, and generate actionable insights for farmers. Through interactive chatbots, helplines, and online forums, farmers would be able to seek advice on crop management, pest control, irrigation scheduling, and other agricultural practices. By offering tailored recommendations and solutions, this initiative aims to support farmers in overcoming challenges and maximizing their yields sustainably.

32.5. ICT-enabled Market Linkages

ICT-enabled market linkages would be established to connect farmers directly with buyers, processors, and retailers, facilitating seamless transactions and improving market access for agricultural produce. Online platforms and mobile apps would be developed to enable farmers to showcase their products, negotiate prices, and arrange for transportation and delivery services. Additionally, these platforms would provide information on market trends, demand-supply dynamics, and price fluctuations to help farmers make informed marketing decisions. By leveraging ICT for market linkages, this initiative aims to empower farmers with greater control over their produce and enhance their profitability in agricultural markets.

32.6. Digital Financial Services for Farmers

Digital financial services tailored to the needs of farmers would be introduced to promote financial inclusion and empower farmers with access to formal banking and credit facilities. Mobile banking, digital payments, and microfinance solutions would be offered to enable farmers to conduct transactions, save money, and access credit conveniently using their mobile phones or other digital devices. Additionally, financial literacy programs and training sessions would be conducted to educate farmers on the benefits of digital financial services and how to use them effectively. By facilitating access to financial services, this initiative aims to enhance the financial resilience and well-being of farmers, enabling them to invest in their farms and improve their livelihoods.

32.7 Publication of an annual STATE OF AGRICULTURE IN GOA report

Beginning with the financial year 2025-6 the directorate of agriculture would prepare a State of agriculture in Goa report similar to Economic Survey tabled in the legislative assembly and the report should consider both the kharip and rabbi seasons and the same be tabled in the monsoon session of Goa assembly covering the preceding cropping seasons. The government would appoint a special local team for this purpose proficient in such publications.

32.8. Publication of a GOA FARMER’s Diary and Agriculture department almanac, calendar

Government would consider publication of a Goa Farmers Diary every year to be made available in English and Konkani to farmers at nominal rates along with a poster size wall almanac detailing agrometeorological information and a calendar exclusively for the farmers to be sold at subsidized rates.

32.9. Dissemination and popularization of farmer friendly smartphone Apps

Government would identify, popularize and disseminate farmer friendly smartphone apps including those with meteorological information

32.10 Incentives to local students and researchers to develop farmer friendly smartphone apps

Government would prepare a scheme to offer awards, rewards, financial support and other incentives to talented local programmers to develop useful farmer friendly smartphone apps. State level annual competitions would be held to select, showcase and adopt the best such apps.

**33**. **State Agriculture Research**

33.1. Vision and Mission Definition

Defining a clear vision and mission for agriculture research in alignment with the state's agricultural scenario and challenges. The involvement of institutions such as ICAR, IIT, incubation centers, and agriculture industries in planning and executing research initiatives would be essential. In the context of Goa, defining a clear vision and mission for agriculture research is paramount to address the unique agricultural scenario and challenges faced by the state. With its diverse agricultural landscape and specific climatic conditions, including rich biodiversity and small landholdings, the vision for agricultural research in Goa would aim to enhance productivity, sustainability, and resilience in farming practices. This vision would encompass goals such as promoting organic farming, conserving indigenous crop varieties, and mitigating the impact of climate change on agriculture. Additionally, the mission would involve leveraging technology and innovation to optimize resource use, improve soil health, and empower farmers with knowledge and tools for sustainable agricultural practices. By aligning research efforts with the state's agricultural priorities and collaborating with relevant stakeholders, such as local farmers, research institutions, and government agencies, Goa can pave the way for a vibrant and resilient agricultural sector that thrives in harmony with its natural environment.

33.2. Research Alignment with Technological Advancements and Farmer Needs

Research initiatives would define their direction based on technological advancements and the specific needs of farmers, focusing on addressing challenges and improving agricultural practices.

33.3. Environment and Facilities Enhancement

Creating a conducive environment and providing necessary facilities in agriculture institutes to facilitate research activities effectively would be prioritized.

33.4. Public-Private Partnership for Research

Encouraging collaboration and partnership between agriculture industries and institutes to fund research projects of common interest, benefiting the agricultural sector in the state would be promoted.

33.5. Soil Testing Laboratories for Soil Health

Establishing soil testing laboratories in each district to guide farmers in improving soil health by identifying deficiencies in macro and micro nutrients would be imperative.

33.6. Seed Testing Laboratories

Setting up seed testing laboratories to ensure the quality and purity of seeds used by farmers, equipped with scientific instruments for assessing germination percentage, viability, and genetic purity would be emphasized.

33.7. Seed Bank Establishment

Establishing seed banks to scientifically store seeds of different local crops, preserving genetic diversity and traditional agricultural practices would be facilitated.

33.8. Pesticides/Chemicals Residue Testing Laboratory

Establishing laboratories to test farm produce for residues of pesticides, fungicides, and herbicides, ensuring food safety and minimizing health risks would be a priority.

33.9. Cultivation and Conservation of Local Varieties

Promoting cultivation and conservation of local fruit and vegetable varieties through scientific research, preserving genetic diversity and traditional agricultural practices would be encouraged.

33.10. Pest and Disease Management Research

Initiating research to manage pests and diseases affecting various crops in the state, aiming to improve crop yield and sustainability would be pursued.

33.11. Industry-Oriented Research

Conducting industry-oriented research to meet market requirements and enhance the marketability and income of agricultural products would be facilitated.

33.12. Establishment of Plant Quarantine Stations

Setting up plant quarantine stations equipped with pathology laboratories at harbors, airports, and land fronts to inspect imported agricultural commodities and prevent the introduction of exotic pests and diseases would be prioritized.

33.13. Lab to Land Program

Implementing a lab to land program to facilitate the transfer of agricultural research findings from institutes and R&D centers to farmers, promoting adoption of innovative practices would be emphasized.

33.14. Allocation of Annual Budget for Agriculture Research

Allocating an annual budget for state agriculture research to support continuous development of research and development activities and facilities, ensuring sustained progress in the agricultural sector would be crucial.

**34**. **Planning and budgeting**

Farm Planning: Farm planning involves creating a roadmap for farming activities. It's like making a to-do list for a farm. Need to decide what crops to plant, when to plant them, how much to produce, and what resources are needed. Efficiency: Planning helps to use the resources efficiently. It does not waste time, money, or effort on things that won't yield good results. Optimal Resource Allocation: There is allocation of resources like land, labour, and capital to different tasks in the best possible way. Risk Management: Planning helps to prepare for challenges like weather changes or market fluctuations. There are backup plans in case things don't go as expected. Higher Productivity: Well planning leads to produce more in a sustainable manner. This leads to better yields and more profit.

Farm Budgeting: Budgeting is creating a financial plan for the farm. There is estimation of the costs and revenues on farming activities. Financial Control: Budgeting keeps the spending in check. Helps to know where your money is invested and can avoid overspending. Goal Setting: There is setting of financial goals and working towards them. Informed Decisions: A budget guides for decisions. Helps to know if you can afford to buy new equipment or expand your operations. Identifying Problems: If spending is more than earning, a budget highlights the issue and finds ways to cut costs or increase revenue

Agriculture and allied sectors including animal husbandry, dairy and fisheries are pivotal to development of the state.

34.1 Planning and Budget Allocation Agricultural activities by both the government and farmers would be prioritized, ensuring dedicated budget allocation. A minimum of 4% of the total state budget would be earmarked for agriculture, encompassing horticulture, dairy, and animal husbandry.

34.2 Subsidy for Revival of Fallow and Khazan Land Efforts would be undertaken by the state government to cultivate the vast fallow, CADA, and khazan lands. Additional budget provisions would be made to support these extensive projects.

34.3 Capital Investment Subsidy A Capital Investment Subsidy (C.I.S.) of up to 40% of the fixed capital cost (excluding land) would be provided for establishing agri-enterprises. Additional incentives would be extended to women agri-preneurs and agriculture graduates. The focus of the CIS would be on various

sectors such as commercial horticulture, meat, egg, and fish production, export of agricultural produce, agri-service centers, seed processing units, beekeeping, biofertilizers, and renewable energy.

34.4 Financial Support for Agricultural Colleges and local Institutes

Proper financial backing would be ensured for agricultural colleges and institutes, with a minimum of 10% of the total departmental budget allocated for this purpose subject to an upper cap of Rs. 50 crores per year.

34.5 Implementation of the Farmer Registration & Unified Beneficiary Information System (FRUITS)

Software Budgetary provisions would be made for advanced agricultural software solutions to enhance efficiency. Initiatives like the Farmer Registration & Unified Beneficiary Information System (FRUITS) would be developed to facilitate Aadhar-based, single-window registration for agricultural schemes and activities.

**35. Agriculture in School Curriculum**

Agricultural education imparts knowledge about agriculture, food, and natural resources to students, fostering skills in science, communications, leadership, management, and technology.

Agricultural education comprises three interconnected components:

Classroom or Laboratory Instruction: Students receive theoretical knowledge in classrooms or laboratories.

Experiential Learning: Supervised by agriculture instructors, students engage in practical learning experiences outside the classroom.

Leadership Education: Through student organizations, trainings, and workshops, students develop leadership skills.

35.1 Introduction of Agriculture Subjects in Schools Introducing agriculture subjects from the sixth grade would provide students with general information on plants, crops, water requirements, and the importance of agriculture for food production.

35.2 Agricultural Education in Advanced Classes Advanced classes would incorporate lessons on the agricultural scenario at the state and national levels, covering different crops, livestock, forestry, irrigation techniques, and renewable energy in agriculture.

35.3 Skill-Based Field Agriculture Education Commencing from the eighth grade, students would engage in skill-based agriculture education, involving activities such as laying kitchen gardens, vegetable plots, and small-scale livestock rearing. They would also receive training in food processing.

35.4 Linking Schools to Agriculture Institutes Establishing partnerships between schools and agriculture institutes would facilitate knowledge exchange, practical training, and collaborative projects on sustainable agriculture, food processing, and storage techniques.

35.5 Agriculture Projects in Schools for Generating Income to Students Each school would undertake 2-3 agricultural projects aimed at developing agricultural skills and generating income for students. Projects may include milk processing, mushroom cultivation, honey bee rearing, fruit and vegetable processing, organic farming, urban farming, and ornamental nursery management.

35.6 Integration of Agriculture in Extracurricular Activities

Incorporating agriculture-related activities into extracurricular programs such as gardening clubs, agricultural competitions, and farm visits would enhance students' practical knowledge and interest in agriculture.

35.7 Vocational Training in Agriculture

Offering vocational training programs in agriculture during high school years would prepare interested students for careers in farming, agricultural research, agribusiness, and related fields.

35.8 Internship Opportunities

Providing internship opportunities for students at local farms, agricultural research institutions, and agribusinesses would give them hands-on experience and insight into real-world agricultural practices.

35.9 Entrepreneurship Education

Integrating entrepreneurship education into agricultural curriculum would equip students with the skills and knowledge needed to start and manage their own agricultural enterprises.

35.10 Awareness Campaigns

Conducting awareness campaigns in schools about the importance of sustainable agriculture, environmental conservation, and food security would instill a sense of responsibility towards agricultural practices and their impact on society and the environment.

**36. Agricultural startups and innovations**

Agricultural startups and innovations refer to newly established ventures and novel technological advancements to improve various aspects of agriculture, including crop cultivation, livestock management, supply chain logistics, and sustainable farming practices. These startups typically leverage cutting-edge technologies, such as artificial intelligence, robotics, and biotechnology, to address challenges in the agricultural sector and drive innovation towards increased productivity, efficiency, and sustainability.

36.1 Startup Incubation Program:

Launching a startup incubation program dedicated to agrohorticulture innovations would provide aspiring entrepreneurs with mentorship, funding, and infrastructure support to nurture their ventures.

36.2 Agro-Innovation Fund:

Establishing an Agro-Innovation Fund within the state budget would offer grants and subsidies to startups focusing on disruptive technologies in agriculture, stimulating innovation and growth in the sector.

36.3 Innovation Challenges:

Organizing hackathons and innovation challenges targeted at addressing key challenges in the agrohorticulture sector would encourage startups to propose novel solutions and drive technological advancements.

36.4 Collaboration with Research Institutions:

Fostering collaboration between agro-tech startups and research institutions would leverage cutting-edge technologies like AI, machine learning, and blockchain for crop management and traceability, enhancing agricultural productivity and sustainability.

36.5 Startup-Farmer Collaboration Platform:

Creating a platform for startups to collaborate with established farmers would facilitate the adoption of innovative practices on the ground and ensure scalability of agro-innovations.

36.6 Fast-Track Approval System:

Implementing a Fast-Track Approval System for agro-tech startups would streamline bureaucratic processes, accelerating the development and deployment of new technologies in agriculture.

36.7 Agro-Innovation Hub:

Developing an Agro-Innovation Hub as a physical and virtual space for startups to collaborate, test prototypes, and access shared resources would foster a supportive ecosystem for innovation in agriculture.

36.8 Tax Incentives for Startups:

Providing tax incentives and exemptions for startups engaged in agro-innovations would attract more entrepreneurs to invest in the sector, driving economic growth and job creation.

36.9 Venture Capital Collaboration:

Collaborating with venture capital firms to create a dedicated fund for agro-tech startups would provide essential financial support, fostering a robust ecosystem of investment and innovation.

36.10 State Agro-Technology Challenge Fund:

Establishing a State Agro-Technology Challenge Fund would incentivize startups to compete for substantial funding by presenting innovative solutions to specific agrohorticulture challenges, driving progress and competitiveness in the sector.

36.11 Procurement Program:

Introducing a procurement program that prioritizes purchasing from local agro-tech startups would boost market access and ensure sustained growth of innovative ventures in agriculture.

36.12 Industry Partnerships:

Facilitating partnerships between agro-tech startups and existing agribusinesses would promote knowledge exchange and accelerate the adoption of innovative technologies in the agricultural value chain.

36.13 Awareness Campaign:

Launching an Agro-Innovation Awareness Campaign would showcase success stories, attract talent, and create a supportive environment for startups in the agrohorticulture sector.

36.14 Training Programs:

Providing specialized training programs for agro-tech entrepreneurs would equip them with essential skills in business development, technology commercialization, and market strategy, enhancing their chances of success.

36.15 Information Portal:

Creating a dedicated portal for agro-tech startups to access information on funding opportunities, market trends, and regulatory guidelines would streamline the process of starting and scaling ventures in agriculture.

36.16 Incubators on Campuses:

Collaborating with educational institutions to establish agro-tech incubators on campuses would nurture a culture of innovation among students and researchers, driving entrepreneurial activity in the sector.

36.17 Startup-in-Residence Program:

Introducing a Startup-in-Residence program would allow agro-tech startups to collaborate with government agencies to pilot and scale innovative solutions, addressing pressing challenges in agriculture.

36.18 Networking Events:

Hosting regular networking events and industry conferences would facilitate connections between startups, investors, and key stakeholders in the agrohorticulture ecosystem, fostering collaboration and knowledge sharing.

36.19 Challenge-Based Funding Model:

Implementing a challenge-based funding model would provide financial support to startups upon successfully addressing specific agrohorticulture challenges outlined by the government, driving innovation and problem-solving.

36.20 Cross-Sector Collaboration:

Encouraging cross-sector collaboration between agro-tech startups and tech companies working on complementary solutions would leverage synergies and accelerate technological advancements in agriculture.

36.21 Regulatory Sandbox:

Establishing a dedicated regulatory sandbox for agro-tech innovations would provide startups with a controlled environment to test and validate their solutions, reducing regulatory barriers and fostering experimentation.

36.22 Mentorship Program:

Creating a mentorship program connecting experienced agribusiness leaders with startup founders would provide guidance and industry insights, accelerating the growth and success of agro-tech ventures.

36.23 Innovation Showcase:

Developing an Agro-Innovation Showcase would highlight the achievements of startups, attracting investors, corporate partners, and potential customers to support and collaborate with innovative ventures in agriculture.

36.24 Co-Working Spaces:

Offering co-working spaces and shared facilities exclusively for agro-tech startups would foster a collaborative ecosystem, promote knowledge sharing, and reduce operational costs for budding entrepreneurs.

36.25 Continuous Evaluation and Updates:

Regularly evaluating and updating startup-focused initiatives based on feedback, market dynamics, and emerging trends would ensure continuous support and relevance for agro-tech startups in Goa.

36.26. Startups. Innovations, indigenization in agrobiotechnology

The government would provide strong incentives in the sector of the establishment of pure culture collections of agriculturally important microbes under the guidance of GSBB and NBA, and for production of quality spawns of edible mushrooms, research on trial cultivation of wild edible mushrooms, mushrooms farms which use local agrowaste and cottage level production of fruit wines for the addition of value.

Incentives to improve alcohol yield in cashew fermentation through novel cultures would be provided and dedicated plantations of sugar rich cashew apples needed in feni industry would encouraged for backward integration of cashew processing.

Government would promote research on microbes useful in wine and vinegar production and manufacture of cashew feni and would ensure establishment of a culture collection for industrial strain development. Production of vinegar using improved cultures would be encouraged.

Mycobiofertilizer units would be promoted based on utilizing local cultures of endo and ectomycorrhizal fungi. Strong incentives would be provided for creating cyanobacteria and algal biofertilizer units.

Startups for production of phosphate solubilizing formulations and ecofreidnly soil conditioners with microbes would be supported. Domestication of Goa's vanishing estuarine edible mangrove fern Acrostichum aureum , locally known as 'ankur" and harvested and marketed from wild natural mangrove areas f during the monsoon would be promoted and local communities in traditional Ankur harvesting zones would be trained if domestication becomes successful. Value added products from this probiotic edible fern would be promoted. Action would be taken with the help of GSBB and Forest department to conserve and preserve the wild habitats of local wild edible mushrooms and estuarine edible fern.

**Part C**

International Collaborations, Effective Implementation mechanisms, Improved mechanism for policy implementation , People's Vault of Good Ideas for Agriculture, Promotion of the Policy after the notification

**C.1 International collaborations: -**

International collaboration offers significant opportunities for the Government of Goa to enhance its agricultural and allied sectors. These collaborations could bring in expertise, technologies, investments, and access to new markets. Here are some potential international collaboration opportunities that could be incorporated into the Goa State Amritkal Agriculture Policy:

1.1.Technology Transfer and Research Collaboration:

Partnering with International Agricultural Research Institutes: Goa would collaborate with organizations like the International Rice Research Institute (IRRI) or the World Vegetable Center to access cutting-edge agricultural research and technologies suitable for its agro-climatic conditions.

1.2. Initiating Joint Research Projects: The government would collaborate with foreign universities and research institutions to conduct joint research projects focusing on sustainable agriculture practices, climate-resilient crops, and advanced agricultural technologies.

1.3. Capacity Building and Training:

Facilitating Farmer Exchange Programs: Goa would establish exchange programs with countries that have advanced agricultural sectors to allow its farmers and agricultural professionals to gain firsthand experience and knowledge.

1.4. Organizing International Training Workshops: The government would collaborate with international experts to host workshops and training sessions on topics such as organic farming, crop management, pest control, and post-harvest technologies.

1.5. Market Access and Export Promotion:

1.5.1.Negotiating Trade Agreements: Goa would collaborate with foreign governments to negotiate trade agreements or partnerships that facilitate easier access for its agricultural products in international markets, focusing on high-value crops like cashews, mangoes, and organic produce.

1.5.2.Collaborating on International Marketing Campaigns: The government would partner with international marketing agencies to promote Goan agricultural products globally, emphasizing their quality, sustainability, and unique attributes.

1.6. Sustainable Agriculture and Climate Resilience:

1.6.1. Partnering with International Environmental Organizations: Goa would collaborate with organizations like the Food and Agriculture Organization (FAO) and the World Bank for projects aimed at sustainable land management, water conservation, and climate resilience.

1.6.2.Participating in International Climate Adaptation Programs: The government would participate in international climate adaptation and mitigation programs, securing funding and technical assistance for projects that reduce agriculture's carbon footprint and increase resilience to climate change.

1.7. Investment and Financial Assistance:

1.7.1. Encouraging Foreign Direct Investment (FDI): The government would encourage FDI in agro-processing, agricultural infrastructure, and value addition projects by showcasing investment opportunities in Goa's agricultural sector.

1.7.2. Seeking International Grants and Loans: Goa would seek grants and low-interest loans from international financial institutions like the Asian Development Bank (ADB) or the International Fund for Agricultural Development (IFAD) for development projects in agriculture and allied sectors.

1.8. Organic Farming and Certification:

1.8.1. Establishing International Organic Certification Partnerships: The government would collaborate with international certification bodies to facilitate certification processes for Goan organic products, enhancing their acceptability in global organic markets.

1.8.2 Implementing Collaborative Organic Farming Projects: Goa would implement collaborative projects with international organizations to promote organic farming practices, including knowledge exchange programs and joint marketing initiatives.

1.9. Establishment of an International Cooperation Unit:

The Goa government would allocate resources to establish a specialized unit within the Directorate of Agriculture tasked with managing international collaborations and partnerships.

This unit would comprise experts in international relations, agriculture, and trade, dedicated to identifying, evaluating, and pursuing opportunities for collaboration with foreign governments, organizations, and institutions.

The unit would be responsible for coordinating all aspects of international cooperation, including policy development, project management, communication, and reporting.

1.10. Development of a Framework for Engagement:

The government would develop a comprehensive framework outlining the objectives, principles, and procedures for engaging with foreign entities in the agricultural sector.

This framework would define the criteria for selecting potential partners, the process for negotiating agreements and partnerships, and the mechanisms for monitoring and evaluating collaboration activities.

It would also establish guidelines for intellectual property rights, data sharing, confidentiality, and dispute resolution to protect the interests of both Goa and its international partners.

1.11. Regular Participation in International Agricultural Forums and Expos:

The Directorate of Agriculture would prioritize participation in key international agricultural forums, conferences, and expos to showcase Goa's agricultural potential, learn from global best practices, and

explore collaboration opportunities.

The government would allocate funds for delegations to attend these events, covering expenses such as registration fees, travel, accommodation, and exhibition booth rentals.

In addition to attending, Goa would actively engage in panel discussions, workshops, and networking sessions to share insights, exchange ideas, and forge partnerships with international stakeholders.

1.12. Bilateral and Multilateral Partnerships:

The international cooperation unit would initiate discussions with specific countries and regional blocs to establish bilateral and multilateral partnerships in areas of mutual interest, such as technology transfer, research collaboration, capacity building, and market access.

These partnerships could take the form of memorandum of understandings (MoUs), joint action plans, or formal agreements outlining the scope, objectives, and responsibilities of each party.

Priority would be given to countries and organizations that have demonstrated expertise, resources, and willingness to collaborate on initiatives aligned with Goa's agricultural development goals.

1.13. Collaborative Research and Development Projects:

The government would promote collaborative research and development projects with international partners to address priority areas such as climate-resilient crops, precision agriculture, water management, and value chain development.

Funding would be allocated for joint research activities, technology demonstrations, pilot projects, and knowledge exchange programs facilitated by Goa's research institutions, universities, and agricultural extension services.

The international cooperation unit would facilitate the establishment of consortia or networks involving multiple stakeholders from both Goa and its partner countries to ensure interdisciplinary collaboration and maximize impact.

**C.2. Effective Implementation of the Schemes**

2.1 For State Sponsored Schemes:

2.1.1 Integration and Synergy: Integration of schemes with overlapping objectives would be prioritized to optimize resource utilization and impact. Collaborative efforts across departments would ensure synergy in water management, soil health, and crop protection initiatives.

2.1.2. Awareness and Outreach Programs: Regular awareness camps and workshops would be organized in collaboration with local bodies to educate farmers about available schemes, application procedures, and benefits. Utilization of digital platforms, local radio, and community meetings would facilitate broader outreach.

2.2.3. Capacity Building and Training: Dedicated training centers would be established or existing ones utilized for schemes focused on human resource development, organic farming, and mechanization. Practical demonstrations and field visits would be incorporated into training sessions.

2.2.4. Monitoring and Evaluation (M&E): A robust M&E framework would be established to assess scheme effectiveness. Data collected would inform decision-making, and feedback mechanisms would be implemented for farmers to report ground realities.

2.2.5. Public-Private Partnerships (PPPs): Exploration of PPPs would be encouraged for schemes requiring significant investment, leveraging additional funding and expertise from the private sector.

2.3. For Centrally Sponsored Schemes:

2.3.1. Seamless Integration with State Objectives: Centrally sponsored schemes would be aligned with state-specific agricultural goals to effectively complement state efforts, particularly in areas like irrigation, soil health, and organic farming.

2.3.2. State-Level Customization: Implementation of centrally sponsored schemes would be customized to address unique challenges and opportunities in Goa, tailoring interventions to local conditions.

2.3.3.Leveraging Central Funds: Maximized utilization of central funds would be ensured by raising awareness among eligible farmers, streamlining application processes, and providing assistance in documentation and compliance.

2.4. For Central Sector Schemes:

2.4.1. Direct Benefit Transfer (DBT) Efficiency: Up-to-date farmer databases would be maintained, and Aadhaar linkage would be utilized to ensure efficient DBT processes, minimizing leakages and ensuring timely payments.

2.4.2. Enhancing Scheme Uptake: Collaboration with the Coconut Development Board Programme would be initiated to identify potential beneficiaries and offer assistance in meeting scheme criteria.

2.5. General Implementation Strategies:

2.5.1. Digital Platform for Scheme Management: Development of a comprehensive digital platform serving as a one-stop portal for scheme information, application processes, tracking, and grievance redressal.

2.5.2. Stakeholder Engagement: Regular engagement with farmer groups, cooperatives, and NGOs to gather feedback and identify areas for improvement in scheme implementation.

2.5.3. Innovative Financing Models: Exploration of revolving funds, credit guarantees, and risk-sharing mechanisms to support schemes requiring significant financial inputs, especially those for infrastructure development and mechanization.

2.5.4. Climate Resilience Focus: Incorporation of climate-resilience practices in all schemes, supporting farmers in adapting to changing climatic conditions.

By implementing these strategies, the Goa State Amritkal Agriculture Policy would ensure effective scheme implementation, leading to enhanced productivity, sustainability, and farmer welfare in the state.

**C.3. Improved mechanism for policy implementation**

For the effective implementation of the Goa State Amritkal Agriculture Policy 2025 over the next decade, the Directorate of Agriculture, Government of Goa, will establish and form several mechanisms, including enhancing service delivery through zonal agriculture offices. These offices will play a pivotal role in the localized execution of various schemes derived from the policy, ensuring accessibility, responsiveness, and tailored support to the agricultural community in their respective zones.

1. Policy Implementation Unit (PIU): A dedicated Policy Implementation Unit within the Directorate of Agriculture would oversee the comprehensive execution of the policy, coordinating across departments and ensuring alignment with policy objectives.

2. Inter-Departmental Coordination Committee: This committee, comprising representatives from various relevant government departments, would facilitate integrated and cohesive policy implementation across sectors affecting agriculture.

3. Monitoring and Evaluation (M&E) Framework: A robust M&E Framework would be developed to track progress, evaluate outcomes, and adapt strategies necessary to effectively meet policy goals.

4. Stakeholder Engagement Forums: Regular forums would engage a wide range of stakeholders, ensuring their voices are heard and incorporated into the implementation process, fostering a sense of ownership and collaboration.

5. Capacity Building Programs: Targeted training programs for government officials and extension workers would enhance skills essential for successful policy implementation, including modern agricultural practices and project management.

6. Enhanced Service Delivery through Zonal Agriculture Offices: To ensure better service delivery, zonal agriculture offices would be strengthened with additional resources, training, and authority. These offices would serve as the front line for the implementation of various schemes under the new policy, providing tailored assistance, resources, and guidance to farmers within their jurisdictions. They would be equipped with advanced digital tools for efficient scheme management and beneficiary communication. Regular training would be provided to staff to keep them updated on policy provisions, agricultural best practices, and service delivery standards. Additionally, each zonal office would establish a local feedback system to promptly address farmers' concerns and suggestions, ensuring that services are continually refined to meet local needs effectively.

By incorporating these measures, alongside enhancing the capabilities and reach of zonal agriculture offices, the Directorate of Agriculture, Government of Goa, commits to the successful and inclusive implementation of the Goa State Amritkal Agriculture Policy 2025.

**C.4. People's Vault of Good Ideas for Agriculture**

Objective: We propose the establishment of the People's Vault of Good Ideas for Agriculture to effectively utilize 500 selected suggestions from about 3000 received during the public consultation phase for the Goa State Amritkal Agriculture Policy, 2025. This vault will house innovative suggestions not incorporated into this policy but holding significant potential for future agricultural enhancements.

3.1. Implementation Strategy:

3.1.1. Cataloguing and Categorization: Each 500 selected suggestions will be meticulously cataloged with detailed descriptions and categorized according to thematic areas such as sustainability, technology adoption, market development, and farmer welfare for easy access and reference.

3.1.1.2. Accessibility to Government Departments: All relevant government departments and agencies involved in agricultural development and policymaking will have access to the vault. This ensures efficient utilization of suggestions in drafting new schemes or policy amendments.

3.1.1.3. Annual Review Process: A yearly review process will evaluate the relevance and feasibility of suggestions based on current agricultural priorities and advancements, ensuring that the vault remains up-to-date and responsive to evolving needs.

3.1.1.4. Documentation of Utilization: When a suggestion from the vault is implemented, details of its utilization, outcomes, and any modifications made will be documented within the vault. This transparent record will showcase the impact of the vault on agricultural development in Goa.

**C.5. Promotion of the Policy after the notification**

The policy after the official notification in the gazette would be printed and made available in the official language Konkani and co-language Marathi besides English within a period of 60 days.

A structured plan will be implemented within a year to ensure the effective dissemination and promotion of the Goa State Amritkal Agriculture Policy 2025 following its official notification. This plan outlines the

sequence of activities designed to highlight the policy's objectives, benefits, and opportunities it presents to various stakeholders within and beyond the state of Goa. Additionally, criteria for the competitive selection of professionals or companies tasked with organizing promotional events are established to guarantee the highest standards of excellence and outreach.

4.1. Plan for Showcasing and Promoting the Policy:

4.1.1. Official Launch Event: An official launch event will be organized to mark the notification of the policy, featuring key stakeholders including government officials, industry leaders, farmers, and media representatives.

4.1.2. Roadshows: Roadshows will be conducted across Goa and other significant agricultural centers nationally to broaden awareness and foster a deeper understanding of the policy among farmers, agri-entrepreneurs, and the wider community.

4.1.3. Agricultural Hackathons: Agricultural hackathons will be hosted to encourage innovators, tech developers, and students to devise and refine solutions that align with the policy's aims, thus driving agricultural innovation.

4.1.4. Exhibitions and Fairs: Participation in and organization of agricultural exhibitions and fairs will serve to demonstrate the advancements and opportunities the policy introduces, enabling direct interaction among farmers, technology providers, and market intermediaries.

4.1.5. Digital Campaigns: A series of digital campaigns will be launched via social media and online platforms to ensure extensive reach, sharing informative content, success stories, and updates on the policy's progress.

4.1.6. Workshops and Seminars: Targeted workshops and seminars will be conducted to offer farmers and grassroots stakeholders comprehensive insights into the policy's advantages and available opportunities.

4.1.7. Collaborations with Educational Institutions: Partnerships will be formed with academic institutions to integrate awareness of the policy into their curricula and to stimulate policy-aligned academic research and projects.

4.1.8. Documentation and Publication: The publication of detailed reports, case studies, and documentaries highlighting the policy's impact and success stories will be pursued, with wide distribution across various media channels.

4.2. Criteria for Selection of Event Organizers:

4.2.1. Experience and Expertise: Demonstrable history in successfully managing similar events or campaigns, particularly within the agricultural sector, underpinned by a robust understanding of the policy's goals.

4.2.2. Innovative Approach: Capability to offer innovative and effective strategies for the policy's promotion to diverse audiences.

4.2.3. Technical Capabilities: Sufficient technical resources to execute large-scale events, including hackathons and digital campaigns, efficiently.

4.2.4. Network and Reach: A well-established network within the agricultural industry and among media outlets to ensure comprehensive coverage of the policy.

4.2.5. Cost-Effectiveness: Competitive pricing models that do not compromise the quality and impact of promotional activities.

4.2.6. Sustainability Practices: A commitment to organizing events in an environmentally sustainable manner, aligning with the policy's sustainability ethos.

4.2.7. Performance Metrics: Provision of clear metrics to measure the success of promotional activities in terms of reach, engagement, and influence on policy adoption among target demographics.

4.2.8. Compliance and Ethical Standards: Adherence to the highest legal, ethical, and professional standards, ensuring a transparent and accountable selection process.

Through the meticulous execution of this plan and adherence to the outlined selection criteria, the Goa State Amritkal Agriculture Policy 2025 will achieve widespread visibility, stimulate engagement, and facilitate the successful realization of its objectives, significantly contributing to the sustainable evolution of Goa's agricultural landscape.

**C.6**. **Concluding statement**: -

In light of the comprehensive framework established by the preamble, alongside the ambitious yet attainable vision and mission statements of the Goa State Amritkal Agriculture Policy 2025, it is with a profound sense of responsibility and optimism that we anticipate the realization of the policy's goals by the year 2034. This policy, the first of its kind since Goa's liberation in 1964 to be meticulously crafted by a democratically elected government in an unique decentralized and participative manner, is a testament to our collective commitment to transforming the agricultural landscape of Goa. It is designed to harness the state's unique agricultural heritage, address contemporary challenges, and leverage innovative practices for the betterment of all involved in the agricultural and allied sectors.

As we proceed with the implementation of this policy, the Government of Goa stands confident in our collective ability to achieve a sustainable, inclusive, and resilient agricultural sector. This confidence is rooted in the strategic approach outlined within this policy document, which integrates global best practices with local knowledge and traditions, ensuring that agriculture in Goa thrives as an economically viable, environmentally sustainable, and culturally rich sector.

With the unwavering support and collaboration of all stakeholders—farmers, agri-entrepreneurs, researchers, and the community at large—we are committed to navigating the path towards our shared objectives. The policy's strategic initiatives are designed with the flexibility and foresight needed to adapt to future challenges and seize emerging opportunities, ensuring the continued prosperity of Goa's agricultural sector.

Thus, as we embark on this transformative journey, guided by the Goa State Amritkal Agriculture Policy 2025, we do so with the confidence that by the year 2034, we will have fostered an agricultural sector that is not only the pride of Goa but also a model of sustainable agricultural development. This policy is a pledge from the Government of Goa to our citizens, to future generations, and to the land that sustains us, to diligently work towards a future where agriculture remains a cornerstone of our economy, culture, and way of life, contributing to the well-being and prosperity of the entire Goan community.

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