

VISION FOR DEVELOPMENT OF AGRICULTURE AND ALLIED SECTORS: A WAY TOWARDS MAKING GOA SELF RELIANT (SWAYAMPURNA GOA)

आमचे गोंय आत्मनिर्भर गोंय



Prepared by



भा.कृ.अनु.प.-केंद्रीय तटीय कृषि अनुसंधान संस्थान
(भारतीय कृषि अनुसंधान परिषद)
ओल्ड गोवा ४०३ ४०२, गोवा, भारत



ICAR - Central Coastal Agricultural Research Institute

(Indian Council of Agricultural Research)
Old Goa - 403 402, Goa, India.

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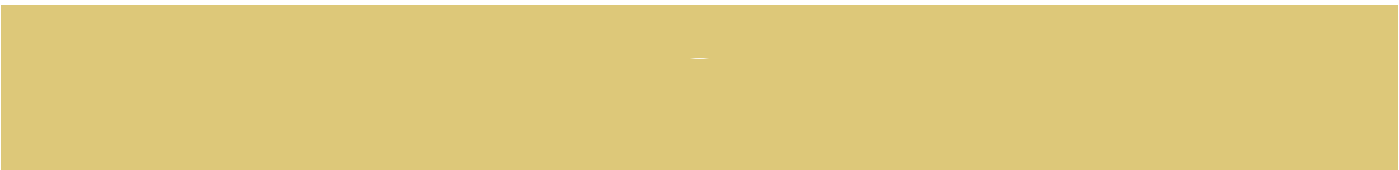


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DR. PRAMOD SAWANT
CHIEF MINISTER, GOA



MESSAGE

I am happy that ICAR- Central Coastal Agricultural Research Institute, Old Goa in collaboration with the Government of Goa has prepared a document entitled “**VISION FOR DEVELOPMENT OF AGRICULTURE AND ALLIED SECTORS : A WAY TOWARDS MAKING GOA SELF-RELIANT (SWAYAMPURNA GOA)**”. The document proposes a systematic and pragmatic action plan, roadmap for sustainable development of agriculture, animal husbandry & veterinary services, fisheries, industries and other allied sectors so as to achieve self-reliance and improve income of farmers of the state of Goa.

I am sure that this exercise will lead to “आमचें गोंय आत्मनश्चिर्भर गोंय”, a self - reliant Goa. The Government of Goa through its state departments of agriculture, animal husbandry & veterinary services, fisheries and industries and with technical assistance from ICAR- Central Coastal Agricultural Research Institute shall take every important step for its implementation.

Date: 13/01/2021
Place: Panaji, Goa


(Dr. Pramod Sawant)

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DY. CHIEF MINISTER
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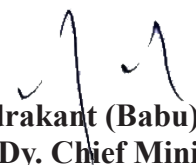
MESSAGE

I am happy to know that the document entitled “Vision for Development of Agriculture and allied sectors: A way towards making goa self-reliant (SWAYAMPURNA GOA)” has been prepared by ICAR - CCARI, Old Goa

This document preparation involved the initiative of Dr. Pramod Sawant, Hon’ble Chief Minister of Goa, under whose Chairmanship a series of meetings between ICAR - CCARI, Old Goa and Department of Agriculture, Animal Husbandry & Veterinary Services, Fisheries, Food Processing Industries etc were held.

Applying the vision of Hon’ble Chief Minister of Goa, Dr. Pramod Sawant of making Goa Swayampurna, to Agriculture Department; the proposed action plan for Goa state by way of this document will improve productivity in crops like paddy, cashew and coconut, diversification in Agriculture, creation of integrated farming system models, mechanisation, value addition and it also proposes policy reforms in Agriculture and allied sectors.

The proposed roadmap of Swayampurna Goa, will get a fresh view point for execution under this.


(Chandrakant (Babu) Kavlekar)
Dy. Chief Minister
Government of Goa

Hon'ble Chief Minister, Government of Goa, Dr. Pramod Sawant conducted a series of meetings with ICAR-CCARI, Old Goa and State Departments of Agriculture, Animal Husbandry and Veterinary Services and Fisheries for improving production, productivity and income of agricultural and allied sectors. The objective of these meetings was to develop strategies and implement it to make Goa self-sufficient, create and popularize brand of GOA in national and global platform and attract youth in agriculture and secondary agricultural businesses.

First meeting: The first meeting was convened at the official residence of the Hon'ble Chief Minister, Government of Goa on 25th November, 2020 wherein he discussed with Dr. A.K. Singh, Deputy Director General (Extension), ICAR, New Delhi, Dr. Lakhan Singh, Director, ICAR-ATARI Pune, Maharashtra, Dr. Jagadish Rane, Principal Scientist, ICAR- National Institute of Abiotic Stress Management, Baramati, Maharashtra, Dr. P.C. Haldavanekar, Associate Dean, College of Horticulture, Mulde, Dr. BSKKV Dapoli, Dr. Relekar, Professor, College of Processing, Roha, Dr. BSKKV Dapoli, Maharashtra through video-conferencing about strategies for agricultural development in the State of Goa. Dr. E. B. Chakurkar, Director and Scientist experts from ICAR-CCARI, Goa, Dr. Ambadas H., Principal Scientist (Horticulture), ICAR-Central Institute for Citrus Research, Nagpur, Maharashtra, Dr. B. L. Kasinath, Sr. Scientist and Head, KVK, North Goa were present and provided their inputs and comments for the same. Dr. Santosh V. Desai, Director, Directorate of Animal Husbandry and Veterinary Services, Dr. Shamila Monteiro, Director, Directorate of Fisheries and other officials of the Directorate of Agriculture, participated in the meeting.

Second meeting: The second meeting was held at Paryatan Bhavan on 27th November, 2020 wherein Chief Secretary and Secretaries of Agriculture, Animal Husbandry and Industries participated along with Self Help Groups (SHGs) and officials of APMC of the State.

Third meeting as Stakeholders meet: Based on the discussion in above two meetings and directives of Hon'ble Chief Minister, Government of Goa Dr. Pramod Sawant, a one-day stakeholder meeting was organized at ICAR-CCARI, Old Goa on 2nd December 2020 on 'Development of roadmap for agriculture and allied sectors for

State of Goa'. Shri. Kuldeep Singh Gangar, IAS, Secretary (Agriculture), Shri. Kunal, IAS, Secretary (Environment), Shri. J. Ashok Kumar, IAS, Secretary (Industries), Govt. of Goa, Dr. E.B. Chakurkar, Director, ICAR-CCARI, Mr. Nevil Alphonso, Director, Directorate of Agriculture, Dr. Santosh V. Desai, Director, Directorate of Animal Husbandry, Dr. Shamila Monteiro, Director, Directorate of Fisheries, Shri Rohan J. Kaskar, Dy. Director (Adm.), and Shri Prashant Kamat, Functional Manager (DIC), Directorate of Industries, Shri Suraj Amre, District Rural Development Agency, Shri Sandeep Faldesai, Managing Director, Goa State Horticulture Corporation Ltd., Govt. of Goa, Shri. Chandrahas Desai, Programme Coordinator, KVK, South Goa, Dr. B.L. Kasinath, Sr. Scientist and Head, KVK North Goa and scientist experts, Dr. A. R. Desai, Dr. R. Ramesh, Dr. Shivasharanappa N., Dr. G. R. Mahajan and Dr. Sreekanth G. B. of ICAR-CCARI, Old Goa participated in the meeting.

Hon'ble Chief Minister chaired the Valedictory Function of the one-day stakeholders meeting and gave his concluding remarks on the roadmap and strategies developed through the deliberations for development of agriculture and allied sectors in the State of Goa to make the State self-sufficient. Deputy Chief Minister and Minister of Agriculture, Shri. Chandrakant (Babu) Kavlekar, also attended the function and expressed his views. A strategy draft for the development of agriculture and allied sectors for the State was prepared. The strategies include 1) improvement of the production and productivity of important crops (rice, cashew, coconut, mango, spices) by increasing seed replacement ratio, adoption of high yielding varieties, replacement of senile plantations, etc. 2) crop diversification and integrated farming system approach (agriculture, livestock and fisheries), 3) production improvement in dairy sector by community dairy farming and fodder production, improving small animal production through establishment of nucleus breeding farms, schemes on goater, poultry and piggery, 4) establishment of storage facilities for fisheries sector, promotion of aquaculture and pisciculture and integrated farming system, 5) farm mechanization suitable for small and marginal farmers, creating value chain supply network by post-harvest management and value addition in paddy, coconut, cashew, jackfruit and other important crops. The ICAR-CCARI also suggested the State the probable funding opportunities for the strategies developed for implementation.

Based on the discussions of the stakeholders meeting, a draft roadmap for development of agriculture and allied sectors has been prepared for further discussions and finalization. A base document developed by ICAR-CCARI, Old Goa, Goa on 'Doubling Farmers Income of State of Goa' has been considered while developing the roadmap.

2.1 Socio-economic status of the State

The State of Goa comprises of two districts with a total geographical area of 3.61 lakh hectares. About 44% of the total geographical area of the state is gross cropped area. The economy of Goa is primarily driven by tourism and mining followed by agriculture, animal husbandry and fisheries activities. Agriculture contributes marginally with 3.74% of State GDP while secondary and tertiary sectors comprising of industries and services contribute to 80% of the GDP (@current prices, 2015). Goa has impressive socioeconomic indicators, as compared to the other states of the Country. The State ranks 4th in the Country with 86% literacy rate as per the 2011 census and has the highest per capita income.

Socio-economic indicators of State of Goa

Parameter	District		Total or average
	North Goa	South Goa	
Population	8,17,761	6,39,962	14,57,723
Human density (Number/km²)	471	326	398.5
Livestock density (Number/km²)	377	578	477.2
Forest area (km²)	923	1296	2219
Forest cover (%)	53.17	65.92	59.54
Cropping intensity (%)	100.81	100.51	100.66
Land degradation (000 ha)	536.33	539.82	1076.15
Net Sown Area (000 ha)	76.8	54.4	131.2
Net irrigated area (000 ha)	15	20	35
Fertilizer consumption (kg/ha)	58	49	53.2
Rural female literacy (%)	82	80	81
Ground water availability (Hectare-meter)	8554	5989	14543

Goa, being in the tropical zone and near the Arabian Sea, has a hot and humid climate for most of the year with moderate temperature variation between 17 to 35°C. The month of May is the hottest, seeing day temperatures of over 35°C coupled with high humidity. The monsoon rains arrive by early June and provide a much-needed respite from the heat. Goa receives heavy precipitation (2500 to 3200 mm) and most of its annual rainfall is received through the South West monsoon which last till late September. Soils of Goa are mostly laterite (red coloured) with acidic soil reaction.

The soils are rice soil organic carbon, deficient in soil available nitrogen, potassium, calcium, magnesium, zinc and boron and medium to sufficient in soil available potassium, iron, manganese, copper. The soils often have poor water holding capacity. Typical agricultural areas in the State are upland and lowland. The coastal saline soils (locally called Khazan) is spread over about 18000 ha area. Census report shows that there are only 31000 cultivators and 27000 agricultural labourers as compared to the total population of 14.58 lakh. Most of the farmers are not fully dependent on agriculture and they have supplementary sources of income through mining related activities, business, private or Government jobs and foreign remittances. It is estimated in the 70th round of NSSO that the average income of farmers in Goa is Rs.91,098 of which Rs. 16,893 is through farming, 15,097 is through Dairying, Rs. 12,243 through non-farm activities and 46,865 through wage labour and salary. The major food crops grown in the state are paddy, cereals, pulses, oilseeds, sugarcane and vegetables. The important horticultural crops of the state are cashewnut, coconut, arecanut, mango, banana, pineapple and spices. Fishing is another important activity covering mainly marine fisheries. Inland fisheries is becoming popular considering the growing demand. The milk production is not sufficient to cater to the demand and is imported from neighboring states. As such, there is great scope for animal husbandry activities.

2.2 Major crops, livestock and fisheries of State of Goa

- Field crops: Rice, pulses (cowpea, moong), oilseeds, sugarcane, etc.
- Plantations - Coconut, Cashew, Arecanut, Oil palm, etc .
- Fruit crops: Mango, banana, pineapple, jackfruit, etc.
- Spices: Black pepper, Nutmeg, Kokum, Turmeric, Cinnamon, Ginger, etc.
- Tubers: Colocasia, Elephant foot yam, Sweet potato, etc.
- Livestock: Dairy cattle, pig, poultry, buffalo, goat, rabbit etc.
- Fisheries: Pelagic fish, demersal fish, crustacean and molluscan species, etc.

2.3 Water resources of the State

It is estimated that the States total projected water requirement by 2051 A.D. could be about 8,030 mcm. As against this requirement, the total surface water resources that can be conserved is projected at 1,585 mcm. The Central Ground Water Board (CGWB), in their report on 'Dynamic Ground Water Resources of Goa State March 2011" have estimated the available ground water sources in the State as 14543.31 mcm and the net annual draft as 41.13 mcm. The stage of ground water development is 28%, which falls in the safe category of groundwater exploitation. Under Minor Irrigation schemes, irrigation potential to the tune of 30,532.95 ha has been created and the potential utilized is 25,769.60 ha.

3

Problems/constraints faced by agriculture and allied sectors in the State of Goa

- Low productivity of most of the crops cultivated.
- Unavailability of quality seed and planting material of important crops like paddy, pulses, oilseeds, cashew, coconut, mango, spices, etc.
- High cost of labour and their poor availability in agriculture in allied sectors. (e.g. coconut harvesters)
- Wild animal menace in agriculture is an important and major problem in Goa.
- Lack of cold storage and warehouses, small scale paddy processing units, etc.
- A wide gap between demand and production of milk, meat, eggs, which is presently supplied by neighboring states like Karnataka and Maharashtra.
- Unavailability of quality feed and fodder for dairy sector.
- Lack of awareness and capacity building of farmers, youth, field veterinarians about improved animal husbandry practices.
- Presently, there is an acute shortage of Field Veterinarians and Veterinary Assistants at all field establishments which limit better veterinary services to the farmers.
- Unavailability of labor in poultry, dairy and other animal husbandry sectors.
- Lack of slaughter houses/meat processing units for small animals (goats, pigs and poultry) for meat production and value addition.
- Unavailability of quality seeds in fisheries sector is a major concern. Besides, storage facilities, lack of awareness about advanced technologies, lack of proper marketing chain and facilities are also matter of concern.
- Establishment of coastal zone coordination agriculture committee minimum support price
- Lack of coordination among different government departments.
- Facility /data of Kisan card should be made valid for availing all the schemes of development departments to get support in terms of subsidy/support price etc.
- Farmers also expressed issues like capacity building of weaker sections, attracting youths to agriculture, and publications of success stories, providing agriculture inputs and providing facilities for by products processing.

4

Implementation Strategies or Plans

A strategy along with the agencies responsible and the funding opportunities for implementation are given below:

4.1. Productivity improvement in crops

4.1.1 Paddy

- Introduction of high yielding varieties (HYV): Directorate of Agriculture, Goa (for distribution of HYV seeds).
- Increasing the seed replacement ratio (SRR) of existing popular varieties: Directorate of Agriculture, Goa (for distribution of seeds) and KVK (North Goa) and KVK (South Goa) (for distribution of seeds).
- Certified seed production of HYV as an enterprise: Directorate of Agriculture, Goa (for certification, procurement and distribution) and KVK (North Goa) and KVK (South Goa) (for identifying entrepreneurs for seed production).
- Probable funding opportunities and collaboration partners for implementation
- National seed corporation (NSC) for production and supply quality seeds of improved varieties
- Participatory seed production programmes

4.1.2 Cashew

- Replacement of senile plantation with HYV: Directorate of Agriculture, Goa (for distribution of HYV grafts/plants).



- Nutrient and pest management (integrated nutrient management and integrated pest management) in cashew: Directorate of Agriculture, Goa (for popularization of INM practices and supply of necessary inputs) and KVK (North Goa) and KVK (South Goa) (for demonstration and dissemination of INM practices).
- High density planting of HYV: Directorate of Agriculture, Goa (for distribution of HYV grafts/plants).

4.1.3 Mango

- Creation of new orchards of improved local varieties by high density planting: Directorate of Agriculture, Goa (for distribution of HYV grafts/plants) and KVK (North Goa) and KVK (South Goa) (for distribution and demonstration of HYV).

Probable funding opportunities and collaboration partners for implementation

- National Horticulture Mission
- National Horticulture Board
- Rashtriya Krishi Vikas Yojana
- Establishment of commercial scale quality planting material nurseries through support from National Horticulture Mission

4.1.4 Coconut

- Introduction of high yielding and dwarf varieties of coconut: Directorate of Agriculture, Goa (for distribution of HYV grafts).
- Intercropping management – Forage / Spices / Fruits / Floriculture: Directorate of Agriculture, Goa (for popularization and supply of necessary inputs) and KVK (North Goa) and KVK (South Goa) (for dissemination and demonstration of technologies).

Probable funding opportunities and collaboration partners for implementation

- National Horticulture Mission
- National Horticulture Board
- Rashtriya Krishi Vikas Yojana
- Coconut Development Board
- Establishment of commercial scale quality planting material nurseries through support from National Horticulture Mission

4.2. Crop diversification, intensification and integrated farming system approaches and advanced management practices

4.2.1 Utilization of rice fallow lands through cultivation of pulses like cowpea, green gram, ground nut, etc.

- Area expansion under cultivation of pulsed and oilseed under the paddy fallow lands: Directorate of Agriculture, Goa (for distribution of HYV pulses).

4.2.2 Vegetables

- Introduction of varieties along with production and protection technologies: Directorate of Agriculture, Goa (for distribution of HYV seeds).

4.2.3 High value horticultural crops and spices

- Introduction of varieties along with production and protection technologies: Directorate of Agriculture, Goa (for distribution of seeds, planting materials).

4.2.4 Creating models of integrated farming system (IFS) in farmer field with different components

- Establishment of the model integrated farming system units in different region of the State of Goa and its popularization: Directorate of Agriculture, Goa (for popularization of IFS, supply of critical components and schemes)

Probable funding opportunities and collaboration partners for implementation

- National Seeds Corporation
- National Horticulture Mission
- Goa Horticultural Corporation
- Contract farming in rice fallow lands
- Commercial vegetable nurseries
- Establishment and demonstration few model integrated farming system units by ICAR-CCARI



4.3. Production improvement in animal sector

4.3.1 Green fodder production

- Area expansion of green fodder cultivation through extension activities and schemes: Directorate AHVS.

4.3.2 Advance technology like hydroponic fodder for landless farmers

- Demonstration and establishing low-cost or suitable models in the field: Directorate AHVS (for formulation of schemes).

4.3.3 Improving production and productivity of dairy sector

- Introduction of exotic germplasm through artificial insemination not exceeding 50% genetic makeup: Directorate of AHVS (for AI programmes).
- Introduction of indigenous breeds: Gir, Sahiwal and Red Sindhi: Directorate of AHVS (for supply of indigenous breeds and maintenance of germplasm).
- Community dairy farming: Directorate of AHVS (for proposal of schemes and incentives).
- Organization of the cattle markets: Directorate of AHVS (organisation of cattle markets)

Probable funding opportunities and collaboration partners for implementation

- Community Dairy Farming through – National Dairy Development Board (NDDB)
- Rashtriya Krishi Vikas Yojana (RKVY)



4.3.4 Improving production and productivity of piggery sector

- Introduction and conservation of indigenous and cross breed pigs: Directorate of AHVS (for conservation and multiplication and supply, formulation of schemes).

4.3.5 Improving production and productivity of goateries sector

- Introduction of coastal goat breeds (Konkan Kanyal) under stall feeding- Directorate of AHVS (for supply and multiplication of goat breeds, formulation of schemes).



4.3.6 Improving production and productivity of poultry sector

- Improvement in backyard poultry and coloured broilers for meat and egg production: Directorate of AHVS (for multiplication and supply of chicks, formulation of schemes)

Probable funding opportunities and collaboration partners for implementation

- Establishment of nucleus breeding units for livestock – Goat, pig, etc. through RKVY, National Dairy Development Board, National Livestock Mission
- Establishment of feed manufacturing units RKVY, National Livestock Mission (NLM)

4.4. Mechanization in agriculture and allied activities

- Mechanisation of land preparation, planting and harvesting: Directorate of Agriculture (for subsidies and creation of machinery bank).
- Mechanization in coconut harvesting: Directorate of Agriculture (for subsidies and creation of machinery bank).
- Developing or outsourcing the services through formation of the squads for nutrient management, pest management (e.g. red palm weevil and rhizoceros beetle in coconut, cashew stem and root borer in cashew), coconut harvesting, artificial insemination, vaccination, etc: Directorate of Agriculture, Animal Husbandry and Veterinary Services and Fisheries (for developing a mechanism for outsourcing services through formation of squads or service providers).

Probable funding opportunities and collaboration partners for implementation

- Mechanization suitable for small and marginal land holding, custom hiring centers for farm mechanization and plant protection - Sub-Mission on Agricultural Mechanization (SMAM)



5

Creating value chain-supply network by post-harvest management and value addition

5.1 Paddy

- Establishment of community agro- processing centres, Establishment and promotion of storage structures - Directorate of Agriculture (for subsidies and creation of machinery bank).

5.2 Coconut

- Establishment of processing units for virgin coconut oil and other products- Directorate of Agriculture (for subsidies) and Coconut Board.

5.3 Cashew

- Cashew apple value addition including feni - Directorate of Agriculture (for subsidies and creation of machinery bank).

5.4 Other fruits/crops

- Establishment of community multi product processing plants for value addition of Kokum, Jackfruit, Breadfruit, Jagoma, Wax Apple, Jamun Karonda, star fruits, etc.- MOFPI and Directorate of Agriculture (for incentives and funding).

5.5 Dairy and meat products

- Establishment of units for value addition in dairy milk products and pork and mutton products - MOFPI and Directorate of Agriculture (for incentives and funding).

Probable funding opportunities and collaboration partners for implementation

- Establishment of rice processing unit – Rashtriya Krishi Vikas Yojana
- Value chain development programme –One District One Product – MOFPI, RKVY, NHB, APEDA.

6

Fisheries sector

- Better availability of the fish seeds, promotion of mussel farming, capacity building and awareness creation, etc.
- Improved storage facilities – cold storage , cold ice plants, insulated vehicles, etc can also play an important role for marketing of the fish catch.
- Development of integrated farming systems with fishery as an important component and enterprise to ensure regular income and improved production.
- Post-harvest handling, value addition, allied activities like ornamental fish farming also have potential to contribute to improvement in income.
- Agency responsible: Directorate of Fisheries (for availability of seeds, creation of storage facilities, establishing model IFS units)

Probable funding opportunities and collaboration partners for implementation

- Pradhan Mantri Matsya Sampada Yojana
- Fisheries Infrastructure Development Fund
- Rashtriya Krishi Vikas Yojana
- National Fisheries Development Board

7

Technical support

A technical support in preparation of the roadmap and its implementation will be extended by ICAR-CCARI, Old Goa, Goa.

8

Monitoring of the progress of preparation and implementation of the roadmap

As per the directives of the Hon'ble Chief Minister of State of Goa, Dr. Pramod Sawant, Secretary (Agriculture), Government of Goa, will undertake review meeting for monitoring the progress of the preparation of the roadmap and its implementation. The meetings will be organized in the first week of the first three months, once in two months for rest of the year and every quarterly in subsequent years. The meetings will be conducted at ICAR-CCARI, Old Goa, Goa.

- Notes -



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