

OPERATIONAL GUIDELINES

AGROFORESTRY

UNDER RASHTRIYA KRISHI VIKAS YOJANA (RKVY)

1. Name of the Component:

Agroforestry under Rashtriya Krishi Vikas Yojana (RKVY). General provisions of RKVY Guidelines shall be applicable for the component.

2. Background:

- 2.1 Agroforestry is known to have the potential to mitigate the climate change effects through microclimate moderation, conservation of natural resources and creation of an additional source of livelihood and income opportunities. In order to make agriculture less vulnerable to climatic aberrations, the Government of India formulated the National Agroforestry Policy in 2014. The policy recommends setting up a Mission or Board with an initial corpus of Rs 4000-5000 crore annually to address the development of agroforestry sector in an organized manner. As a follow-up to the policy, the Sub-Mission on agroforestry (SMAF) under National Mission for Sustainable Agriculture (NMSA) was launched in 2016-17 to encourage and expand tree plantation on farmland, with the motto of “*Har Med Par Ped*”, along with crops/cropping system.
- 2.2 There have been many initiatives to upscale agroforestry in farmlands, degraded, barren and wastelands. The adoption of agroforestry by farming community is on an upward trend after the coming of the National Agroforestry Policy in 2014. There is ample evidence to show that agroforestry enhances productivity, soil fertility improvement, soil conservation, nutrient cycling, microclimate improvement etc. Over 70% of nurseries in the country are privately owned. Approximately only 10% of seedlings supplied for agroforestry are of Quality Planting Material. Quality Planting Material (QPM) like seeds, seedlings, clones, hybrids, improved varieties, etc. of healthy, resilient and adaptable nursery stock must be made available to farmers. QPM can be considered as part of a value chain that begins with the source of tree seed and ends at the market for the tree product or environmental service, or even at the consumer level. The quality of the initial input, which is the tree seed source determines the productivity and quality of the product or service at the end of the chain.
- 2.3 Agroforestry has varieties of produce from timber to non-timber products. Strengthening farmer access to markets for tree products is important hence, providing support price and buy-back guarantee for farm-grown trees and other agroforestry products can be an important step to promote agroforestry for the farmers. Marketing infrastructure similar to what is available for agricultural commodities including market information can be taken up in agroforestry with more private sector participation.
- 2.4 Agroforestry has the potential to contribute to the government's strategy to promote millets. Traditionally millets are grown along with trees in tropical as well as sub-tropical regions of the country. In agroforestry systems, millets perform exceptionally

well due to their hardiness and capacity to withstand prolonged periods of drought, and high temperatures and also having higher efficiency in absorbing and utilizing carbon dioxide.

- 2.5 Agroforestry can support the action plan for Mission LiFE (Lifestyle for Environment) which makes environmental protection and conservation as a participative process. Reduction of diversity in agricultural landscapes across India severely reduces the resilience to climate and pest shocks, while also missing out on potential economic and ecological opportunities. Increase in the green cover through agroforestry will mitigate pollution, and climate change impacts and contribute to biodiversity conservation in the agricultural ecosystem.
- 2.6 Agroforestry has importance as a carbon sequestration strategy because of the carbon storage potential in its multiple plant species considering its applicability in agricultural lands and reforestation. Evidence is now emerging that agroforestry systems are promising land use systems to increase and conserve aboveground and soil carbon stock. The carbon sequestration potential of an agroforestry system is generally greater than that of an annual cropped-based system. Agroforestry thus contributes to the resilience of agriculture by adaptation and mitigation of climate change effects and provides scope for emerging carbon market.
- 2.7 Agroforestry supports agro-ecology and reduces vulnerability to climate and environmental change. Activities under the NMSA strategy and technologies associated with Climate Resilient Agriculture may be promoted through the scheme.
- 2.8 Institutional support from the Indian Council of Forest Research & Education (ICFRE), ICAR -Central Agroforestry Research Institute (CAFRI), Council of Scientific and Industrial Research (CSIR), ICRAF, etc. which have the technical knowledge and experience on agroforestry will form an integral part of the intervention.

3. Objectives:

- i. To encourage and expand tree plantation in a complementary and integrated manner with crops to improve productivity, additional income generation and improved livelihoods of rural households, especially the small farmers.
- ii. To ensure the availability of Quality Planting Materials (QPM) like seeds, seedlings, clones, hybrids, improved varieties, etc. Quality Planting Material (QPM) of healthy, resilient and adaptable nursery stock raised through seed or vegetative propagation with an overall goal to improve the quality of the plants available to farmers and growers.
- iii. To popularize various agroforestry practices/models suitable to different agro-ecological regions and land use conditions through demonstration plots.
- iv. To create a database, information and knowledge support in the area of agroforestry.
- v. To provide Research & Development (R&D), extension and capacity-building support to the agroforestry sector.
- vi. To identify and catalyze linkages with traditional and emerging markets for the timber and non-timber products generated from agroforestry plantation on farmland including Bio-fuels, matchwood, plywood, silk, fiber, lac, beauty and wellness sector, handicrafts, construction, etc.
- vii. To promote value addition and processing of agroforestry produce by creating

- collection and post-harvest facilities for additional income generation by farmers.
- viii. To provide use of modern technology for monitoring and evaluation (M&E) on the impact of agroforestry in agro-ecology.

4. Strategy: Quality Planting Material (QPM) and Certification:

4.1 The scheme shall promote the setting up of new small, medium and hi-tech nurseries for producing Quality Planting Materials (QPM) like seeds, seedlings, clones, and improved varieties to meet the requirement of farmers. Various agroforestry practices/models suitable to different agroecological regions and land use conditions shall be promoted that will support adaptation and mitigation efforts in accordance with NMSA guidelines.

4.2 ICAR-CAFRI as Nodal Agency for QPM:

- I. ICAR-Central Agroforestry Research Institute (CAFRI) shall be the nodal agency for providing technical support, capacity building, setting up of nurseries, production, and certification of QPM etc. CAFRI shall extend support through its All India Coordinated Research Project (AICRP) centres on agroforestry situated at various locations around the country. ICAR-CAFRI shall coordinate activities with other agencies/ institutes like ICFRE, CIFOR-ICRAF, FAO-India, SAUs, CAUs, Private Partners, etc. while facilitating the implementation of the scheme.
 - II. All nurseries set up under the scheme shall comply with the registration and accreditation requirements as laid down by CAFRI. The state shall also make efforts for accreditation of other existing Forest Department/Private/Cooperative nurseries in the State that produce planting material relevant to Agroforestry.
 - III. Certification of QPM from accredited nurseries shall be done as per guidelines laid down by CAFRI in association with empanelled agencies/experts.
 - IV. CAFRI shall provide the standards and modalities for Registration, Certification and Accreditation of Nurseries as well as Certification of QPM from such Registered/Accredited nurseries.
 - V. Capacity building in agroforestry shall be through ICAR-CAFRI and it may be notified as the Central HRD Institution that shall train Master Trainers for different states.
- 4.3 **The State Nodal Department/Agency:** For the implementation of the scheme State Nodal Department/Agency shall be identified for each State/UTs. The Nodal Department/Agency shall ensure the availability of QPM by producing on its own or through the collaborative arrangement with individuals/institutions such as SAUs, KVKs, FPOs, NGOs, Entrepreneurs/Startups, Forest/Agriculture institutes, farmers/cooperative societies. Independent empanelled experts etc.
- 4.4 Capacity building/training for officials/workers, scientists and farmers, extension activities including demonstration of Nursery Techniques for the raising of QPM, seminars/workshops/conferences/fairs & exhibitions and exposure visits of

stakeholders shall be emphasized upon.

- 4.5 Physical verification of the Nurseries raised under the scheme and seedlings raised shall be done by the State Nodal Department/Agency based on the technical guidelines from CAFRI. Verification certificate shall be obtained by each beneficiary.
- 4.6 PMUs constituted at the State levels will have the responsibility to ensure collaboration among various line departments in the Centre / State /District to achieve the targets. A national level PMU shall be operational at DAC&FW for overall implementation and monitoring of the scheme.
- 4.7 Technical Support Groups (TSG) with experts from ICAR-Central Agroforestry Research Institute (CAFRI), Indian Council of Forest Research & Education (ICFRE), ICRAF and other organizations / individuals shall be constituted at National level. ICAR-CAFRI will act as Nodal Agency for repository of agroforestry related works with a preamble note to states for providing all related information to CAFRI. CAFRI may undertake project-based activities including transfer of agroforestry technology in various agroclimatic zones, business incubation and training to stakeholders.

5. Seed source:

Supply of Quality Planting Material (QPM) which essentially is healthy, resilient and adaptable nursery stock raised through seed or vegetative propagation is the key for promoting agroforestry. The scheme envisages a sustainable supply of Quality Planting Material (QPM) of healthy, resilient nursery stock raised in hi-tech centralized nurseries as well as small-scale decentralized model nurseries. QPM may be of multipurpose tree species, species having timber value, medicinal plants etc. Also, various agroforestry practices/models suitable to different agroecological regions and land use conditions shall be promoted. The Nodal Department/Agency shall coordinate with the Forest Department/CAFRI/ICFRE/SAUs for germplasm/seed source for QPM. The State Forest Department is the main custodian of seeds/germplasm of agroforestry species. Also, through their research programs State Forest Departments are implementing various tree improvement programs. Therefore, the State Forest Department shall play a key role in the supply of seeds/germplasm for raising seedlings in the nurseries under the scheme. The need to establish a national-level coordinating centre for streamlining the supply, while ensuring the quality of the seeds shall be explored.

6. Distribution of Quality Planting Material (QPM):

QMP raised under the scheme shall be made available for farmers/SHGs free of cost or as decided by the respective States/UTs. The plantation and maintenance in subsequent years shall be done by beneficiaries. However, nodal departments/ agencies shall make efforts to meet out the plantation and maintenance cost through convergence with MNREGA/other schemes of Department of Rural Development/ Forests/ Agriculture/ Horticulture.

7. Geo-Tagging of land-based interventions:

- a. Digital information and support system to farmers shall be promoted (ICAR-Central Agroforestry Research Institute (CAFRI) has developed a *bilingual* mobile app

'Farm Tree' for effective outreach to its stakeholders and farmers. With the help of this farm tree app, farmers can know about the suitable tree species, spacing, cultivation practices, etc. Similarly, International Centre for Research in Agroforestry (ICRAF) with the Department of Agriculture, Odisha has developed App - Agroforestry App Odisha (India) for farmers' support on agroforestry. Both the ICAR-CAFRI and ICRAF will also work towards establishing a database for knowledge support in agroforestry.

- b. All land-based interventions shall be Geo-tagged through Apps based monitoring system. A robust Monitoring and Evaluation mechanism to keep a tab on supply of QPM up to the survival of planted trees shall be ensured.
- c. National Web portal shall be developed where such information on registered nurseries, plantations, availability of seedlings, price, seed source, genetic makeup etc. shall be made available.
- d. M&E platforms using modern geo-spatial technology/satellite imagery in collaboration with MNCFC/ICAR-CAFRI shall be taken up.

8. Support of Agroforestry through MNREGA

- 8.1 Agroforestry envisages close convergence with MNREGA (Department of Rural Development). Under MNREGA mandatory expenditure of at least 60% on the works to be taken up is for agriculture and allied activities (out of total 265 types of permissible works, 166 works are related to agriculture & allied activities). The scheme provides for various plantation models such as block plantation, canal side plantation, sericulture, horticulture plantation, boundary plantation, farm forestry, wasteland plantation, shelter belt trees plantation, coastline plantation, development of silvipasture grassland etc. Further, raising of nursery is a permissible activity under the scheme. Plantation works are permissible in the community as well as in individual beneficiary land. There are many line Departments such as the Forest Department, Agriculture Department, Horticulture Department, Soil Conservation Department, Tribal Development, Watershed Department etc. that are working as implementing agency under MNREGS in the States. Every asset/land-based intervention is geo-tagged in three stages, stage 1- before, Stage 2- during and Stage 3 -after completion of work under MNREGA.
- 8.2 During the implementation of agroforestry scheme, an incentivized system will promote the local communities/SHGs/farmers to adopt agroforestry/restore wasteland/degraded land by plantation (agro-ecological sustainable models). Agroforestry scheme made provision of QPM distribution to farmers. Since MNREGA provides sufficient opportunities for agroforestry related works, States/UTs must ensure convergence of the scheme with MNREGA to meet the cost of plantation including maintenance.
- 8.3 Works such as nurseries, plantations, survival of seedling in the field etc. shall be closely monitored. As MNREGA has robust monitoring system, monitoring of works such as plantation and maintenance at the micro level shall be carried out by State PMUs with support of Panchayat institutions through existing mechanism of MNREGA.

9. Scheme Interventions:

- i. **Establishment of nurseries for Quality Planting Material(QPM):** Expanding the scope of business opportunities as startups in agroforestry, the small nurseries, big nurseries, Hi-Tech nurseries and Tissue Culture facilities shall be supported under the scheme as given at **Annexure-I**. Such nurseries and QPM labs shall adopt standards/ protocols developed by ICAR-CAFRI/ICRAF. Also, nurseries shall be registered and accredited as per the protocol developed by ICAR-CAFRI with suitable third-party certification procedure.
- ii. **Skill development and awareness campaign:** Activities like training of farmers/field workers to ensure raising quality planting material, skill development to youth for business opportunities in agroforestry, awareness campaign, publications, information sharing, exposure visits, seminars/workshops at national/international levels etc. would be supported under the scheme. States can utilize up to 5% of the allocated funds for capacity building and training activities. The training activities, materials and report should be made publicly available for the benefit of all stakeholders.
- iii. **Research and Development:** Specific projects for demonstration for extension purposes on specific innovative agroforestry models by ICAR-CAFRI/SAUs/CAUs/CSIR/ICFRE institutes/ State Government/ other National & International level organizations/Private Partners shall be supported. Also project based studies on carbon sequestration, soil health improvement, etc will be supported under the scheme.
- iv. **Monitoring &Evaluation and Other specialized technical works:** For M&E, use of geo-spatial technology/satellite imageries, AI & ML etc. shall be taken up with ICAR-CAFRI/ICFRE/MNCFC institutes.
- v. **Local Initiative:** States can utilize up to 2% of the allocated funds for promoting innovations as per local needs (transportation of seedlings/local level monitoring mechanism through SHGs (NRLM) etc.)

Eligible components and pattern of assistance for interventions is given in the Table below.

S. No.	Name of interventions	Unit cost (upper limit)	Remarks
1.	Establishment of new nurseries		
	a. Hi-tech (2 ha)	Rs. 50.00	100% assistance to Government agencies for taking up the work on Government land and 50% assistance to Private Agency / individual entrepreneur.
	b. Big (1 ha)	Rs. 16.00	
	c. Small (0.5 ha)	Rs 10.00	
2.	Raising of saplings in the existing nursery	Up to Rs. 5.00 lakh / nursery	

3.	Establishment of tissue culture units		
	a. Strengthening of existing tissue culture units	Up to Rs. 20.00 lakh	100% assistance to Government agencies and 50% back ended credit linked assistance for private partners.
	b. Establishment of new tissue culture units	Up to Rs. 200.00 lakh	100% assistance to Government agencies and 50% back ended credit linked assistance for private partners.
4.	Skill Development and awareness campaign Training to Farmers, Officers / Extension Workers, Organizing Workshop/ Seminars / Conference, etc.		Up to 5% of allocation is admissible for skill development and awareness campaign (as per the norms of ATMA / respective organizations who shall conduct the training)
5.	Research & Development	Project Based	Demonstration units/ plots to exhibit best practice at farmers' fields, KVKs, etc.
6.	Monitoring & Evaluation and Other specialized technical works	Project Based	100% assistance to Government agencies/organizations.
7.	Local Initiative	Up to 2 % of Approved Annual Plan	Promotion of innovations (transportation of seedlings/local level monitoring mechanism through SHGs (NRLM) etc.)

Note:

- (i) Cost of plantation and maintenance is to be met through convergence with MNREGA/other schemes of Department of Rural Development/ Forests/ Agriculture.
- (ii) Format for Annual Action Plan for Agroforestry component is given at **Annexure - I**

10. Convergence architecture with other Central Government schemes

- 10.1 An incentivized system will promote the local communities/SHGs/farmers to adopt agroforestry/restore wasteland/degraded land by plantation. Under the agroforestry scheme, cost of plantation including maintenance of QPM distributed shall be met through convergence with MNREGA/other schemes of Department of Rural Development.
- 10.2 Need based interventions and activities of tree plantation, Industry development & market linking to agriculture and allied sectors will be automatically converged/dovetail for integrated and holistic development of project area under Central & State Government programmes. Convergence with other schemes of DA & FW viz. RAD, Integrated Farming System, Per Drop More Crop (micro irrigation enhances growth and yields), Agri-infrastructure Fund, formation of 10,000 FPOs and other organizations is envisaged for enhanced returns. Convergence with programmes like National Clean Ganga Mission, National Medicinal Plant Board, M/o AYUSH, Central Silk Board, Indian Institute of Petroleum, etc. may also be explored.

11. Monitoring & Evaluation:

- 11.1 Monitoring & Evaluation shall form an integral part of the scheme. Sustainable supply of QPM, survival of seedling in the field, enhanced agroforestry produce, increase in agroforestry area of the country etc. shall be closely monitored. Monitoring of plantation and maintenance works shall be carried out through existing mechanism of MNREGA/schemes of Ministry of Rural Development. Also, SHGs (under NRLM)/village level institutions shall be closely involved in monitoring the implementation of the scheme.
- 11.2 Project based studies and assessment for Soil carbon sequestration, soil organic matter, improvement in livelihood, productivity enhancement of crop and cropping systems etc. shall also be undertaken. MIS and periodical assessment using GIS technologies would be adopted for ensuring effective monitoring of the programme. M&E initiatives using geo-spatial technology shall be taken up with Mahalanobis National Crop Forecast Centre (MNCFC)/ICAR under the program.

12. Expected Outcome:

- i. Sustainable availability of Quality Planting Material for agroforestry.
- ii. Increase in tree cover on farmlands, community land, government land, leading to increased production of timber and non-timber produce out of agroforestry to meet the increasing demand of raw materials for wood-based industries.
- iii. Reduction in pressure and dependence on forests and forest produce. Reduction in import of timber and other tree products.
- iv. Additional Income to farmers even under adverse climatic conditions & livelihood improvement.
- v. Enhanced carbon sequestration in farmlands as well as ecosystem services.

Annual Action Plan of implementing Agencies for Agroforestry components.**State:.....Implementing Department/Agency:.....****Details of interventions/activity wise projection (Rs in lakh)**

S. No.	Component/ Activities/ Sub-component	Number/ Units/	Admissible Cost Norms (In Rs Lakh)	Total Cost	Admissible cost under the scheme	Beneficia ries Share (In Rs Lakh)	Admissible Amount (Rs in Lakh)		
							Admissible Amount under The Scheme	Centra lShare	State Share
1	2	3	4	5	6	7	8	9	10
A. Establishment of new nurseries									
100% Funding(Central Share +State Share) for Govt. Agencies.									
i.	Small Nurseries		10.0						
ii.	Big Nurseries		16.0						
iii.	Hi –Tech Nurseries		50.0						
iv.	Raising of saplings in the existing nursery		5.0						
v.	Strengthening of existing tissue culture units		20.0						
vi.	Establishment of new tissue culture units		200.0						
Sub-Total									
50%Funding(Central Share + State Share)+ 50% Non Govt. Beneficiary Share									
i.	Small Nurseries		10.0						
ii.	Big Nurseries		16.0						
iii.	Hi-tech nurseries		50.0						
iv.	Raising of saplings in the existing nursery		5.0						
v.	Strengthening of existing tissue culture units		20.0						
vi.	Establishment of new tissue culture units		200.0						
Sub-Total									
B. Skill development and awareness campaign(Central + State Share)									
i.	Skill development and awareness campaign		5% of AAP						
C.	Research & Development		Project based						
D.	Monitoring &Evaluation and Other		Project based						

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	specialized technical works								
E.	Local Initiatives		Up to 2% of AAP						
	TOTAL								