



NATIONAL MISSION FOR SUSTAINABLE AGRICULTURE

OPERATIONAL GUIDELINES



**Department of Agriculture & Cooperation
Ministry of Agriculture
Government of India
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National Mission for Sustainable Agriculture (NMSA)

Operational Guidelines

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Chapter - 1

NATIONAL MISSION FOR SUSTAINABLE AGRICULTURE (NMSA)

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National Mission for Sustainable Agriculture (NMSA)

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1. Introduction

- 1.1 Sustaining agricultural productivity depends on quality and availability of natural resources like soil and water. Agricultural growth can be sustained by promoting conservation and sustainable use of these scarce natural resources through appropriate location specific measures. Indian agriculture remains predominantly rainfed covering about 60% of the country's net sown area and accounts for 40% of the total food production. Thus, conservation of natural resources in conjunction with development of rainfed agriculture holds the key to meet burgeoning demands for foodgrain in the country. Towards this end, National Mission for Sustainable Agriculture (NMSA) has been formulated for enhancing agricultural productivity especially in rainfed areas focusing on integrated farming, water use efficiency, soil health management and synergizing resource conservation.
- 1.2 NMSA derives its mandate from Sustainable Agriculture Mission which is one of the eight Missions outlined under National Action Plan on Climate Change (NAPCC). The strategies and programme of actions (POA) outlined in the Mission Document, that was accorded 'in principle' approval by Prime Minister's Council on Climate Change (PMCCC) on 23.09.2010, aim at promoting sustainable agriculture through a series of adaptation measures focusing on ten key dimensions encompassing Indian agriculture namely; 'Improved crop seeds, livestock and fish cultures', 'Water Use Efficiency', 'Pest Management', 'Improved Farm Practices', 'Nutrient Management', 'Agricultural insurance', 'Credit support', 'Markets', 'Access to Information' and 'Livelihood diversification'. During XII Five Year Plan, these measures are being embedded and mainstreamed onto ongoing/proposed Missions/Programmes/Schemes of Dept. of Agriculture & Cooperation (DAC) through a process of restructuring and convergence. NMSA architecture has been designed by converging, consolidating and subsuming all ongoing as well as newly proposed activities/programmes related to sustainable agriculture with a special emphasis on *soil & water conservation*, *water use efficiency*, *soil health management* and *rainfed area development*. The focus of NMSA will be to infuse the judicious utilization of resources of commons through community based approach.
- 1.3 NMSA will cater to key dimensions of 'Water use efficiency', 'Nutrient Management' and 'Livelihood diversification' through adoption of sustainable development pathway by progressively shifting to environmental friendly technologies, adoption of energy efficient equipments, conservation of natural resources, integrated farming, etc. Besides, NMSA aims at promoting location specific improved agronomic practices through soil health management, enhanced water use

efficiency, judicious use of chemicals, crop diversification, progressive adoption of crop-livestock farming systems and integrated approaches like crop-sericulture, agro-forestry, fish farming, etc.

2. Mission Objectives

NMSA will have following objectives:

- 2.1 To make agriculture more productive, sustainable, remunerative and climate resilient by promoting location specific Integrated/Composite Farming Systems;
- 2.2 To conserve natural resources through appropriate soil and moisture conservation measures;
- 2.3 To adopt comprehensive soil health management practices based on soil fertility maps, soil test based application of macro & micro nutrients, judicious use of fertilizers etc.;
- 2.4 To optimize utilization of water resources through efficient water management to expand coverage for achieving '*more crop per drop*';
- 2.5 To develop capacity of farmers & stakeholders, in conjunction with other ongoing Missions e.g. National Mission on Agriculture Extension & Technology, National Food Security Mission, National Initiative for Climate Resilient Agriculture (NICRA) etc., in the domain of climate change adaptation and mitigation measures;
- 2.6 To pilot models in select blocks for improving productivity of rainfed farming by mainstreaming rainfed technologies refined through NICRA and by leveraging resources from other schemes/Missions like Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Integrated Watershed Management Programme (IWMP), RKVY etc.; and
- 2.7 To establish an effective inter and intra Departmental/Ministerial co-ordination for accomplishing key deliverables of National Mission for Sustainable Agriculture under the aegis of NAPCC.

3. Mission Strategy

To achieve these objectives, NMSA will have following multi-pronged strategy:

- 3.1 Promoting integrated farming system covering crops, livestock & fishery, plantation and pasture based composite farming for enhancing livelihood opportunities, ensuring food security and minimizing risks from crop failure through supplementary/ residual production systems;
- 3.2 Popularizing resource conservation technologies (both on-farm and off-farm) and introducing practices that will support mitigation efforts in times of extreme climatic events or disasters like prolonged dry spells, floods etc.

- 3.3 Promoting effective management of available water resources and enhancing water use efficiency through application of technologies coupled with demand and supply side management solutions;
- 3.4 Encouraging improved agronomic practices for higher farm productivity, improved soil treatment, increased water holding capacity, judicious use of chemicals/energy and enhanced soil carbon storage;
- 3.5 Creating database on soil resources through land use survey, soil profile study and soil analysis on GIS platform to facilitate adoption of location and soil-specific crop management practices & optimize fertilizer use;
- 3.6 Promoting location and crop specific integrated nutrient management practices for improving soil health, enhancing crop productivity and maintaining quality of land and water resources;
- 3.7 Involving knowledge institutions and professionals in developing climate change adaptation and mitigation strategies for specific agro climatic situations and promoting them through appropriate farming systems
- 3.8 Programmatic interventions as per land capability and conducive to climatic parameters in select blocks as pilots for ensuring integrated development through dissemination and adoption of rainfed technologies with greater reach in disadvantaged areas & location specific planning by way of coordination, convergence and leveraging investments from other Schemes/Missions like MGNREGS, IWMP, RKVY, National Food Security Mission (NFSM), Mission for Integrated Development of Horticulture (MIDH), National Mission for Agricultural Extension & Technology (NMAE&T) etc. A consortium approach may be evolved with various stake holders including knowledge partners like State Agricultural Universities (SAUs), Krishi Vigyan Kendras (KVKs), Indian Council of Agricultural Research (ICAR) Centres, professional organisations etc. by the State Government to provide single window service/knowledge provider system for the benefit of farming community.
- 3.9 State Government may engage reputed NGOs for implementation of cluster/village development plan in case of limited govt. infrastructure is available in that area through a transparent system of selection and defined process of supervision and monitoring through a line department.
- 3.10 Strong technical monitoring and feedback systems on climate change mitigation and adaptation issues to the National Advisory council for regular updates on technical feasibility of various components and their effectiveness in bringing about the climate resilience. The experts of central institutes and state agricultural universities would be part of such technical monitoring/feedback. The capacity building of the implementing agencies would be steered by MANAGE.

- 3.11 Establishing platform to liaison, review and coordinate implementation of interventions outlined in Mission Document of NMSA under aegis of National Action Plan on Climate Change.

4. Mission Interventions

NMSA has following four (4) major programme components or activities:

- 4.1 Rainfed Area Development (RAD):** RAD will adopt an area based approach for development and conservation of natural resources along with farming systems. This component has been formulated in a ‘watershed plus framework’, i.e., to explore potential utilization of natural resources base/assets available/created through watershed development and soil conservation activities/interventions under MGNREGS, NWDPRA, RVP&FPR, RKVY, IWMP etc.. This component will introduce appropriate farming systems by integrating multiple components of agriculture such as crops, horticulture, livestock, fishery, forestry with agro based income generating activities and value addition. Besides, soil test/soil health card based nutrient management practices, farmland development, resource conservation and crop selection conducive to local agro climatic condition will also be promoted under this component. A cluster based approach of 100 hectare or more (contiguous or non contiguous in difficult terrain with close proximity in a village/adjoining villages) may be adopted to derive noticeable impact of convergence and encourage local participation and for future replication of the model in larger areas. Supplementary support from this component will be admissible for gap-filling resource conservation activities under converging programmes. RAD clusters should have soil analysis/soil health card/soil survey maps to justify the interventions proposed and at least 25% of the farming system area will have to be covered under On Farm Water Management. Farming Systems recommended by ICAR's Contingency Plans and successful findings of NICRA projects shall also be considered in development of integrated project plan. Besides, creation and development of common property resources/assets/utilities like grain bank, biomass shredders, fodder bank, group marketing etc. will be encouraged under this component.
- 4.2 On Farm Water Management (OFWM):** OFWM will focus primarily on enhancing water use efficiency by promoting efficient on-farm water management technologies and equipment. This will not only focus on application efficiency but, in conjunction with RAD component, also will emphasize on effective harvesting & management of rainwater. Assistance will be extended for adopting water conservation technologies, efficient delivery and distribution systems etc. Emphasis will also be given to manage and equitably distribute the resources of commons by involving the water users associations, etc.. To conserve water on farm itself, farm ponds may be dug using MGNREGA funds and earth moving machinery (to the extent manual digging under MGNREGA is not feasible)

4.3 Soil Health Management (SHM): SHM will aim at promoting location as well as crop specific sustainable soil health management including residue management, organic farming practices by way of creating and linking soil fertility maps with macro-micro nutrient management, appropriate land use based on land capability, judicious application of fertilizers and minimizing the soil erosion/degradation. Assistance will be provided for various improved package of practices based on land use and soil characteristics, generated through geographical information system (GIS) based thematic maps and database on land and soil characteristics through extensive field level scientific surveys. Besides, this component will also provide support to reclamation of problem soils (acid/alkaline/saline). This component will be implemented by State Govt., National Centre of Organic Farming (NCOF), Central Fertilizer Quality Control & Training Institute (CFQC&TI) and Soil and Land Use Survey of India (SLUSI). Given the limitations, such as staff and infrastructure, faced by the department of agriculture at the field level, a Public Private Partnership Model may be adopted by states depending upon the private partner's strength in the field to ensure that the soil testing is done in time and in the numbers required. The private parties can be encouraged to set up soil testing labs in selected areas in the district. Detailed separate guidelines for implementation of Soil Health Management component are given in Chapter-2.

4.4 Climate Change and Sustainable Agriculture: Monitoring, Modeling and Networking (CCSAMMN): CCSAMMN will provide creation and bidirectional (land/farmers to research/scientific establishments and vice versa) dissemination of climate change related information and knowledge by way of piloting climate change adaptation/mitigation research/model projects in the domain of climate smart sustainable management practices and integrated farming system suitable to local agro-climatic conditions. The dedicated expert teams of technical personnel will be institutionalised within NMSA to rigorously monitor and evaluate the mission activities thrice in a year and will inform the National Committee. Comprehensive pilot blocks will be supported to illustrate functional mechanism for dissemination of rainfed technologies, planning, convergence and coordination with flagship schemes/Missions like MGNREGS, IWMP, Accelerated Irrigation Benefit Programme (AIBP), RKVY, NFSM, MIDH, NMAET etc. Such an integrated action of input and output flows across agriculture, livestock and other production systems will harness the growth potential of the rainfed production systems, imparting sustainability of local production systems while negotiating climate change risks. A consortium approach will be evolved with various stake holders including knowledge partners like State Agricultural Universities (SAUs), Krishi Vigyan Kendras (KVKs), Indian Council of Agricultural Research (ICAR) Institutes etc. by the State Government to provide single window service/knowledge provider system for the benefit of farming community. Financial support may be provided through States to institutionalize the concept and meeting supplementary

developmental activities. Climate change related monitoring, feedback, knowledge networking and skill development will also be supported under this component through State Agricultural Universities, ICAR Institutes National/International Institutes, KVKS, Public/Private R&D Organizations etc. Awarding of Studies, Documentation & Publication, Domestic and Foreign Training, Workshops/Conferences etc. will be supported under this component.

Eligible components and pattern of assistance is at **Appendix-I**.

5. Mission Structure

NMSA will have following three tier structure for planning, implementation and monitoring of various components:

5.1 National Level Architecture:

5.1.1 National Advisory Committee (NAC): A National Advisory Committee(NAC) under Chairmanship of Secretary (A&C) with the following members will be constituted to provide strategic direction for guidance and planning for effective implementation of the mission.

Secretary, Department of Agriculture & Cooperation	Chairman
Additional Secretary & Financial Advisor, DAC	Member
Representative from Ministry of Water Resources:	Member
Representative from Ministry Rural Development:	Member
Representative from Ministry of Panchayati Raj	Member
Representative from Ministry of Environment & Forest	Member
Representative from Ministry of Food Processing Industries	Member
Representative from Ministry of Tribal Affairs	Member
Representative from Department of Agricultural Research & Education	Member
Representative from Department of Animal Husbandry Dairying & Fisheries,	Member
Representative from Department of Land Resources	Member
Technical Expert of National Rainfed Area Authority (NRAA)	Member
Joint Secretary (INM), DAC	Member
Joint Secretary (NHM), DAC	Member
Joint Secretary (Crops), DAC	Member
Joint Secretary (NRM & RFS) &Mission Director (NMSA)	Member Secretary

(Note: Representatives from Ministries/Departments to be not below the rank of Joint Secretary)

- 5.1.2 Project Sanctioning Committee (PSC):** A Project Sanctioning Committee (PSC) chaired by Mission Director, NMSA with representation from Indian Council of Agriculture Research (ICAR), Department of Land Resources (DoLR), Ministry Water Resources (MoWR), Ministry of Tribal Affairs (MoTA), Ministry of Environment & Forests (MoEF), Dept. of Animal Husbandry, Dairy & Fisheries (DAHD&F), INM & NHM Divisions of DAC, NCPAH and other restructured Missions will prioritize and approve projects under NMSA. PSC will be serviced by Natural Resource Management (NRM) and Rainfed Farming System (RFS) Divisions of DAC. The proposals for reclamation of problem soils may be made under RAD components. Proposals of SHM components being demand based, would be scrutinized and approved by INM Division of DAC.
- 5.1.3 Standing Technical Committee (STC):** The programme implementation will be strongly supported by technical backstopping through well-structured and institutionalised feedback from scientific institutions for regular corrections. The expert institutions in the field of climate change research and natural resources management such as CRIDA will be made the Main Knowledge Partner for this purpose and will coordinate the activities of Technical Committees. The scientific committee will have the ability and be provided adequate space within the NMSA to make their own assessment. Standing Technical Committee (STC) will be set up at the National level to provide time to time knowledge support and technical feed back to the Project Sanctioning Committee and National Advisory Committee of NMSA to decide the policy content or change in any component if required. The STC will be represented by CRIDA, CAZRI, ICAR Research Complex for NEH Region, IISS (Bhopal), ICAR Research Complex for Eastern Region (Patna), IARI (Delhi), selected SAUs and professionals of national/international eminence. Eight Technical Experts drawn from ICAR/SAUs/any other source with additional responsibility or, full time engagement as Advisors/Chief Consultants on contract basis may be placed as Technical Support Group at National level to assist STC. The duties/responsibilities, qualification and honorarium for engagement of Advisers/Chief Consultants will be made as per the specifications given at **Appendix-V and V(A)**. STC will suggest modalities for sustainable agriculture practices based on NICRA outcome and R&D experiences of ICAR and SAU systems to formulate Mission Implementation Plan. STC will meet at least once in three months and submit its report to the PSC on the implementation of NMSA alongwith technical suggestions. Similar setup at State level will also be established to function as arms of central STC and to provide technical advisory to State Mission. Adequate provision for scientific institutions will be made to enable the experts of the committee for visits, documentation and related expenditures.

5.1.4 Climate Change Cell (CCC): of DAC along with Soil & Land Use Survey of India (SLUSI) will serve as knowledge networking centre for facilitating collaborative and interactive processes among stakeholders.

5.1.5 Subordinate Offices/Institutions of DAC: Following subordinate organizations/attached offices of Department of Agriculture & Cooperation will also be associated in the implementation and monitoring of the Mission:

- (a) **Soil and Land Use Survey of India (SLUSI):** SLUSI conducts various types of soil and land resource surveys and develops soil-related database for the planning and implementation of land development programmes. SLUSI will house Technical Support Unit (TSU), monitor & coordinate implementation of mission in the states, undertake soil resource mapping, develop a GIS-based web server, support training and skill development in the areas of soil health management, water management, integrated farming etc.
- (b) **National Centre of Organic Farming (NCOF):** NCOF will be involved in promotion of organic farming through technical capacity building of stakeholders, technology development, transfer of technology, promotion & production of quality organic and biological inputs, awareness creation & publicity, quality control requirements of bio-fertilizers & organic fertilizers including revision of standards & testing protocols, organic input resource management and market development.
- (c) **Central Fertilizer Quality Control & Training Institute (CFQCTI):** CFQCTI will undertake inspection and analysis of indigenous and imported fertilizers, standardization of methods of analysis and providing technical guidance to the State Governments on integrated nutrient management.
- (d) **National Committee on Plasticulture Applications in Horticulture (NCPAH):** NCPAH will be associated in implementation, monitoring and technical supervision of micro irrigation technology.

Details of technical programme under the above subordinate offices/institutes at 5.1.4(a), (b) & (c) are given in **Chapter -2**.

5.2 State Level Architecture: At State level, State Level Committee (SLC) chaired by Agriculture Production Commissioner(APC)/Principal Secretary/Secretary (Agriculture/Horticulture) with representation from concerned line Departments like Revenue, Animal Husbandry, Fisheries, Forests etc., CEO of SLNA, SAUs and ICAR Centers will oversee planning and implementation of the Mission. Present NMMI Committee may be notified by the State Government as the NMSA State Level Committee with following changes. The committee may be strengthened with additional members from concerned line departments; to be chaired by APC and in case institution of APC does not exist, senior most Pr. Secretary/Secretary

either from Agriculture or Horticulture may be nominated by Chief Secretary of the State as the Chairman. Director (Agriculture) will be Member Secretary and Director (Horticulture) will be Co-Member Secretary of the Committee. Once the SLC for NMSA is notified, the State level Committee of NMMI will stand dissolved. Further, States will have freedom to nominate other nodal Department or Agency or create an autonomous State Mission for Sustainable Agriculture (SMSA) for this purpose. State may setup State Standing Technical Committee (SSTC) to function as arms of central STC and to provide technical advisory to State Mission. State Agricultural University will be the main knowledge partner of SSTC. Three to four Technical Experts drawn from local ICAR Centres/ SAUs/other professional agencies in this field with additional responsibility or, full time engagement as State Consultants on contract basis will be placed as Technical Support Group at State level to assist SSTC. The duties/responsibilities, qualification and honorarium for engagement of State Consultants will be made as per the specifications given at **Appendix-V and V(A)**. SSTC will suggest modalities for sustainable agriculture practices based on R&D experiences and local requirements to formulate Mission Implementation Plan. SSTC will meet at least once in three months and submit its report to the STC on the implementation of NMSA alongwith technical inputs.

5.3 District Level Architecture: District Mission Committee (DMC) will be entrusted with project formulation, implementation and monitoring of NMSA. DMC may be headed by Collector or CEO of Zilla Parishad /District Council with representatives from concerned line Departments including animal husbandry, horticulture, fishery, rural development, forest etc. and ATMA, KVK, Growers' Associations, Marketing Boards, Banks, Non-Government Organizations etc., Dy. Director (Agriculture) will be the Member Secretary of the District Mission Committee. A dedicated subject expert/consultant on sustainable agriculture will be engaged each for 2 to 3 adjoining districts depending on the number of clusters taken up to look after the projects, give technical advice and assist in monitoring. These consultants to be engaged on contract basis and their remuneration is admissible from Mission. They will also assist the State Level Standing Technical Committee in preparation of Mission Implementation Plan, Annual Action Plan and technical supervision to the Mission. Their performance need to be linked to the periodic achievements of the objectives of the mission in deciding their continuation and payment. The duties/responsibilities, qualification and honorarium for engagement of these Consultants will be made as per the specifications given at **Appendix-V and V(A)**.

6. Planning & Implementation

6.1 Component Specific Planning (CSP)

NMSA has four major programme components e.g. 'Rainfed Area Development', 'Soil Health Management', 'On Farm Water Management' and 'Climate Change

and Sustainable Agriculture Modeling and Networking'. An illustrative approach for component specific planning is outlined below:

6.1.1 Rainfed Area Development (RAD)

- (i) RAD aims at promoting integrated farming system(IFS) with emphasis on multi-cropping, rotational cropping, inter-cropping, mixed-cropping practices with allied activities like horticulture, livestock, fishery, agro-forestry, apiculture, conservation/promotion of NTFPs etc. to enable farmers not only in maximizing the farm returns for sustaining livelihood, but also to mitigate the impacts of drought, flood or other extreme weather events;
- (ii) Depending on the type and extent of natural resources/assets/commodities already developed or supported, location-specific crops, fruits, vegetables, spices, flowers, feed & fodder, livestock, fisheries, apiculture, mushroom, medicinal & aromatic plantation and related income generating activities would be supported. Activities like construction of ponds, land treatment, wells, supply of pumps, micro-irrigation/other water saving devices, seed and sapling support etc. would be converged/supplemented to promote value addition through a sustainable farming system;
- (iii) Adoption of a cluster approach in a village or an area of not less than 100 Ha (contiguous or non-contiguous in difficult terrain with close proximity, in a village/adjoining villages) may be preferred for injecting investments to utilize the potential of available/created common resources;
- (iv) Selected clusters will have soil analysis/soil health card as mandatory and at least 25% of the farming system area will have to be covered under On Farm Water Management.
- (v) Support will be given to those who wish to add other compatible farming component(s) to their existing crops/ system. It should have the potential to introduce/merge at least one or more major components/activities apart from cropping system and water harvesting of the farming systems to qualify for the support. **Support for only cropping system will not be allowed under this component unless it is diversified from the regular practice to a farming system suitable to that particular ecological conditions through effective on-farm water management and soil health care.** Farmers would have the option to choose one or combination of farming systems suitable to the specific eco-system supported through local KVK, SAU, ICAR Centre, ICRISAT, ATMA etc., for maximizing agricultural productivity from the existing natural resource assets;

- (vi) Support to each farm family under RAD component will be restricted to a farm size of 2 Ha and financial assistance will be limited to Rs. 1 lakh. However, construction/renovation of farm ponds, storage/processing unit and/or construction of poly house etc., are excluded from these limits. Credit support, if required, may be arranged to meet the balance;
- (vii) Farmland development through location specific interventions e.g. resource conservation, rainwater harvesting, land development in river valley project and flood prone river areas, last mile connectivity etc. Farmers' Companies, Farmers' Producer Companies/Organizations, Registered Farmers' Societies, Farmers' Cooperatives would also be eligible for developing a cluster. The support for the activities would be restricted to the eligible limits for members. The FPOs are also eligible to get support from NMSA, but as per the **Policy and Process Guidelines for Farmer Producer Organisations issued by Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India**. Due consideration should also be given to ensure that farmers rights and ownership issues are not violated;
- (viii) Converging the upgraded utilities developed through watershed development programmes/NREGA in terms of water harvesting and micro water storages through effective application and distribution systems like improved conveyance, field channels, pressurized irrigation, water lifting devices etc. to enhance the potential of farming systems.
- (ix) The farmers' producer companies may be set up to grow organic products. These farmers can come from a group of villages, preferably contiguous, forming a cluster and should be supported to achieve organic certification over a period of three years. These producer companies should be given financial support as per provisions for FPOs and subsidies for eligible components under NMSA for marketing of the organic product so that it fetches better prices and encourages others to take up organic farming. Marketing Federations existing at the state level should enter into agreement with the producer companies to market their organic product in the niche markets.
- (x) Resource Conservation Technologies (RCT) and rainwater harvesting have been kept under the basket of eligible activities of RAD to fulfill specific requirement of farmers/localities to supplement the works undertaken under National Watershed Development Programme for Rainfed Areas (NWDPRA) and Soil Conservation in the Catchments of River valley Projects & Flood Prone Rivers (RVP&FPR) which have not been developed to their full potential due to limitation of resources

and in some cases not completed due to discontinuation of funding. RCT activities will not be taken up in any developed/ongoing / proposed IWMP watershed project areas unless specifically recommended by the State Level Nodal Agency of IWMP.

- (xi) Reclamation of problem soils (Acidic/alkaline/saline) through appropriate soil amendments, land development including bio-drainage, on-farm water management including secondary storage as may be required in the cluster, may be proposed under RAD Component adopting the norms and specifications given under SHM /OFWM components.
- (xii) Convergence of relevant developmental programmes in project areas to be ensured for optimal utilization of resources by establishing an integrated and coordinated system involving different sectors and institutions. The upgraded utilities developed through watershed development programmes/MGNREGA in terms of water harvesting and micro water storages can be made use through effective application and distribution systems like improved conveyance, field channels, pressurized irrigation, water lifting devices etc. to enhance the potential of farming systems. Areas/Commodities developed/being developed under National Food Security Mission (NFSM), National Mission on Oilseed & Oil Palm (NMOOP), Mission for Integrated Development of Horticulture (MIDH), National Livestock Mission (NLM) can be supplemented with other production systems from NMSA to make it an Integrated Farming System facilitating additional livelihood opportunities to farmers. Similarly the interventions of National Mission for Agriculture Extension & Technology (NAMET) to appropriately made use for capacity building, awareness generation, information support, farm mechanization, availability of seeds/planting materials etc.
- (xiii) Suitable linkage for agro-processing and Marketing may be established for the cluster. Possibilities of building post harvest and market linkage under PPP model may be explored. Funds from schemes like NADP, National Mission for Food Processing may be dovetailed for this purpose.

6.1.2 Soil Health Management (SHM):

The operational guidelines on Soil Health Management component in **Chapter 2** provide detailed guidelines for planning and implementation.

6.1.3 On Farm Water Management (OFWM):

- (i) OFWM will focus on enhancing water use efficiency by promoting appropriate technological interventions like drip & sprinkler

technologies, efficient water application & distribution system, secondary storage and drainage development.

- (ii) The unit cost of Drip Irrigation system varies with respect to plant spacing and location of the water source. The normative cost has been laid down for various Micro Irrigation systems for the purpose of calculating financial assistance. Twenty five (25%) higher cost, over & above the normative cost for all the systems has been fixed for North Eastern & Himalayan states for the purpose of calculating financial assistance.
- (iii) Location and crop specific technologically appropriate irrigation systems will be propagated ensuring least cost burden to the farmers/beneficiaries;
- (iv) It may be ensured that atleast 25% of the micro irrigation fund allocated to the State is used for crop sector.
- (v) Support to each farm family under OFWM component will be restricted to a farm size of 5 Ha. However, beneficiaries who have already availed the benefit of central support for micro irrigation cannot avail further assistance for the same land for the next 10 years;
- (vi) Support for creating secondary storage at tail end of canal system to store water when available in abundance (rainy season) or from perennial sources like streams for use during dry periods through effective on-farm water management; Support for drainage development through surface/sub-surface/bio-drainage system;
- (vii) Training on appropriate water management technologies, judicious use of water and agronomic & land development measures for effective water management; and
- (viii) Implementing Agency at the District level should follow uniform procedures and assure transparency in selecting beneficiaries and releasing assistance expeditiously. PRIs need to be consulted in selection of beneficiaries.
- (ix) The water resources developed through watershed development programmes/NGNREGA in the demonstration area should invariably be linked with the activities of OFWM component for its potential use. Project areas under National Food Security Mission (NFSM), National Mission on Oilseed & Oil Palm (NMOOP), Mission for Integrated Development of Horticulture (MIDH), National Livestock Mission (NLM) may also take the advantage of this component for improving water use efficiency, if this component has not been utilized from the parent scheme.
- (x) Norms for registration of MI system manufacturers, quality control and after sale services are given in Appendix-IA.

Details of eligible components and pattern of assistance against are at **Appendix-I.**

6.1.4 Climate Change and Sustainable Agriculture: Monitoring, Modeling and Networking (CCSAMMN):

- (i) CCSAMMN will support climate change adaptation/mitigation research/pilot/model projects to develop suitable sustainable management practices and integrated farming system models suitable to specific agro-climatic conditions;
- (ii) Comprehensive pilot blocks will be supported to illustrate functional mechanism for dissemination of rainfed technologies, planning, convergence and coordination with flagship schemes/Missions like MGNREGS, IWMP, Accelerated Irrigation Benefit Programme (AIBP), RKVY, NFSM, MIDH, NMA&ET etc. Such an integrated action of input and output flows across agriculture, livestock and other production systems will harness the growth potential of the rainfed production systems, imparting sustainability of local production systems while negotiating climate change risks. A consortium approach may be put in place with various stake holders including knowledge partners like State Agricultural Universities (SAUs), Krishi Vigyan Kendras (KVKs), Indian Council of Agricultural Research (ICAR) Centres, Professional organizations including NGOs etc. by the State Government to provide single window service/ knowledge provider system for the benefit of farming community. The consortium will prepare a comprehensive and holistic development plan for the pilot block incorporating all eligible activities that can be supported through different schemes/programmes of Central & State Governments to mainstream sustainable and climate resilient agriculture practices. State Government will adopt a transparent process for constitution of the consortium and selection of Consortium leader organization.
- (iii) State will notify the pilot blocks in advance. Pilot block will be selected on the basis of following parameters:
 - (a) *Blocks having least irrigated area i.e., primarily rainfed agriculture is being practiced in the block*
 - (b) *Preponderance of SC & ST farmers in the block*
 - (c) *Lower crop productivity compared to State's average*
 - (d) *Any other parameters based on State specific issues to prioritize its adoption*
- (iv) State Government will issue government order to direct all the departments/agencies implementing developmental programmes like MGNREGS, IWMP, National Rural Livelihood Mission, RKVY, MIDH, NFSM, National Livestock Mission, BGRF etc. to channelize

the funds through the consortia for the activities under the consolidated and holistic development plan developed by the consortia as stated in Para ii above. This will not only avoid duplication of efforts but also help in deriving potential benefit of the interventions taken up under various programmes in a complementary manner. Funds under this component will not be released until and unless the State Government notifies the block and issues orders as stated above.

- (v) Trainings and demonstrations on various aspects of climate change adaptation in agriculture based on research (e.g NICRA, CRIDA etc) findings/experiences.
- (vi) Knowledge Networking and Up-gradation through web portal/information system, studies, documentation, conferences, workshops etc., in the area of climate change will also be supported;
- (vii) Agricultural Universities, ICAR Institutes/Centers, National/International Institutes, KVKS, Private/Public sector R&D organizations are eligible to place proposals for CCSAMMN. These projects will be finalized by STC;
- (viii) Appropriate coordination and synergy will be ensured with National Initiative on Climate Resilient Agriculture (NICRA) programme of ICAR in implementation of these projects; and
CCSAMMN will be implemented both at National and State levels.

6.2 Mission Implementation Plan (MIP): States will prepare Mission Implementation Plan (MIP) indicating action plan and strategies for sustainable agriculture development with a horizon of 5-7 years which will emanate from District Agriculture Plans (DAPs) and State Agriculture Plan (SAP) prioritizing the interventions from climate change point of view. Perspective plan should also consider the agriculture sector recommendations made in the State Action Plan on Climate Change (SAPCC) if prepared by the State along with SAP to address climatic factors. Agro-ecological conditions like topography, soil characteristics, climate, frequency of extreme weather events, crops and cropping systems, plants & trees, land& land use, water etc. are key parameters for outlining strategy for sustainable development. It should primarily focus on conservation of natural resources for promoting farming systems that have locational advantage and easier adaptability. A tentative structure/content of the MIP is given at Appendix-II.

6.3 Annual Action Plan (AAP): AAP will operationalize MIP taking into account tentative outlay of States as communicated by DAC except for SHM component, at the beginning of Financial Year (March- April). Tentative provisions for each component will be indicated to facilitate the States in preparing component specific

programmes in the AAP excepting for SHM component which will be demand driven. The designated nodal department for NMSA will coordinate and collate proposals from respective implementing departments/agencies while preparing AAP. States will also ensure that AAP is suitably integrated with District Agriculture Plans (DAPs) and State Agriculture Plan (SAP) and complement each other without overlapping of activities, including those taken up under RKVY. AAP will indicate physical and financial targets of each intervention, action plan and implementation mechanism to achieve these targets and expected outcomes separately for each component i.e., RAD, SHM, OFWM and CCSAMMN. Bottom-up approach may be adopted for preparation of AAP. Agencies at District level will prepare Annual Work Plan (AWP) keeping in view their priorities. These AWP's will be consolidated as State level AAP. States may engage consultants or take help of TSU for preparing perspective/strategic plan as well as AAP.

6.4 Project submission and approval: AAP with Separate proposals for each component as stated in Para 6.3 and duly approved by SLC needs to be submitted to Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India, latest by March end, for examination, deliberation and final approval.

Format for submission of Annual Action Plan to DAC is at **Appendix-II A**. Concerned technical Divisions in DAC will examine AAP before it is placed before the PSC for consideration, sanction and approving release of funds to States.

6.5 Programme Implementation: State Department of Agriculture will have the overall responsibility for implementing NMSA in a mission mode at State level. State Governments may engage/nominate any other Department/Agency as nodal for implementing NMSA at district level. Panchayati Raj Institutions (PRIIs) should be actively involved in planning and implementation of NMSA. The role and functions of different Institutions at National, State, District and various levels of Panchayati Raj Institutions will be communicated separately. District Agriculture Contingency Plans and NICRA findings of ICAR need be taken into consideration while identifying location specific interventions. ICAR Institutions, State Agricultural Universities (SAU), Krishi Vigyan Kendras (KVK), ATMAS and reputed NGOs may be consulted for identifying appropriate technology, farm practices and technical backstopping. A cluster based approach may be adopted for selecting package of interventions. While choosing cluster, preference may be given to those where natural resource base including water resources have already been developed under various developmental and watershed development programmes namely; National Watershed Development Project for Rainfed Areas(NWDPR), Soil Conservation in the Catchments of River Valley & Flood Prone Rivers (RVP&FPR), Rashtriya Krishi Vikas Yojana (RKVY), Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS), Integrated Watershed Management Programme (IWMP) etc. Over the next five years, efforts for direct transfer of subsidy to the farmers/beneficiary will be made based on ADHAR No.

and available infrastructure in the districts where it is functional. The amount will be transferred only after ensuring the proof of procurement of equipments/inputs made by the farmer as per provisions and norms prescribed in the guidelines. State Government will ensure that atleast 50% of beneficiaries belong to small and marginal farmer category.

6.5.1 In a cluster approach a specific area is to be taken up and all/most of the farmers in that area are chosen as beneficiaries and incase individual farmers wanting to avail the benefits of the NMSA, the beneficiary selection process should be transparent and time bound. The entire process of application/selection of beneficiaries may be made online and time bound. In cases where the farmers, do not have access to internet can make use of online kiosks, the common service centers, etc. which are now available in the rural area and are being used by the farmers for various other activities. Such internet and online service providers should be allowed to charge some fixed fee from the farmer to submit their application online and for further follow up. Besides, the name of beneficiaries and assistance given to them be also put on the departmental website in public domain. The selection and transfer of benefit should be time bound and may be online so that the farmer is not required to visit the department office for such things time & again.

7. Monitoring and Evaluation

- 7.1 NMSA envisages concerted mechanism for monitoring and evaluation with involvement of all implementing agencies including line departments.
- 7.2 Strong technical monitoring and feedback system will be put in place to service the National Advisory Council (NAC) on technical feasibility of components in terms of climate resilience. The experts from CRIDA/CAZRI and state agricultural universities will be institutionalised within NMSA to rigorously monitor and evaluate the mission activities thrice in a year and report to NAC. These scientific committees will help National Committee/Mission Director to assess and decide the policy content or change in action plan, if required.
- 7.3 At State level, process of implementation will be monitored by SSTC and SMSA/SLC. At National level, NMSA will be monitored by PSC and STC. Web-based monitoring, video conferencing, desk reviews, field visits, and evaluation of programme implementation will be followed for effective monitoring of Mission initiatives. State Government may also undertake concurrent evaluation during implementation period to facilitate mid course corrections, if, any.
- 7.4 States will ensure submission of detailed Quarterly Progress Reports (QPR) by 10th of first month of next quarter. Similarly, detailed Annual Progress Report

(APR) should be sent to Department of Agriculture & Cooperation, Ministry of Agriculture within three months, after closure of financial year.

- 7.5 State Governments may ensure that digital location of all the project areas/ physical assets created, name of beneficiaries, assistance provided etc. under NMSA are, maintained and uploaded on the digital map of the district/state and kept in public domain to ensure better transparency in programme implementation.
- 7.6 At field or village level, Panchayats will be involved in overseeing day to day process of implementation. At district level, monitoring will be undertaken by Joint Director/Deputy Director Agriculture in collaboration with respective Zilla Panchayati Raj Institutions.
- 7.7 At cluster/village level, details of approved programme, all activities undertaken, name of beneficiaries, expenditure incurred etc. may be displayed at the Panchayat Bhavan/prominent public place in the locality and it be placed before the concerned Gram Sabha annually from the point of social audit.

8. Coverage

NMSA will be operational throughout the country. However, some components/interventions will have location specific approach suitable to specific agro-ecological zones besides converging the activities of the Mission with other programmes of DAC like NFSM, MIDH, NMOOP, NMAET etc.

9. Fund Flow Mechanism

- 9.1 Department of Agriculture & Cooperation, Government of India will communicate tentative annual outlay to each State/implementing agency, who in turn will prepare respective component-wise allocation for AAP's (refer Para-6.3 & 6.4 above).
- 9.2 Consequent to approval of AAP, funds will be released to State Nodal Department or designated implementing agency notified by the State.
- 9.3 State Level Implementing Agency would ensure implementation in a time bound manner in accordance with their approved AAP. Funds will be released in installments based on physical & financial progress report, submission of utilization certificates and other necessary documents as per provisions of General Financial Rules, specific emergent need etc. However, for setting/strengthening of soil/fertilizer testing laboratories, funds would be released in one instalment after approval of AAP.
- 9.4 NMSA will earmark about 3% of annual outlay for administrative expenses at National level viz. for establishment expenses of DAC and its subordinate offices/ Institutes (refer to Para 5.1.4), Technical Support Units (TSU), monitoring & evaluation, capacity building and other contingent expenses etc. Similarly, 5% of

total allocation to States will also be earmarked for meeting administrative and other contingent expenses for implementation of the Mission.

- 9.5 At least 50% of the allocation is to be utilized for small, marginal farmers of which atleast 30% are women beneficiaries/ farmers. Further 16% & 8% of the total allocation or in proportion of SC/ST population in the district will be utilized for Special Component Plan (SCP) and Tribal Sub Plan (TSP) respectively.

10. Impact Assessment, Periodic Evaluation and Reporting

- 10.1 Information and communication technology will be deployed extensively for ensuring transparency in the implementation process and effective monitoring of the Mission programme.
- 10.2 States will upload approved AAP on NMSA website that will be exclusively created for this purpose. Physical and financial progress under each sub components of NMSA should also be updated every month and uploaded in the website as per format given at **Appendix - III**.
- 10.3 The information on physical and financial achievements under TSP and SCSP components have to be furnished annually as per format given at **Appendix-IV**.
- 10.4 NMSA will be evaluated preferably on bi-annual basis through ‘third party agency’ for assessing efficacy, performance, outcome and shortcomings to facilitate mid course corrections. State Govt. and designated implementing agencies may, however, conduct independent evaluation to assess performance of NMSA, in terms of its objectives.
- 10.5 A bench marking exercise must be taken up before taking up any cluster/ project under NMSA.

11. Expected Outcome:

NMSA is expected to transform Indian agriculture into more climate resilient production system through suitable adaptation and mitigation measures in domains of both crops and animal husbandry. These measures will help in absorption of improved technology and best practices and promote different coping mechanisms for climatic and non-climatic stresses. While primary focus of NMSA will be conservation and sustainable use of natural resources for food and livelihood security, it will also expand its coverage primarily to rainfed areas by integrating farming systems with livestock and fisheries, so that agricultural production continues to grow in a sustainable manner.

APPENDIX-I

National Mission for Sustainable Agriculture (NMSA) Cost Norms and Pattern of Assistance

Sl. No.	Item	Practices	Cost Norms & Central share	State Share
A. Rainfed Area Development (RAD)				
A (I)	Sub Component: Integrated Farming System <i>(Indicative combinations illustrated; any other location specific suitable cropping/farming systems may be taken up in consultation with ICAR/SAUs/Research Organizations.</i>			
1.	Cropping system (CS)	Rice-wheat-sorghum +cowpea Rice-oil seeds Rice-vegetable-wheat/cowpea Rice-vegetables+mushroom Rice-wheat-pulses Rice-pulses-veg Rice-Wheat-Vegetables Rice-rice Rice-soybean/sunhemp+mushroom	50% of input cost limited to Rs. 10,000/- per ha. Maximum permissible assistance will be restricted to 2 ha per beneficiary. (Input cost includes land preparation, seeds, fertilizer/manure, plant nutrients, plant protection chemicals and herbicides etc.)	-
	b. Coarse cereal based	Maize-potato-onion Maize-wheat-summer mungbean Maize+ soybean-wheat Maize-pea-potato Maize-Potato-Wheat Maize+cowpea-onion Sorghum-pigeonpea Sorghum-chickpea/safflower Sorghum/maize-mustard Cowpea-fingermillet Fingermillet+ soybean-field bean		

	c. Oil-seed based	Soybean-wheat-cowpea Soybean-garlic Soybean+pigeonpea/ sorghum-chickpea- rapeseed-safflower Castor-pigeonpea/ sorghum/greengram/ blackgram Groundnut-castor Groundnut-pigeonpea Sunflower/safflower- coarse cereals		
	d. Fibre based	Cotton-Groundnut Cotton-wheat Cotton+sorghum/ pigeonpea/soybean/ groundnut/greengram Rice-Jute		
	e. Pulse based	Green gram-finger millet, Blackgram- barley/rapeseed/ mustard/finger millet, Cowpea-finger millet		
2.	Horticulture Based farming system (Plantation + Crops/roping System)	Mango+short duration pulses Mango+berseem/ Wheat/Gram/Soybean Ber+Cowpea/gram/ Cluster beanCitrus/ Sapota/Pomegranate/ Amla/Litchi/Jackfruit/ Falsa+Field crops (Pulses/Oilseeds) Sweet potato+Maize/ Castor Tapioca+Maize/Castor Leucena+Turmeric/ Ginger Guava+Maize/	50% of input costs limited to Rs. 25000/- per ha. Maximum permissible assistance will be restricted to 2 ha per beneficiary. (Input cost includes land preparation, seeds, fertilizer/manure, plant nutrients, plant protection chemicals and herbicides etc.)	-

		Vegetables/Pigeon Pea Tamarind+Blackgram+ Vegetables		
3.	Tree/Silvi- Pastural/in- situ/ex-situ conservation of Non Timber Forest Produce (NTFP) (Plantation + grass/Crops/ Cropping System)	Neem+Sorghum Fodder Tree+Grass Subabul/Casurina/ Agave+Grass Sunhemp-Niger Shisham/Leucaena/ gambar+stylo/ Cenchrus/mixture/ NTFP species	50% of input costs limited to Rs. 15000/- per ha. Maximum permissible assistance will be restricted to 2 ha per beneficiary. (Input cost includes land preparation, seeds, fertilizer/manure, plant nutrients, plant protection chemicals and herbicides etc.)	-
4.	Livestock based farming system	CB Cows+Mixedfarming+ Fodder Buffalo+Mixed farming+Fodder Cow/buffalo+dairy+ fodder Cow/buffalo+small ruminants	50% of input costs of cropping system including cost of animals with one year concentrated food limited to Rs. 40,000/- per ha (2 milch animals+ 1 ha CS) Maximum permissible assistance will be restricted to 2 ha per beneficiary. (Input cost of cropping system includes seeds, fertilizer/manure, plant nutrients, plant protection chemicals and herbicides etc.)	-
		Small ruminant +Mixed farming+Pasture	50% of input costs of cropping system and cost of animals/birds with one	

		Poultry/ duckery+Mixed Farming Poultry/ duckery+Fishery+Mixed Farming	year concentrated food limited to Rs. 25,000/- per ha(10 animals/50 birds + 1 ha CS). Maximum permissible assistance will be restricted to 2 ha per beneficiary. (Input cost of cropping system includes seeds, fertilizer/manure, plant nutrients, plant protection chemicals and herbicides etc.)	
5.	Fishery based farming system	Rice-Fish farming system Fishery in pond+Fruits/Vegetables on bunds+crops Fishery+duckery-poultry	50% of input cost of cropping/vegetable system including cost of fish farming limited to Rs. 25,000/- per ha. Maximum permissible assistance will be restricted to 2 ha per beneficiary. (Input cost of cropping/ vegetable system includes land preparation, seeds, fertilizer/manure, plant nutrients, plant protection chemicals and herbicides etc.)	-
A (II) Sub Component: Value addition and Farm development activities				
6.	Apiculture (Bee Keeping)	One unit per farm under plantation/Crop/floriculture based farming system	40% of input cost limited to Rs. 800/colony of 8 frames and Rs. 800 per hive. Limited to 50 colonies/hive per beneficiary.	-

7.	Silage making for increased availability of green fodder round the year	Construction of Silo Pit of 2100-2500 cubic feet with Brick and cement Mortar; either below ground or above ground) with provision of Chaff Cutter and Weighing Balance	100% assistance for silage making unit consisting of Silo Pit Chaff Cutters and Weighing Balance limited to Rs. 1.25 lakh per farm family	-
8.	Green house (i) Naturally ventilated Tubular Structure	High value crops, Vegetables, Flower, raising planting material to avoid water stress etc.	50% of input cost subject to a limit of: Rs.530/Sq.m (up to area 500 Sq. m) Rs. 468/Sq.m (>500 Sq. m up to 1008 Sq. m) Rs. 445/Sq. m (>1008 Sq. m up to 2080 Sq. m) Rs. 422/Sq. m (>2080 Sq. m up to 4000 Sq.m) Above rate will be 15% higher for hilly areas. Limited to 4000 sq.m per beneficiary.	-
	(ii) Naturally ventilated wooden Structure		Rs. 270/- per sq.m and Rs. 311/- per sq.m for hilly areas. Limited to 20 units (each unit not to exceed 200 sq.m) per beneficiary	
	(iii) Naturally ventilated bamboo Structure		Rs. 225/- per sq.m and Rs. 259/- per sq.m for hilly areas. Limited to 20 units (each unit not to exceed 200 sq.m) per beneficiary	

	(iv) Plastic Tunnels		Rs. 30/- per sq.m and Rs. 37.50 per sq.m for hilly areas Limited to 1000 sq.m per beneficiary	-
9.	Water Harvesting and Management	Water harvesting system for individuals:	50% of cost (Construction cost - Rs. 125 for plain/ Rs. 150 per cum for hilly areas) limited to Rs. 75000 for plain areas and Rs. 90000 for hilly areas including lining. For smaller size of the ponds/ dugwells, cost admissible on pro rata basis. Cost for non-lined ponds/tanks will be 30% less. The families who are eligible for individual beneficiary oriented works under MGNREGS should preferably be given the labour component through MGNREGS and the material component through NMSA.	-
		Lining of tanks/ponds constructed under MNREGA/WSDP etc.	50% (cost of plastic/RCC lining limited to Rs. 25,000 per pond/tank/well). Maintenance is to be ensured by the beneficiary.	
		Water harvesting system for communities: Construction of Community tanks/on	100% of cost limited to Rs. 20 lakh /unit in plain areas, Rs. 25 lakh/unit in hilly areas) for 10 ha of command area or any	

	<p>Water harvesting system for communities: Construction of Community tanks/on farm ponds/check dam/ reservoirs with use of plastic/RCC lining on public land. If some individual agrees for construction on his land, the same will have to be transferred in the name of panchayat/government first.</p>	<p>other smaller size on pro rata basis depending upon the command areas, owned & managed by a community/farmers group. Cost for non-lined ponds/tanks will be 30% less.</p> <p>Assistance under NMSA will be restricted to the cost of plastic/RCC lining for MNREGS beneficiaries. Minimum command area shall be at least 10 ha for such projects and operation and management of assets will be preferably through Water Users Association (WUA).</p>	
	<p>Construction of Tube wells/ Bore wells (Shallow/Medium)</p>	<p>50% of the total cost of installation limited to Rs. 25,000/- per unit only in areas which are not categorized under over-exploited, critical & semi-critical zones by Central Ground Water Board.</p>	
	<p>Restoration/Renovation of small tank</p>	<p>50% of the cost of renovation limited to Rs. 15,000/- per unit</p>	
	<p>Recharge of defunct bore well</p>	<p>50% of the cost of recharging limited to Rs. 5000/- per unit</p>	
	<p>Pipe/pre-cast distribution system</p>	<p>50% of the cost of system limited to Rs. 10,000/- per ha.</p>	

			Maximum permissible assistance will be restricted to 4 ha per beneficiary/group.	
		Water Lifting Devices (Electric, Diesel, wind/Solar)	50% of the cost of installation limited to Rs. 15,000/- per electric/diesel unit and Rs. 50,000/- per solar/wind unit.	
10.	Last Mile connectivity	Electricity connectivity to Community Tube-well/Tube-wells/Water sources (without scope of gravitational flow) with command of more than 25 Ha. Group of farmers as a registered User Group can also avail assistance for private Tube-wells/Dugwells with irrigation potential more than 25 Ha.	50% of the cost of installation & transmission system from the nearest source limited to Rs. 1.25 lakh per unit. The implementation agency should be the user group and to be responsible for its maintenance and security.	-
11.	Resource Conservation	In-situ moisture conservation: land leveling, field bunding, mulching, broad bed and furrow system, ridge and furrow method, saucer basins/ semi circular bunds, compartmental bunding, tied ridges	50% of cost limited to Rs.4,000/- per ha. Maximum permissible assistance will be restricted to 2 ha per beneficiary/group.	-

	Contour/graded/staggered bunding/trenching	50% of cost subject to a limit of Rs. 5000/- per ha to individual and 90% of cost in case of common land proposed in project mode with other activities. Maximum permissible assistance shall be restricted to Rs. 10,000/- for individual beneficiary and Rs. 1 lakh for a common property per village.	
	Bench Terracing/Zing Terracing	50% of cost limited to Rs. 20,000/- per ha. Maximum permissible assistance will be restricted to 2 ha per beneficiary/group.	
	Upper reach gully control bund (Earthen with vegetative support/ loose boulder/gabion)	50% of the cost subject to a limit of Rs. 3,000/- per structure in case of individual and 100% in case of common land proposed in project mode with other activities. Maximum permissible assistance shall be Rs. 15,000/- per individual and Rs. 1.2 lakh for a common property per village.	-
	Middle reach gully control bund (Earthen with vegetative support/ loose boulder/check bund/gabions)	50% of cost subject to a limit of Rs. 12,000/- per structure in case of individual and 100% in case of common land	

			proposed in project mode with other activities. Maximum permissible assistance shall be restricted to Rs. 24,000/- per individual and Rs. 1.2 lakhs for a common property per village.	
		Lower reach gully control structure (Earthen with vegetative support/loose boulder/check bund/gabions)	50% of the cost subject to a limit of Rs. 20,000/- per structure in case of individual and 100% in case of common land proposed in project mode with other activities. Maximum permissible assistance shall be restricted to Rs. 40,000/- per individual and Rs. 2.4 lakhs for common property per village.	-
		Spill ways (Drop, Chute, Spur, Retaining wall)	50% of the cost subject to a limit of Rs. 40,000/- per structure in case of individual and 100% in case of common land proposed in project mode with other activities. Maximum permissible assistance shall be restricted to Rs. 40,000/- per individual and Rs. 1.6 lakhs for common property per village.	-
12.	Vermi compost Units/organic input production unit, green manuring	Construction of Vermi compost units, organic input production units and green manuring.	50% of cost subject to a limit of Rs. 125/- per cubic ft. Maximum permissible assistance shall be Rs. 50,000/- per	-

			unit for permanent structure and Rs. 8,000/- per unit for HDPE vermi bed. 50% of cost limited to Rs. 2000/- per ha and restricted to 2 ha per beneficiary for green manuring.	
13.	Post harvest & Storage/value addition of NTFP	Small village level Storage/packaging/processing unit for value addition to the produce of farming system to fetch better economic returns.	50% of capital cost subject to a limit of Rs. 4000/- per square meter of storage/processing unit. Maximum permissible assistance shall be restricted to Rs. 2.0 lakh per unit.	-
14.	Formation of Farmer Producers Organizations (FPOs) and their training		As per policy & process guidelines for FPOs issued by SFAC, DAC, Ministry of Agriculture. (Up to 2% of project cost)	Out of the State level administrative provision for NMSA
15.	Reclamation of Problem soil	Alkali/saline Soil	50% of cost subject to a limit of Rs. 25,000/- per ha and/or Rs. 50,000/- per beneficiary	-
		Acid Soil	50% of cost subject to a limit of Rs. 3,000/- per ha and/or Rs. 6,000/- per beneficiary	
16.	Concept of Integrated Farming, Climate change adaptation, Good agriculture practices on soil, water and crop management	Training to farmers including field demonstrations; Capacity building of stakeholders/farmers through field visits	Rs. 10,000/- per training session for 20 participants or more. Rs. 20,000/- per demonstration for a group of 50 participants or more.	-

B. Soil Health Management (SHM)		Details of SHM are in Chapter-2
C. On Farm Water Management (OFWM)		
1.	Micro Irrigation	<p>Drip Irrigation (Wide spaced crops)</p> <p>35% of cost of installation* for small & marginal farmers and 25% of cost of installation* for others in non-DPAP/DDP/ NE&H regions.</p> <p>50% of cost of installation* for small & marginal farmers and 35% of cost of installation* for others in DPAP/DDP areas and NE & H States.</p> <p>Normative Cost of installation is Rs. 37200/ ha (average). However assistance to farmers will be as per norms of individual crop spacing given at Annexure I. Maximum permissible assistance will be restricted to 5 ha per beneficiary/group.</p> <p>(DPAP- Drought Prone Area Programme, DDP- Desert Development Programme, NE&H States – North Eastern and Himalayan States)</p>
	Drip Irrigation (Close spaced crops with rows at less than 1.2 meter)	<p>35% of cost of installation* for small & marginal farmers and 25% of cost of installation* for others in non-DPAP/DDP/ NE&H regions.</p>

		<p>50% of the cost of installation* for small & marginal farmers and 35% of cost of installation* for others in DPAP/DDP areas and NE & H States.</p> <p>Normative Cost of installation is Rs. 90,000/ha (average). However assistance to farmers will be as per norms for different land sizes given at Annexure I.</p> <p>Maximum permissible assistance will be restricted to 5 ha per beneficiary/group.</p>	categories of farmers
	Micro Sprinkler	<p>35% of cost of installation* for small & marginal farmers and 25% of cost of installation* for others in non-DPAP/DDP/ NE&H regions.</p> <p>50% of the cost of installation* for small & marginal farmers and 35% of cost of installation* for others in DPAP/DDP areas and NE & H States.</p> <p>Normative Cost of installation is Rs. 58,900/ha.</p> <p>Maximum permissible assistance will be restricted to 5 ha per beneficiary/group.</p>	Additional 10% assistance to be provided by State Govt. to all categories of farmers

	Mini Sprinkler	<p>35% of cost of installation* for small & marginal farmers and 25% of cost of installation* for others in non-DPAP/DDP/ NE&H regions.</p> <p>50% of cost of installation* for small & marginal farmers and 35% of cost of installation* for others in DPAP/DDP areas and NE & H States.</p> <p>Normative Cost of installation is Rs. 85,200/ha.</p> <p>Maximum permissible assistance will be restricted to 5 ha per beneficiary/group</p>	Additional 10% assistance to be provided by State Govt. to all categories of farmers
	Portable Sprinkler	<p>35% of cost of installation* for small & marginal farmers and 25% of cost of installation* for others in non-DPAP/DDP/ NE&H regions.</p> <p>50% of cost of installation* for small & marginal farmers and 35% of cost of installation* for others in DPAP/DDP areas and NE & H States.</p> <p>Normative Cost of installation is Rs. 19,600/ha.</p> <p>Maximum permissible assistance will be as per length of pipe and restricted to 5 ha per beneficiary/group</p>	Additional 10% assistance to be provided by State Govt. to all categories of farmers

	Semi Permanent Irrigation System	<p>35% of cost of installation* for small & marginal farmers and 25% of cost of installation* for others in non-DPAP/DDP/ NE&H regions.</p> <p>50% of cost of installation* for small & marginal farmers and 35% of cost of installation* for others in DPAP/DDP areas and NE & H States.</p> <p>Normative Cost of installation is Rs. 36,600/ha.</p> <p>Maximum permissible assistance will be restricted to 5 ha per beneficiary/group</p>	Additional 10% assistance to be provided by State Govt. to all categories of farmers
	Large Volume Sprinkler Irrigation System (Raingun)	<p>35% of cost of installation* for small & marginal farmers and 25% of cost of installation* for others in non-DPAP/DDP/ NE&H regions.</p> <p>50% of cost of installation* for small & marginal farmers and 35% of cost of installation* for others in DPAP/DDP areas and NE & H States.</p> <p>Normative Cost of installation is Rs. 31,600/ha.</p> <p>Maximum permissible assistance will be as per length of pipe and restricted to 5 ha per beneficiary/group</p>	Additional 10% assistance to be provided by State Govt. to all categories of farmers

		Training Programme	Rs. 50,000/- per training programme (For 30 participants for a duration of at least 2 -3 days)	-
* Upper limit of assistance will be restricted to the amount as per the eligible pattern of assistance of the normative cost of installation.				
2.	On-farm water distribution / application	Land leveling, Construction of field channels, sub surface distribution with box outlets	50% of cost limited to Rs. 12,000/- per ha. Maximum permissible assistance will be restricted to 5 ha per farm family.	-
		Construction of Secondary Storage Structures with protective fence, Connectivity from canal/perennial source, distributory/outlet, inlet and silt detention structures at feasible locations	50% of cost limited to Rs. 100 per cum of storage capacity. Maximum permissible assistance will be restricted to Rs. 2 lakh per beneficiary.	-
3.	On farm Drainage	Support for mechanical, biological or combination of both systems for improving drainage in waterlogged farm land. Activities like field drains, laterals, connecting drains, refuse/sink, agro-nomic measures etc. would be supported.	50% of cost limited to Rs. 25,000 per ha. Maximum permissible assistance will be restricted to Rs. 1 lakh per beneficiary.	-

D. Climate Change and Sustainable Agriculture Modeling & Networking (CCSAMN)				
1. Climate Change Adaptation and Mitigation	State will be supported to illustrate functional mechanism for dissemination of rainfed technologies, planning, convergence and coordination in pilot blocks.	Rs. 10 crore/Block (Rs. 3.0 crore for facilitation and Rs. 7.0 crore for innovative and gap filling activities)	-	
	Research/model/pilot projects for different agro climatic conditions on climate change adaptation and mitigation	As per project		
	Capacity Building, Training and networking projects on climate change adaptation and mitigation	As per project		

APPENDIX-IA

Registration of the MI System Manufacturers, Quality Control and After Sales Services

1. Registration of Micro Irrigation Manufacturers

Registration of the MI System manufacturers shall be done by the State Level Committee (SLC). The Company should be registered for the entire plan period so as to maintain continuity. Companies who wish to participate in On Farm Water Management (OFWM) component under National Mission on Sustainable Agriculture (NMSA) should supply only BIS marked components. The State Standing Technical Committee (SSTC) at the State Level would ensure physical verification and quality check of the material/components of the manufacturers before registration & will submit the required report to the SLC for consideration. While registering the MI manufacturers, the following aspects shall be ensured:

- (i) In the case of drip irrigation, the company must manufacture at least laterals & emitters conforming to BIS standards for online drip system & Emitting Pipes for inline drip irrigation system.
- (ii) In case of sprinkler irrigation, the company must manufacture either HOPE pipe (having both IS 14151 Part I & II BIS licenses) or nozzle and supply other required equipment conforming to respective BIS standards. They must provide guarantee of quality assurance of other components which are not manufactured by them.

In case of supply of imported MI components under OFWM, prior approval of OAC should be obtained subject to indigenize the manufacturing of component/equipment within a period of two years from the date of sanction.

The material should be supplied directly by the manufacturers or their authorized distributors/dealers. In all cases, the manufacturers should authenticate the invoices. MI manufacturers shall furnish a Bank Guarantee, quantum of which will be prescribed by the SLC, valid for the plan period from the date of registration of the company/firm.

The company must provide free after sales service to the farmers for at least three years from the date of installation of Micro Irrigation (MI) systems. Moreover, they should set up service centers for providing technological and agronomic support at the grass root level.

The companies will provide GPS reading of each installation along with the design map.

2. After Sales Service

The state nodal agency should ensure that Micro Irrigation system manufacturers have adequate network for providing after sales service in their areas of operation.

The manufacturers should provide detailed operational & maintenance manuals in the vernacular language at the time of installation of the system and provide proper orientation for the operation and maintenance of drip/sprinkler irrigation systems.

The manufacturer is responsible for any dispute/s arising from the supply of the MI system or its components directly or through their distributors/dealers.

In order to safeguard the interests of farmers and to ensure effective utilization of public funds, the SLC may take punitive measures against erring companies.

In case the system supplier/manufacturer fails to provide after sales service satisfactorily, should be debarred (at SLC Level) from renewal of registration.

The registered companies may be asked to furnish a tentative schedule for their campaigns in major clusters whereby the farmers may seek their interventions.

3. Quality Control

Supply of good quality components is important for operational life of the system as well as its performance having impact on crop yield, water& fertilizer use efficiency as well as energy consumption. It is to be ensured that only BIS marked components are supplied.

Regular inspections of the installed systems should be done through a team constituted by the SLC/State nodal agency who would draw random samples from the field for testing & evaluation. At the time of inspection, the system should be functional. In case of any quality and functional issues, the same be brought to the notice of SLC for appropriate action.

ANNEXURE-I**Cost of installation of Drip Irrigation System for different spacing and land size**

Lateral Spacing (m)	Amount in Rupees				
	1ha	2ha	3ha	4ha	5ha
A. Wide Spaced crops					
8m & above	23,500	38,100	59,000	74,100	94,200
4m to <8m	33,900	58,100	89,300	1,13,200	1,42,400
2m to <4m	58,400	1,08,000	1,61,800	2,20,600	2,71,500
B. Closed Spaced crops					
1.2m to <2 m	85,400	1,61,300	2,43,400	3,32,800	4,12,800
<1.2m	1,00,000	1,93,500	2,92,100	3,99,400	4,95,400

APPENDIX-II

**National Mission For Sustainable Agriculture (NMSA)
Mission Implementation Plan (MIP)
(Suggestive List of Contents)**

1. Introduction:
 - a. About the State
 - b. Agro-climatic features including mean annual rainfall, soil type/depth etc.
 - c. Land use
 - d. Extent of degradation/problem soil
 - e. Available water resources
 - f. Poverty and social development issues
 - g. Strength, Weakness, Opportunity and Challenges (SWOC) Analysis based on PRA exercise
2. The Plan of action for XII Plan:
 - a. Description
 - b. Site selection criteria and process
 - c. Approach and strategy
 - d. Institution
3. Mission Components:
 - a. Rainfed Area Development
 - i. Programme area, Interventions
 - b. Soil Health Management
 - i. Programme area, Interventions
 - c. On Farm Water management
 - i. Programme area, Interventions
 - d. Research/pilot/networking projects on Climate Change
 - i. No and type of projects
4. Mission Management:
 - a. Organization Set-up.
 - b. Implementation Arrangements
 - c. Capacity Building of the Staff
 - d. Partnering Institutions
 - e. Selection of Support Organizations

- f. Monitoring & Evaluation
 - g. IT Infrastructure Development
 - h. Governance & Accountability
5. Community Participation:
- a. Project cycle at the community level
 - b. Community institutions to be formed/facilitated
 - c. Role of community groups and institutions in the planning and implementation process
 - d. Content and details of community level plans
 - e. Community level implementation arrangements
6. Mission cost:
7. Mission outcome & sustainability

APPENDIX-II A

**National Mission for Sustainable Agriculture (NMSA)
Preparation of Annual Action Plan**

A. Rainfed Area Development (RAD):

The concept of cluster based development is to promote Integrated Farming System (IFS) which is culturally and socially acceptable to the local community. Only cropping system is not recommended under NMSA, unless it is proposed for diversification and taken up as a component of IFS with additional income generating activities from other programmes to make it farming system. Each farmer has to be supplemented with farm driven alternate income generating activities in addition to crop/cropping system to make it climate resilient i.e. to sustain his livelihood through alternate means of income in case of crop failure in the wake of extreme climatic events. Since NFSM and NMOOP also promote cropping system, the cropping system segment of the farming system may be availed from these schemes and resources of NMSA be utilised for additional alternative income generating interventions like livestock, dairy, fishery, poultry, duckery, horticulture, silvi-pasture, agro-forestry etc. However, cropping system in form of mixed farming or diversified farming may be promoted in the non NFSM districts with additional income generating activities to make it a system approach.

In addition to IFS, farmer may require other intervention/interventions like value addition, water management, need based resource conservation technologies etc. to complement the farming system, he/she has opted for. Resource conservation technologies are not recommended to be taken up in totality in a cluster as is done in watershed programmes. Only supplementary resource conservation technologies may be proposed in arable land depending on the specific requirement of the farmer in already treated watersheds of NWDPRA or RVP&FPR programmes. A specific cluster may have a predominant acceptance for a particular IFS i.e. agri-horti, agro-forestry, cropping system + dairy/small ruminants, cropping system + poultry, cropping system + fishery/duckery in farm pond, rice – fish farming, fishery and duckery + fruits/vegetables on bunds of farm pond, project mode development for saline/alkaline soil etc.

Though, it is fact that complete coverage of a particular farming system in a cluster is not feasible, yet considering the social and cultural similarity, there will be predominance of a particular IFS in a specific cluster. Depending on the largest coverage under particular type of IFS, the cluster may be considered as the cluster development model for that IFS. The estimate of fund requirement may be carried out and projected in the Annual Action Plan depending on the number of clusters and area of coverage. Similar exercise may be carried out for different cluster development models i.e. predominance of specific IFS. The Annual Action Plan for the entire State need to be developed in a statement form indicating the particular IFS model along with supplementary interventions, unit cost, number of cluster, area coverage and projected cost. However, during the process of developing the detailed project report, actual fund requirement may vary depending on the actual requirement of farmer and combination of interventions opted by him.

The AAP format to be generated based on the combination of interventions of each farming unit i.e. IFS and/or activity/activities of value addition, water management, resource conservation technologies, vermi compost/organic farming, post harvest/NTFP, problem soil reclamation etc. Specimen AAP format and Cluster planning is given below.

Cluster Development Plan (Separate plans/estimates for specific farming system model to be worked out)

Name of Cluster/Village(with latitude & longitude):

Type/Model IFS

Implementing Agency:

Total Area proposed for development

Research/ Technical Support Institution:

I. Integrated Farming System

Farming System	Area proposed (ha.)	Number of Beneficiaries	Estimated Cost	Assistance Sought from NMSA
Horticulture Based Farming System				
Livestock Based Farming System				
Dairy Based Farming System				
Fishery Based Farming System				
Agro-forestry				
Silvi-pastoral system/NTFP				
Project mode Saline/alkaline reclamation with Farming System				
Any other farming system (Type and combination with specific cropping system be indicated)				
Total				

II. Value addition and Resource Conservation

Activity	Number proposed	Capacity/ Area	No. of Organizations/ Groups/ Individual	Estimated Cost	Assistance Sought from NMSA
Green house & low tunnel poly-house					
Apiculture Silage unit					
Post harvest & storage					
Water harvesting Tank/ pond/dug well (individual)					
Community Tank (Community/ Govt. Land)					
Lining of tank/Pond					
Tube Well					
Tank Restoration					
Water application & Distribution					
Recharge Well					
Water Lifting Devices					
Last mile connectivity					
In situ moisture Conseravation					
Vegetative Barriers					
Contour/graded bunding					
Terracing (only in farmer's land)					
Gully control Structures (only in farmer's own arable land)					
Spill ways					
Reclamation of Alkali Soil					
Reclamation of Acid Soil					
Vermi compost					
Formation of FPOs					
Training on IFS/resource conservation					
Total					

Note: This cluster plan need to be developed based on planning of individual farm unit/beneficiary with combination of interventions and summed for the total cluster area

Rainfed Area Development Annual Action Plan

Type of IFS Model/project	Farming System	Area (ha)	Supplementary interventions (No)					No. of clusters	Area (ha.)	Estimated Cost	Assistance Sought from NMSA
			RCT	WM	GH	BK	PH				
Livestock Based System											
Horticulture Based system											
Dairy Based System											
Fishery Based System											
Agro-forestry											
Silvi-pastoral system/NTFP											
Project mode Saline/alkaline reclamation with Farming System											
Any other farming system (Type & combination with specific cropping system be indicated)											
Total											

GH : Green house/Poly house;

WHS : Farm pond, check dams, community tank, tank restoration etc;

WM : application, distribution, lining, Tube well, last mile connectivity etc;

RCT : in-situ moisture conservation, contour/graded bunding, veg. barrier, terracing, runoff control measures etc.;

BK : Bee keeping/apiculture;

PH : post harvest, storage, NTFP etc.;

Others : silage, vermin compost, FPO, Training etc.

B. Soil Health Management (SHM):

Activity	Area in ha / Number of Units proposed.	Estimated Cost	Assistance Sought from DAC
Setting up of new Soil testing lab	SSTL- , MSTL-		
Strengthening of Soil Testing Lab			
New Fertilizer Quality Control Lab			
Strengthening of Fertilizer Quality Control Lab			
Data Bank			
District Map			
Setting up of FTL			
Setting up of Mobile Soil Testing Lab			
Promotion of INM, organic farming, micro nutrient etc.			
Development of Shifting Cultivation Areas			
Training & Demonstration on SHM			
Total			

C. On Farm Water Management (OFWM)**I. Horticultural Crops**

Technology	Category of farmers	Targeted Area (Ha.)		Estimated No. of Beneficiaries		Estimated Cost (lakh Rs.)		Assistance Sought from DAC (Lakh Rs.)
		DPAP/ DDP	Non DPAP/ DDP	DPAP/ DDP	Non DPAP/ DDP	DPAP	Non DPAP/ DDP	
Drip Irrigation System (Wide spaced crop)	S & M							
	Others							
Drip Irrigation System (Close spaced crop)	S & M							
	Others							
Micro Sprinkler Irrigation System	S & M							
	Others							
Mini Sprinkler Irrigation System	S & M							
	Others							
Portable Sprinkler Irrigation System	S & M							
	Others							

Technology	Category of farmers	Targeted Area (Ha.)		Estimated No. of Beneficiaries		Estimated Cost (lakh Rs.)		Assistance Sought from DAC (Lakh Rs.)
		DPAP/ DDP	Non DPAP/ DDP	DPAP/ DDP	Non DPAP/ DDP	DPAP	Non DPAP/ DDP	
Semi-Permanent Sprinkler Irrigation System	S & M							
	Others							
Large Volume Sprinkler Irrigation System (Rain-gun)	S & M							
	Others							
Training Programme								
Total								

II. Agricultural Crops

Technology	Category of farmers	Targeted Area (Ha.)		Estimated No. of Beneficiaries		Estimated Cost (lakh Rs.)		Assistance Sought from DAC (Lakh Rs.)
		DPAP/ DDP	Non DPAP/ DDP	DPAP/ DDP	Non DPAP/ DDP	DPAP	Non DPAP/ DDP	
Drip Irrigation System (Wide spaced crop)	S & M							
	Others							
Drip Irrigation System (Close spaced crop)	S & M							
	Others							
Micro Sprinkler Irrigation System	S & M							
	Others							
Mini Sprinkler Irrigation System	S & M							
	Others							
Portable Sprinkler Irrigation System	S & M							
	Others							
Semi-Permanent Sprinkler Irrigation System	S & M							
	Others							
Large Volume Sprinkler Irrigation System (Rain-gun) Training Programme	S & M							
	Others							
Total								

D. Climate Change and Sustainable Agriculture: Modeling & Networking (CCSAMN)

Subject	Agro Climatic Zone/Location	Agency	Estimated Cost	Assistance Sought from DAC
Pilot Blocks				
Adaptive Research projects				
Capacity building & Training				
Networking projects				
Total				

Total Project Cost including management cost:

APPENDIX-III**National Mission for Sustainable Agriculture (NMSA) Progress Reporting Format****A. Rainfed Area Development**

Farming System	Type of IFS Model / project	Area (ha)	Supplementary interventions (No)								No.of clusters	Area (ha.)	No. of farmers	Expenditure (Crore)
			WHS	WM	RCT	GH	BK	PH	Others					
Livestock Based System														
Horticulture Based system														
Dairy Based System														
Fishery Based System														
Agro-forestry														
Silvi-pastoral system/ NTFP														
Project mode Saline/ alkaline reclamation with Farming System														
Any other farming system (Type & combination with specific cropping system be indicated)														
Total														

GH: Green house/Poly house; WHS: Farm pond, check dams, community tank, tank restoration etc; WM: application, distribution, lining, Tube well, last mile connectivity etc; RCT: in-situ moisture conservation, contour/graded bunding, veg. barrier, terracing, runoff control measures etc.; BK : Bee keeping/apiculture; PH: post harvest, storage, NTFP etc.; Others : silage, vermin compost, FPO, Training etc.

B. Soil Health Management (SHM):

Activity	Area / No.	Expenditure
New Soil testing lab		
Strengthening of Soil Testing Lab		
Data Bank		
District Map		
Strengthening of Fertilizer Quality Control Lab		
New Fertilizer Quality Control Lab		
Setting up of FTL		
Setting up of Mobile Soil Testing Lab		
Promotion of INM, organic farming, micro nutrient etc.		
Reclamation of Alkali Soil		
Reclamation of Acid Soil		
Development of Shifting Cultivation Areas		
Training & Demonstration on SHM		
Total		

C. On Farm Water Management (OFWM)**I. Horticultural Crops**

Technology	Category of farmers	Physical (Ha.)		No. of Beneficiaries		Financial (Lakh Rs.)	
		DPAP/ DDP	Non DPAP/DDP	DPAP/ DDP	Non DPAP/DDP	DPAP	Non DPAP/DDP
Drip Irrigation System (Wide spaced crop)	S & M						
	Others						
Drip Irrigation System (Close spaced crop)	S & M						
	Others						
Micro Sprinkler Irrigation System	S & M						
	Others						
Mini Sprinkler Irrigation System	S & M						
	Others						
Portable Sprinkler Irrigation System	S & M						
	Others						
Semi-Permanent Sprinkler Irrigation System	S & M						
	Others						
Large Volume Sprinkler Irrigation System (Rain-gun)	S & M						
	Others						
Training Programme	NA						
Total							

II. Horticultural Crops

Technology	Category of farmers	Physical (Ha)		No. of Beneficiaries		Financial (Lakh Rs.)	
		DPAP/ DDP	Non DPAP/DDP	DPAP/ DDP	Non DPAP/DDP	DPAP	Non DPAP/DDP
Drip Irrigation System (Wide spaced crop)	S & M						
	Others						
Drip Irrigation System (Close spaced crop)	S & M						
	Others						
Micro Sprinkler Irrigation System	S & M						
	Others						
Mini Sprinkler Irrigation System	S & M						
	Others						
Portable Sprinkler Irrigation System	S & M						
	Others						
Semi-Permanent Sprinkler Irrigation System	S & M						
	Others						
Large Volume Sprinkler Irrigation System (Rain-gun)	S & M						
	Others						
Training Programme	NA						
Total							

B. Climate Change and Sustainable Agriculture: Modeling & Networking (CCSAMN)

Subject	Agro Climatic Zone/Location	Agency	Expenditure
Pilot Block projects			
Research projects			
Capacity building & Training			
Networking projects/Studies			
Total			

Total Expenditure: _____ (As on _____).

APPENDIX-IV**Progress reporting format for TSP and SCSP component under NMSA****A. Physical achievement**

Components	Physical Target						Physical Achievement					
	SC		ST		General		SC		ST		General	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female

C. Financial Target

Components	Financial Target						Financial Achievement					
	SC		ST		General		SC		ST		General	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female

APPENDIX-V**Duties of Consultants under NMSA at National, State & District Level**

National Mission for Sustainable Agriculture will be operational in all States and UTs. To provide technical support and assist the Standing Technical Committee there is provision for engaging Consultants at National, State and District level. At National level 8 Advisors/ Chief Consultants can be engaged drawing from ICAR/SAUs with additional responsibilities or full time engagement on contract basis to serve the Standing Technical Committee and Technical Support Group. At the State level there is provision of 84 State Consultants for the entire country. Each State may engage maximum of 3 State Consultants to serve State Level Standing Technical Committee and Technical Support Group. There is provision of 300 district level Consultants covering all States/UTs to coordinate with Technical Support Group and assist in planning, monitoring and execution of District level activities of NMSA. States may engage one Consultant for each 2 to 3 adjoining Districts for this purpose.

NATIONAL ADVISORS/CHIEF CONSULTANTS:**Duties:**

- To provide technical guidance to the Mission director on matters related to interventions proposed in the Mission. To develop standardized formats for sub-Mission of action plans.
- To coordinate with Standing Technical Committee (STC) for providing time to time knowledge support and technical feed back to the Project Sanctioning Committee and National Advisory Committee of NMSA.
- To assist State in planning, formulation of NMSA Mission Implementation Plan and Annual Action Plan.
- To provide technical assistance to NMSA staff in scrutinizing the action plans received from the States.
- To Establish time-lines and indicators for completion of each activity.
- To supervise the quality of implementation of various interventions proposed in the Mission for improving the production of rice, wheat and pulses.
- To assist Mission Director and other senior officers in synchronizing and synergizing with other divisions of DAC; State governments; State agriculture Universities; ICAR research institutions and other stake holders on technical front.
- To constitute teams for monitoring the progress of works in the States and provide technical guidance to them in conducting Monitoring and evaluation.
- To coordinate the works of State and District level programmes

- To visit the States periodically to provide technical guidance and impart knowledge about best practices.
- To assist in the conduction of specific central and regional workshops.
- To analyze the data received from various States and to come up with suggestions wherever improvements are required in the execution of the activities.
- Documentation and dissemination of contribution of various interventions and success stories.
- To render overall help to the technical staff working in the cell.
- To perform other tasks specified by Mission Director.

STATE CONSULTANTS:

Duties:

- Liaisoning with SAUs, ICAR Institutes & other professional agencies.
- To coordinate with State level Standing Technical Committee (STC) for providing time to time knowledge support and technical feedback.
- To assist Nodal Department in planning, formulation of NMSA Mission Implementation Plan and Annual Action Plan.
- To establish time-lines and indicators for completion of each activity
- To supervise the quality of implementation of various interventions proposed in the Mission.
- To assist Mission Director and other senior officers in synchronizing and synergizing with line Departments of State Government, State Agriculture Universities, ICAR research institutions and other stake holders on technical front.
- To assist in programme monitoring, evaluation and uploading of information in the Monitoring Information System (MIS).
- To coordinate the works of District level programmes.
- To visit Districts periodically to provide technical guidance and impart knowledge about best practices.
- To assist in the conduction of specific central and regional workshops.
- To analyze the data received from various Districts and to come up with suggestions wherever improvements are required in the execution of the activities.
- Documentation and dissemination of contribution of various interventions and success stories.

- To render overall help to the technical staff working in the cell.
- Training of field staff engaged in NMSA work.
- Making available technical information required by National Level Monitoring team during its visit to the State.
- Development of technical literature/ extension materials for farmers.
- Compilation and documentation of contribution of various interventions under cluster demonstrations, lessons learnt and success stories from NMSA districts.
- To perform other tasks specified by Mission Director.

DISTRICT CONSULTANTS:

Duties:

- Liaisoning with KVK and other Agricultural Research Organizations located in the districts.
- Collection and maintenance of basic Agricultural and allied statistics of the district.
- Planning and supervising implementation of various Mission interventions and reporting performance, weather data to the State Mission Director/State Consultant.
- Development of technical/extension material for farmers in consultation with District Agriculture/Horticulture Officers and the State Consultants.
- Assisting District Nodal Officers in preparation of projects for various components and clusters.
- Assisting Panchayati Raj Institutions, in selection of village, clusters, beneficiaries, activities etc.
- Assisting District Officials in programme monitoring and reporting.
- To visit project areas/clusters periodically to provide technical guidance and supervision.
- Training of district extension staff in improved production and management practices.
- Analyze and documentation of the contribution of various interventions under cluster demonstrations and success stories.
- Any other work assigned by the District Level Committee of NMSA for effective implementation of various components of the Mission.

APPENDIX-V (A)**Basic Qualification, Experience and Honorarium of Advisors/Consultants**

Level and post	Educational Qualification & experience	Honorarium (Rs./Month)
A. District Level		
Consultants	<p>Basic degree in Agriculture/Horticulture/Agricultural Engineering/Forestry/Veterinary Science/Botany. Preference may be given to candidates with Masters Degrees in the above disciplines and having at least 5 years of field experience in farming system/Extension.</p> <p>The person should have the ability of team leadership & motivation.</p>	30,000
B. State Level		
State Consultants	<p>Master degree in Agriculture/Horticulture/Forestry/Veterinary Sciences/Botany or Bachelor Degree in Agricultural Engineering/Information Technology/Environmental Sciences. Preference may be given to candidates with Doctorate Degree/Master of Technology in the above disciplines and having at least 10 years of field experience in Farming system/Extension.</p> <p>Ability to analyze data and preparation of projects, writing reports/seminar notes/articles etc.</p> <p>The person should have the ability of team leadership & motivation.</p>	50,000
C. National Level		
Advisors/Chief Consultants	<p>Master degree in Agriculture/Horticulture/Forestry/Veterinary Sciences/Botany or Bachelor Degree in Agricultural Engineering/Information Technology/Environmental Sciences. Preference may be given to candidates with Doctorate Degree/Master of Technology in the above disciplines and having at least 10 years of field experience in farming system/natural resource management/monitoring information system/ programme evaluation or 5 years experience in the rank of Additional Commissioner or above in Government of India, handling agriculture programmes.</p> <p>Ability to analyze data and preparation of projects, writing reports/seminar notes/articles as evidenced by publication in national and international journals.</p> <p>The person should have the ability of team leadership & motivation.</p>	70,000

- Note: 1) Consultants will be engaged on contract basis on payment of fixed honorarium as mentioned above. No other allowances shall be payable.
- 2) Expenditure on engagement of consultants will be met from Administrative and other contingent expenses admissible under NMSA.

Chapter – 2

OPERATIONAL GUIDELINES FOR IMPLEMENTATION OF SOIL HEALTH MANAGEMENT (SHM) COMPONENT UNDER NMSA

Guidelines for implementation of Soil Health Management (SHM) component under National Mission for Sustainable Agriculture (NMSA)

The Mission intervention on Soil Health Management (SHM) will be implemented by INM Division of Department of Agriculture & Cooperation This intervention will be governed by these operational guidelines.

1. Implementation of Mission Intervention on Soil Health Management (SHM)

- 1.1 Out of the 4 interventions under NMSA, **Soil Health Management (SHM) is one of the most important intervention:** SHM will aim at promoting location as well as crop specific sustainable soil health management including residue management, organic farming practices by way of creating and linking soil fertility maps with macro-micro nutrient management, appropriate land use based on land capability, judicious application of fertilizers and minimizing the soil erosion. Assistance will be provided for various improved package of practices based on land use and soil characteristics, generated through geographical information system (GIS) based thematic maps and database on land and soil characteristics through extensive field level scientific surveys. This component will be implemented by State Govt., National Centre of Organic Farming (NCOF), Central Fertilizer Quality Control & Training Institute (CFQC&TI) and sanctioned by INM division. Besides, this component will also provide support to reclamation of problem soils (acid/ alkaline/saline) and promote appropriate land uses through State Governments, Soil and Land Use Survey of India (SLUSI)/NRM Division. It will have following approach for component specific planning.
 - 1.1.1 SHM will support various types of soil and land resource surveys for creating a comprehensive soil database for the planning and implementation of programmes;
 - 1.1.2 Ensure quality control requirements of fertilizers, bio-fertilizers and organic fertilizers under the Fertilizer (Control) Order (FCO), 1985, including revision of standards and testing protocols keeping in view the advances in research and technology and covering organic inputs under quality control regime;
 - 1.1.3 Promote Integrated Nutrient Management (INM) through judicious use of chemical fertilizers, including secondary and micro nutrients, in conjunction with organic manures and bio-fertilizers, for improving soil health and its productivity;
 - 1.1.4 Support augmentation and strengthening of soil and fertilizer testing facilities and provide soil test based recommendations to farmers for improving soil fertility and enhancing economic return to farmers. It will

also support up-gradation of skill and knowledge of Soil Testing Laboratories (STL)/extension staff and farmers and their capacity building through training and demonstration including demonstration on farmers fields on soil health care;

- 1.1.5 Training on appropriate measures on soil nutrient management and judicious distribution of fertilizers as per soil/crop need for enhanced productivity with reduced cost of cultivation;
- 1.1.6 Reclamation of problem soils (Acidic/alkaline/saline) through appropriate soil amendments and land development;
- 1.1.7 It is to be noted the reclamation and land use survey and planning will be implemented by SLUSI through NRM division.

2. The details of specific components in this Intervention are given below:-

- 2.1 Soil Health-The various components under Soil Health are given below:-
 - 2.1.1 Setting up new Soil Testing Laboratories (STLs) and Mobile Soil Testing Laboratories (MSTLs) for macro nutrients and micro nutrients analysis.
 - 2.1.2 Strengthening of existing State STLs for micronutrient analysis.
 - 2.1.3 Capacity building through training of STL staff/extension officers/farmers and field demonstration/workshop etc.
 - 2.1.4 Creation of data-bank for balanced use of fertilizers, which is site specific.
 - 2.1.5 Adoption of village by STLs (10 villages each) through Frontline Field Demonstrations.
 - 2.1.6 Preparation of digital district soil maps (using Global Positioning System) and soil fertility monitoring system by ICAR/ State Agriculture Universities (SAUs).
 - 2.1.7 Providing portable soil testing kits to field level officers of State Govt.
 - 2.1.8 Promotion and distribution of micronutrients.
 - 2.1.9 Strengthening of Fertilizer Quality Control Laboratories
 - 2.1.9.1 Strengthening/up-grading existing State Fertilizer Quality Control Laboratories.
 - 2.1.9.2 Setting up of New Fertilizer Quality Control Laboratories by State Governments.
 - 2.1.9.3 Reclamation of Alkaline/Saline soils
 - 2.1.9.4 Reclamation of Acidic soils
 - 2.1.9.5 Supporting CFQC&TI in discharging of its functions

2.1.9.6 Supporting SLUSI in discharging of its functions

The reclamation of Alkaline/Saline/Acidic soils to be taken up under RAD Component. SLUSI related work to be implemented by NRM division.

2.2 Integrated Nutrient Management & Organic Farming— The various Components under the INM& Organic Farming will be as under:

- 2.2.1 Setting up of mechanized Fruit/Vegetable market waste/Agro waste compost production unit.
- 2.2.2 Setting up of State of art liquid/carrier based Biofertilizer/Biopesticide units
- 2.2.3 Setting up of Bio-fertilizer and Organic fertilizer testing Quality Control Laboratory (BOQCL)
- 2.2.4 Strengthening of existing Biofertilizer and Organic Fertilizer Testing/Quality Control Laboratory (BOQCL) under FCO
- 2.2.5 Promotion of Organic Inputs on farmer's field (Manure, Vermi-compost, Bio-Fertilizers Liquid/solid, Waste compost, Herbal extracts etc.)
- 2.2.6 Adoption of organic farming through cluster approach under Participatory Guarantee System (PGS) certification.
- 2.2.7 Support to PGS system for on-line data management and residue analysis
- 2.2.8 Organic Village adoption for manure management and biological nitrogen harvesting
- 2.2.9 Support to research for development of organic package of practices specific to state and cropping system
- 2.2.10 Setting up of separate Organic Agriculture Research and Teaching Department
- 2.2.11 Supporting NCOF in discharging of its functions 51

3. The details of these components, physical and financial targets for these components and pattern of assistance have been described at APPENDIX and listed at **Annexure I, II and III** respectively.

4. Project Sanctioning System

4.1 The State Governments will prepare proposals related to SHM Intervention and furnish to INM Division of Department of Agriculture & Cooperation, Government of India. A project Sanctioning Committee(PSC) chaired by Joint Secretary INM, with representation from ICAR, NCOF, CFQTI, IFD , NRM and Crops Division will approve projects so received.

- 4.2 The INM division will be reporting the progress periodically to National Advisory Committee constituted under NMSA mission. Technical backstopping will be provided by Standing Technical Committee from time to time.
- 4.3 Coverage: The intervention will be operational throughout the country. However, some components/interventions will have location specific approach suitable to specific agro-ecological zones.
- 4.4 Fund Flow Mechanism:
 - 4.4.1 Consequent to approval of project, funds will be released to State Designated Agency notified by the State. State Level Implementing Agency would ensure implementation in a time bound manner. Funds will be released based on progress report, submission of utilization certificates of earlier sanctioned projects, specific emergent need etc.
 - 4.4.2 About 3% of annual outlay for administrative expenses at National level viz. for establishment expenses of DAC and its subordinate offices/ Institutes, Technical Support Units (TSU), monitoring& evaluation, capacity building and other contingent expenses etc. Similarly, upto 5% of total allocation to States will also be earmarked for meeting administrative and other contingent expenses for implementation of the Mission Intervention on SHM.

5. Monitoring and Evaluation

- 5.1. At State level, process of implementation will be monitored by State Standing Technical Committee (SSTC) and State Mission for Sustainable Agriculture (SMSA)/ State Level Committee (SLC). At National level, Intervention on SHM will be monitored by INM division. Web-based monitoring, video conferencing, desk reviews, field visits, and evaluation of programme implementation will be followed for effective monitoring. State Government may also undertake concurrent evaluation during implementation period to facilitate mid course corrections, if, any.
- 5.2. States will ensure submission of detailed Quarterly Progress Reports (QPR) by 10th of first month of next quarter. Similarly, detailed Annual Progress Report (APR) should be sent to Department of Agriculture & Cooperation, Ministry of Agriculture within three months, after closure of financial year.
- 5.3. At field or village level, Panchayats will be involved in overseeing day to day process of implementation. At district level, monitoring will be undertaken by Joint Director/Deputy Director Agriculture in collaboration with respective ZillaPanchayat Raj Institutions.
- 5.4. At cluster/village level, details of approved programme, all activities undertaken, name of beneficiaries, expenditure incurred etc. may be displayed at the PanchayatBhavan/prominent public place in the locality.

APPENDIX

Details of the components of Soil Health Management under National Mission for Sustainable Agriculture (NMSA)

A. SOIL HEALTH MANAGEMENT

1. Strengthening Of Soil Testing Laboratories

- 1.1 **Setting up of new Soil Testing Laboratories (Static and Mobile)-** In order to promote soil test based balanced and judicious use of chemical fertilizers, 100 new static/mobile STLs will be set up in the country during the 12th Five Year Plan.
- 1.2 **Norms for Assistance-** 75% of the project cost, subject to a limit of Rs. 56 lakh, will be provided as subsidy for purchase of machinery & equipment, chemicals & glass wares, miscellaneous laboratory articles and contingencies as per indicative list at **Annexure IV**. In case of Mobile STLs, financial assistance from DAC shall be 75% of the project cost subject to a maximum of Rs. 56 lakh per Mobile STL as per indicative list at **Annexure V**. The suggested list of equipment can be changed in special circumstances only with the specific approval of INM Division.
- 1.3 **Expected Outcome-** It is expected that each of these static STLs equipped with AAS could analyse about 10000 soil samples per annum for NPK and Micronutrients. Efforts will need to be made for ensuring that one out of every three samples (preferably from the same locality) shall also be tested for micronutrients. Similarly, capacity of every MSTL is 5000 samples per annum, which should be optimally utilised. In case of Labs with ICP, this capacity will get enhanced to atleast 1 lac samples.
- 1.4 **Involvement of Private Sector-** Whereas normally Soil Testing labs will be set up by state government through state agencies, it is expected that state government will encourage involvement of other agencies such as Private Companies associated with Agriculture Extension in some way such as Fertilizer Companies, Agriclinics, NGOs, Cooperative Societies and private entrepreneurs(Agripreneurs). The State Governments will need to announce clear guidelines for involving these private sector agencies in the operation and management of these Soil Testing labs. State Governments are encouraged to announce innovative PPP Guidelines for involvement of Private sector for running of these Labs. The guidelines should, inter alia, clearly define all the terms and conditions including the soil testing charges to be charged from farmers and the MOU/Agreement to be signed with these private agencies, clear cut monitorable targets. State Governments will monitor and review performance of these private sector labs periodically.

2. Strengthening of Existing Soil Testing Laboratories

- 2.1 At present, there are 1087 soil testing laboratories (930 STLs and 157 MSTLs) working in the country having annual analyzing capacity of about 12 million soil

samples. Many of the existing STLs do not have facilities for micronutrient analysis and the existing capacities of analysing NPK also is not being fully utilised. A onetime grant shall be provided to create facilities for analysis of micronutrients such as Zinc, Iron, Copper, Manganese, Boron, etc. Atleast 125 existing STLs will be strengthened during the 12th Five Year Plan period.

- 2.2 **Norms for assistance-** Rs. 30 lakhs per/lab for creating micronutrient analysis facilities through purchase of Inductively Coupled Plasma Spectrophotometer (ICP)/Atomic Absorption Spectrometer(AAS), its accessories with required chemicals and glassware of standard quality as per indicative list at **Annexure-VI**.
 - 2.3 Normally Existing STLs/MSTLs working under the control of the State Governments/UTs will be eligible for strengthening. For strengthening of STLs having no micro-nutrient analysis facility, performance assessment should be made keeping in view the existing staff before any assistance is given. Only working STLs should be supported. The State Government should carefully study the existing performance level of the STL and whether it requires any process change to achieve higher efficiencies. Moreover, a system of bench-marking should clearly be put in place. State Governments are encouraged to announce clearly defined and transparent guidelines for taking help of private sector as defined in para 1.4 above for operation and management of existing STL and MSTL , along with strengthening under the scheme.
- 3. Capacity Building through training of STL staff/extension officers/farmers and field demonstration/workshops etc. on Soil health management/INM/balanced use of fertilizers**
- 3.1 **Training Programme for Staff-** The training programme to be organized for STL staff and field functionaries on Balanced Use of Fertilizers will be a two day programme. The course content shall inter alia, include Importance of Soil testing in Soil Fertility Management; Sampling Methodology; Testing protocols; Interpretation of soil test results and calculation of nutrient requirement; Cropping system based nutrient management & Importance of balanced nutrition on productivity and quality of produce and soil health maintenance etc.
 - 3.2 **Training Programme for Farmers-** The training programme to be organized for farmers on Balanced Use of Fertilizers will be a two day programme. For organizing the two day training for farmers on Balanced Use of Fertilizers, the course content shall interalia include, topics such as Importance of Soil Testing in Soil Health Management; Importance of balanced fertilizer use in crop productivity and Soil Health Management; Sampling protocols and sending samples to testing laboratories; Importance of organic manures and biofertilizers in balanced nutrition; Implementation of soil test results for soil fertility management as per the requirement of crop etc.

- 3.3 Field Demonstrations-** Field Demonstrations on Balanced Use of Fertilizers should be conducted at the farmers' field. The entire package of practices except fertilization should be taken up uniformly. Cultural practices such as ploughing, disking, levelling, etc should be done before sowing/planting. The demonstration plot should preferably be of one acre (4000 sq. mt.) each in one single patch. Two or more well divided plots of total one acre can also be selected. Each demonstration plot should be divided into 2 equal parts i.e. Control part - based on existing practices adopted by the farmer and Treated part - based on soil test based balanced fertilization including economic fertilizers such as SSP, Neem coated Urea, Sulphur Coated Urea, Zincated Urea, Customized Fertilizers, micro nutrients and Bio-Fertilizers & soil amendments, if required. All other cultural practices should be kept uniform till harvesting.
- 3.4 Farmers' fair-** A one day farmer's fair should be organized at a time when the crop is at almost grain forming/ fruiting stage or on the day of harvesting. 50 farmers from the nearby villages should be invited to demonstrate the impact and usefulness of balanced and soil test based fertilization practice. Efforts should be made to supply technical literature in the regional language. Two subject matter specialists should also be invited for proper technology transfer and for addressing farmers' queries.
- 3.5** State Governments may implement this component through any of the selected agencies such as ICAR institute/SAUs/KVK/Agriculture Department/state agency/Fertilizer Industry or may also involve any agriculture graduate or progressive farmer in its implementation. The number of programs will be decided by the INM division based on proposal received from states and UTs. Details of Norms for assistance and duration have been given in **Annexure VII**.
- 3.6** GOI or state Government will organize or assist organization of regional and national workshop/seminar/exhibition through central agency or state agencies for promotion of Soil Health management, Integrated Nutrient management or Balanced use of fertilization.

4. Creation of Data Bank for site specific Balanced Use of Fertilizer

- 4.1 Objective-** For promoting balanced use of fertilizers, it is essential to maintain region specific and location specific data on soil fertility. As on today, there is no systematic data or system available in the country for recommending site-specific nutrient requirement and delineation of secondary and micronutrient deficiencies. It is proposed to create a National Data Bank.
- 4.2** State Governments can implement this intervention by any agency of their choice such as ICAR institute/SAUs/National Informatics Centre etc or even private sector, but the proposal should specifically cover an action plan for the use of this data for educating farmers. Transparent guidelines for selection of Private sector will need to be in place for approval of the proposal.
- 4.3** Norms for assistance are given at **Annexure-III**.

5. Adoption of village by STLs (maximum 10 Villages per STL) through Frontline Field Demonstration (FFD)

- 5.1 **Objective-** For confidence building of farmers about usefulness of balanced use of fertilizers, it is essential that STLs' recommendations are effectively demonstrated in villages. It is proposed to adopt 8000 villages by 800 Soil Testing Laboratories to conduct frontline field demonstration on balanced use of fertilizers. These 800 STLs shall be chosen by the State Government, a list will be sent to GOI along with the proposal.
- 5.2 Around 10 farmers belonging to the adopted village should be selected. A field day shall invariably be arranged for farmers of the same or nearby villages. Subject matter specialists should explain the requirement and usefulness of soil test based fertilization and the importance of soil amendments.
- 5.3 **Norms for Assistance-** Rs. 20,000 per FFD as per the details at Annexure-VIII.

6. Preparation of Digital District Soil Maps and Global Positioning System (GPS) based Soil Fertility Monitoring

- 6.1 **Objectives-** Lack of GPS based district soil fertility maps is the major hindrance in adopting balanced use of fertilizers. During 11th Plan IISS, Bhopal was entrusted the work of preparation of fertility maps of 171 districts in 19 major States. It is proposed to prepare digital district soil maps and GPS based soil fertility monitoring system in remaining agricultural districts during the 12th Five Year Plan.
- 6.2 State Governments/SAUs/ICAR Institutes/National Informatics Centre/KVKs or other central/state Government agency can be associated for implementation of this project.
- 6.3 Norms for Assistance will be restricted to around Rs. 6.00 lakh per district.

7. Portable Soil Testing Kits for Balanced Use of Fertilizers

- 7.1 For faster and on-farm testing of soil nutrient for balanced use of fertilizers assistance to State Government subject to maximum of Rs. 0.15 lakh/per kit will be provided. It is proposed to distribute 3000 soil testing kits to field functionaries during 12th plan period. Preference will be given for kits having micro nutrient facility. Technical suitability of kit will be decided in consultation with ICAR institutes such as IARI, New Delhi.

8. Promotion and Distribution of Micronutrient

- 8.1 Intensive agriculture is experiencing widespread deficiency of micronutrients particularly of Zinc followed by Iron, Manganese, Boron, etc. It is proposed to promote and distribute micronutrients during the entire 12 th Five Year Plan.

Assistance will be limited to 50% of the cost of requisite nutrients subject to a maximum of Rs. 500 per hectare.

9. Strengthening Of Fertilizer Quality Control system

9.1 Strengthening/Upgradation of the existing State Fertilizer Quality Control Laboratories

- 9.1.1 In order to check the quality of the fertilizers sold in the country, at present there are 74 FQCL working under the control of different State Governments. Since quality testing is a statutory requirement under the Fertilizer Control Order (FCO), it is imperative to maintain all the instruments and equipment and to ensure supply of quality chemicals and glasswares for the analysis. This requires time-to-time upgradation and replacement of the equipment. Many of the State Laboratories are also facing acute financial problem to maintain these facilities. Therefore, in order to maintain the high standard of analysis potential, it is proposed to upgrade and strengthen the existing FQCLs.
- 9.1.2 **Eligible Agencies-** FQCLs under State Governments. Assistance will be provided to only those State laboratories, which are functional and working well and there will be no recurring liability on the part of the Central Government.
- 9.1.3 **Norms for Assistance-** Rs. 30 lakh per laboratory is to be provided for purchase of machinery & equipment, chemicals, glasswares and miscellaneous laboratory articles as indicated Annexure-IX.

9.2 Setting up of new Fertilizer Quality Control Laboratories by State Governments

- 9.2.1 Considering that the total number of dealers in the country by the end of the 12th Five Year Plan would be about 3.25 lakhs, the minimum requirement of fertilizer samples to be tested for ensuring quality is 6.50 lakh (to cover each dealer during kharif and rabi). The capacity of existing testing facilities (1.25 lakh) is quite inadequate and is only around 20 per cent of the requirement. It is, therefore, proposed to set up 20 new FQCLs by the State Governments for quality testing with annual analyzing capacity of 4000 samples each. A one-time financial assistance @ Rs. 75 lakh/ laboratory is proposed to be provided to the State Governments. This will provide an additional annual analyzing capacity of 0.80 lakh samples.
- 9.2.2 **No. of Laboratories to be set up** -20 new FQCLs will be set up during the 12th Five Year Plan
- 9.2.3 **Norms for Assistance-** One time grant of Rs.75 lakh per laboratory shall be provided for purchase of machinery & equipments, chemicals, glass

wares and miscellaneous laboratory articles as per **Annexure- X** to create facilities for analysis of NPK, secondary and micronutrients.

- 9.3 Reclamation of Alkaline/Saline soils and Acidic soils Reclamation of problem soils (Alkaline/Saline/Acidic soils to be proposed under **RAD Component**. The norms for assistance are given at **Appendix I of NMSA Guidelines**.

10. Support to CFQC&TI

- A. 10.1 **Analysis of Fertiliser Samples for Quality Control-** The CFQC&TI and its 03 Regional Laboratories are the notified labs under clause 29 of FCO for analysis of the fertilizer samples drawn by the fertilizer inspectors from fertilizer dealers and other sources. During 12th plan period it is proposed to continue analyse of fertilizer samples.
- 10.2 **Human resource development through trainings directly by CFQC&TI and its 03 Regional Labs**

At CFQC&TI/RFCLs

- 10.2.1 **Training Programme on Fertiliser Quality Control for Fertiliser Analyst-** Four week duration with 20 participants in each course will be organized during 12th plan.
- 10.2.2 **Training Programme on Fertiliser Quality Control for Fertiliser Inspectors-** Two week duration with 20 participants in each course will be organized during 12th plan.
- 10.2.3 **Training Programme on Fertiliser Quality Control for Fertiliser Enforcement officers of N.E. States-** Two week duration with 20 participants in each course will be organized during 12th plan.
- 10.2.4 **Training Programme on Fertiliser Quality Control for Notified authorities-** One week duration with 20 participants in each course will be organized during 12th plan.
- 10.2.5 **Training Programme on Fertiliser Quality Control for Foreign Participants-** Five week duration with 20 participants in each course will be organized during 12th plan.

In States

- 10.2.6 **Training Programme on Fertiliser Quality Control for Fertiliser Enforcement/ Extension Officers-** Two days duration with 50 participants in each course will be organized during 12th plan.

- 10.2.7 Training Programme on Fertiliser Quality Control for Fertiliser Dealers-**
One days duration with 50 participants in each course will be organized during 12th plan.

Innovative Components for SHM- Any innovative project submitted by any state government to promote the objectives of this scheme will be considered for funding under the scheme within the overall outlay and budget limits. The total amount spent in any year on such innovative components will not exceed 10% of the total Budget for the year

B. INM & ORGANIC FARMING

12. Support to NCOF

12.1 National Centre of Organic Farming (NCOF) till now effectively acted as only a centre on Bio Fertilizer. In 12th plan NCOF will act as a national centre and coordinate all activities required for promotion of organic farming in the country rather than just focusing on Bio Fertilizers. NCOF will focus on area expansion,, promoting marketing in Domestic market, certification, technical capacity building of all the stakeholders including human resource development, transfer of technology, promotion and production of quality organic and biological inputs, awareness creation and publicity through print and electronic media in association with states. NCOF will develop a very effective system of data collection on as aspects of Organic farming in association with states, by taking assistance from reputed private players in the filed of data collection and organic farming.

12.2 Human resource development through trainings by NCOF and its Six RCOFs

- 12.2.1 International Trainers' training/cooperation and liaison with international bodies:** This being an exclusively new field with practically little expertise in the country, training of officers from DAC, NCOF, State agencies (involved with organic agriculture implementation programme), certification agencies and scientists from ICAR and SAUs (working for development of organic package of practices since last 3 years) are required to be given and international exposure. This also includes the need based visit of foreign experts to India and Indian executive officers/technical experts to different countries to create awareness about Indian organic produce, attend seminar/conferences, participate in exhibitions and develop liaison with international bodies on organic agriculture. Visit by select group of officers from DAC and NCOF to BioFach, Nuremberg and other such events, can also be useful in learning international trends in organic agriculture.

12.2.2 Certificate Courses:

- 12.2.2.1 **Certificate Course on organic farming-** To create first generation organic agriculture extension workers and field workers in the field of organic farming and to create a rural force of soil testing entrepreneurs through rapid soil testing kits it is propose to conduct one month certificate courses on organic production practices, on farm input management, certification process (third party and PGS both), documentation, post harvest processing, storage and marketing. The course will be open for rural youth having Degree/Diploma in agriculture/Science with Biology, SAUs/Educational institutes can also sponsor their undergraduate students for such courses. Ten such courses (2 per year) will be organized at NCOF, Ghaziabad.
- 12.2.2.2 **Training/Refresher course on production and quality control of organic inputs-** To update the analytical skills, sample collection and handling requirements of State Government officers/ personnel from organic inputs production units on quality analysis requirement as pr FCO for biofertilizers and organic fertilizers and to transfer appropriate production technology to personals associated with the production of organic and biological inputs, **10 days** training/refresher courses are proposed.
- 12.2.2.3 **Trainers trainings-** To create a cadre of organic agriculture trainers it is propose to organize **five days** customized trainers training courses for Fertilizer inspectors, Senior level extension officers, KVK trainers, NGO trainers, PGS Regional Council members and technical staff of production and quality control units etc. on FCO, certification systems, PGS operational strategy, organic management, production and quality control of organic inputs.
- 12.2.2.4 **Training of Field Functionaries/Extension Officers on Organic Farming, PGS-India programme, soil health management and for input dealers on quality control-** As organic farming and sustainable soil health management practices are primarily on-farm management practices, to disseminate appropriate management protocols to field functionaries and extension officers, working in both Government and NGO sector, two days training courses are proposed.

13. Components to be implemented by NABARD

- 13.1 **Support and Encourage production and use of organic inputs for nutrient mobilization and plant protection through Capital Investment Subsidy for Setting up of Commercial Input Production Units:**

- 13.1.1 Setting up of mechanized Fruit/Vegetable Market/Agro Waste Compost production unit (100 TPD capacity)-** For establishment of large mechanized compost plants by State Government/APMCs/Municipalities/other public sector enterprise/fertilizer companies/private industries/private entrepreneur/individual etc. for fruit and vegetable waste/agro waste compost unit under PPP or otherwise mode. Model project outlay of each unit is proposed for Rs.190.00 lakh. 100% assistance will be provided to State Govt /Govt Agencies upto a maximum limit of Rs 190 lakh / unit and for individuals/private agencies in the form of Capital Investment Subsidy @ 33% of total financial outlay (TFO) limited to Rs.63 lakh as Credit linked back ended subsidy through NABARD. Details in respects of Model financial Outlay are given at Annexure-IV.
- 13.1.2 Setting up of State of art liquid/carrier based Bio-fertilizer/Biopesticide Production Units (200 TPA Capacity)-** For establishment of state of the art sterile liquid/carrier based 200 TPA biofertilizers and microbial Biopesticides production units by State Government/APMCs/Municipalities/other public sector enterprise/fertilizer companies/private industries/private entrepreneur/individual etc. under PPP or otherwise mode. Model project outlay of each unit is proposed for Rs.175.00 lakh. 100% Assistance will be provided to State Govt./Govt. Agencies upto a maximum limit of Rs 160 lakh/unit and for individuals/private agencies in the form of Capital Investment Subsidy @ 25% of total financial outlay (TFO) or Rs.40 lakh whichever is less as credit linked back ended subsidy through NABARD.

14. Components to be implemented by State Govts./ICAR/SAUs etc.

- 14.1 Setting up of Biofertilizer and Organic Fertilizer Testing/Quality Control Laboratory (BOQCL) under FCO-** For setting up of Biofertilizers/Organic Fertilizers Testing/Quality Control Laboratories assistance as Grant-in-Aid shall be provided to State Government.
- 14.2 Strengthening of existing Biofertilizer and Organic Fertilizer Testing/Quality Control Laboratory (BOQCL) under FCO-** For existing Biofertilizers/Organic Fertilizers Testing/Quality Control Laboratories established by State Government under FCO financial assistance @ Rs.45.00 lakh per unit shall be provided as Grant-in-Aid for their strengthening in terms of equipments/instruments etc. In all 8 such units are to be provided financial assistance during 12th plan period with a total cost of Rs.360.00 Lakh.
- 14.3 Support to PGS system for on-line data management an residue analysis -** Assistance shall be provided to state government for assitingauthorized Regional Councils under PGS-India programme as Grant-in-aid for on data management of

group registered under each Regional Council and residue analysis soil from registered farmers under Local Group of Regional Council.

- 14.4 Organic Village adoption for manure management and biological nitrogen harvesting-** State Government shall be provided assistance as Grant-in-Aid for adoption of organic villages against state specific project proposal for adoption of organic village.
- 14.5 Support to research for development of organic package of practices specific to state and cropping system-** For development of organic package of practices specific to cropping system and state-specific assistance as Grant-in-Aid to eligible ICAR/SAUs/Other research institutions/State Government agencies with research facilities for development of organic package of practices, shall be provided on specific proposal basis.
- 14.6 Setting up of separate Organic Agriculture Research and Teaching Department-** For proper popularization of organic agriculture, there is a need to establish separate departments under State Agricultural Universities where diploma/degree courses on organic agriculture can be conducted. For this purpose assistance as Grant-in-Aid shall be provided to SAUs against specific proposal from SAUs. It is proposed to establish 8 such department in various universities during 12th plan period. For this purpose an amount of Rs. 800.00 Lakh is earmarked for 12th plan period.
- 14.7 Promotion of Organic Inputs on farmer's field (Manure, Vermi-compost, Bio-Fertilizers Liquid/solid, Waste compost, Herbal extracts etc.)-** For promotion of organic inputs financial assistance @ 50 % of cost subject to a limit of Rs. 5000/- per ha and Rs. 10,000 per beneficiary will be provided. 1 million ha area is proposed to be covered during 12th Plan period.
- 14.8 Adoption of organic farming through cluster approach under Participatory Guarantee System (PGS) certification-** For adoption of organic farming through cluster approach under Participatory Guarantee System (PGS) certification financial assistance of Rs. 20,000/- per ha subject to maximum of Rs. 40,000/- per beneficiary will be provided for 3 year term.
- 14.9 Field demonstrations-cum field days-** To demonstrate the organic farming packages in PGS clusters/farmers' field, one practicing organic farmer shall be selected for demonstration and field days shall be arranged. Entire organic packages including multiple cropping, crop rotation, conversion, documentation etc. shall be demonstrated.
- 14.10 Capacity building and operationalization of PGS-India programme-** As a farmer group centric certification programme, PGS-India has been launched during 2011-12, continuous monitoring, surveillance and coordination is needed. Website management and on-line monitoring will be the regular activity. Once the PGS-

India certified products are released a system of random residue testing shall also be carried out. Residue analysis shall be undertaken through NABL accredited laboratories. Funds shall be needed for its operationalization website management, surveillance, traveling charges for non-official PGS-NAC members and for paying cost of residue analysis tests.

- 14.11 Training/Refresher Course on Production and Quality Control of Organic Inputs-** To update the analytical skills, sample collection and handling requirements of State Government officers on quality analysis requirement as per FCO for biofertilizers and organic fertilizers and to transfer appropriate production technology to personals associated with the production of organic and biological inputs, **10 days** training/refresher courses are proposed.
- 14.12 Training for field functionaries and extension staff-** As organic farming and sustainable soil health management practices are primarily on-farm management practices, to disseminate appropriate management protocols to field functionaries and extension officers, working in both Government and NGO sector, **two days** training courses are proposed.

ANNEXURE-I

Tentative targets and financial outlay for major project activities for the XII Five Year Plan shall be as under

Programme Activity/Component	Physical	Financial Outlay (Rs. Crore)
Soil Health Management (SHM)		700
• <i>Soil resource mapping(SRM) through field survey, District-wise Digital Soil Fertility Maps, Crop-wise portal & National/Global Farm Registry (Central sector/centrally sponsored)</i>		25
• <i>Establishment/Strengthening of Agro waste compost/Bio-fertilizer/ Bio-pesticide unit Capital investment through NABARD (Central sector) Grant to State Govt./Govt. Agencies (centrally sponsored)</i>	75 10	41 18
• <i>Establishment/strengthening of Bio & Organic Fertilizer Testing Quality Control Laboratories (BOQCL)</i>	20	12
• <i>Organic Village Adoption including manure management and biological nitrogen harvesting</i>	Project based	100
• <i>Promotion of INM, organic farming, micro-nutrient, market development, awareness creation, exhibition & publicity</i>	Project based	65
• <i>Quality analysis under Fertilizer Control Order (FCO) (Central sector)</i>	42500 samples	30
• <i>Establishing new Mobile/Static Soil Testing Laboratory</i>	70	40
• <i>Strengthening of existing Soil Testing Laboratory (STL)</i>	125	38
• <i>Distribution of portable soil testing kit</i>	4000	6
• <i>Establishing/Strengthening of Fertilizer Testing Laboratory(FTL)</i>	60	30
• <i>Strengthening of existing RFCL & 3 new labs (Kandla, Vizag & Mangalore (Central sector)</i>	6	5
• <i>Reclamation & development of saline/alkaline soils</i>	0.1Mha	100
• <i>Reclamation & development of acid soils</i>	0.1Mha	30
• <i>Establishment (SLUSI, NPOF, CFQCTI), capacity building, training (Central sector)</i>		160

Note: The component on *Soil resource mapping(SRM) through field survey to be taken up by SLUSI*. Reclamation of problem soils (Alkaline/Saline/acidic soils) to be proposed under RAD Component.

ANNEXURE-II**Tentative Budget Outlay for Salary and other Establishment expenses
(under central sector scheme)**

(Rs. in crore)

Sl. No.	Name of the Institute	2013-14	2014-15	2015-16	2016-17	Total
1.	Central Fertilizer Quality Control & Training Institute (CFQC&TI)	2.0	10.0	12.0	12.0	40.00
2.	National Centre of Organic Farming (NCOF)	3.0	16.0	18.0	20.0	57.00
3.	Soil and Land Use Survey of India (SLUSI)	5.0	19.0	20.0	23.0	75.00
	Total	10.00	45.00	50.00	49.00	160.00

ANNEXURE-III**Component wise Pattern of assistance (under centrally sponsored scheme)****A. Soil Health components of SHM under NMSA**

Sl. No.	Component	Pattern of assistance
1.	Setting up of new Mobile/Static soil testing laboratories (MSTL/SSTL)	75% Assistance of total project cost to State Govt. for SSTL subject to a maximum limit of Rs 56 lakh per SSTL/MSTL.
2.	Strengthening of existing SSTL/MSTL.	75% Assistance to State Govt. subject to a maximum limit of Rs 30 lakh per MSTL/SSTL.
3.	Training and demonstration on Soil Health management	Training to STL/FTL Staff, field functionaries. Rs. 25,000/- per training session for 20 participants or more. Training to farmers including field demonstrations; Rs. 10,000/- per training session for 20 participants or more. Rs. 20,000/- per Front Line Field Demonstration
4.	Creation of databank on location specific balanced use of fertilizers	One time assistance to State Govt. up to Rs. 10 lakh per state.
5.	Creation of District-wise Digital soil fertility maps	One time assistance to State Govt. up to Rs. 6.00 lakh per district subject to maximum of Rs. 50 lakh for one State per annum.
6.	Providing Portable Soil Testing Kit to field level officers of State Govt.	Assistance @ Rs.15,000/Kit
7.	Promotion and distribution of micronutrients	50% of cost subject to a limit of Rs. 500/- per ha and/or Rs. 1000/- per beneficiary.
8.	Strengthening of existing Fertilizer Quality Control Labs (FTLs) by State Govts.	Assistance to State Govt. subject to a maximum limit of Rs.30 lakh per FTL
9.	Setting up of new Fertilizer Quality Control Labs by State Govts.	100% assistance to State Govt. subject to a maximum limit of Rs 75 lakh per FTL.

B. Organic & INM components of SHM under NMSA

Sl. No.	Component	Pattern of assistance
1.	Setting up of mechanized Fruit/Vegetable market waste/Agro waste compost production unit.	100% Assistance to State Govt./Govt. Agencies upto a maximum limit of Rs. 190.00 lakh/unit and 33% of cost limited to Rs. 63 lakh/unit for individuals/private agencies through NABARD as capital investment for 3000 TPA production capacity
2.	Setting up of State of art liquid/carrier based Biofertilizer/Biopesticide units	100% Assistance to State Govt./Govt. Agencies upto a maximum limit of Rs. 160.00 lakh/unit and 25% of cost limited to Rs. 40 lakh/unit for individuals/private agencies through NABARD as capital investment of 200 TPA production capacity
3.	Setting up of Bio-fertilizer and Organic fertilizer testing Quality Control Laboratory (BOQCL) or Strengthening of existing Laboratory under FCO.	Assistance up to maximum limit of Rs. 85 lakh for new laboratory and up to a maximum limit of Rs. 45 lakh for strengthening of existing infrastructure to State Government Laboratory under Agriculture or Horticulture Department.
4.	Promotion of Organic Inputs on farmer's field (Manure, Vermicompost, Bio-Fertilizers Liquid/solid, Waste compost, Herbal extracts etc.)	50% of cost subject to a limit of Rs. 5000/- per ha and Rs. 10,000 per beneficiary. Propose to cover 1 million ha area.
5.	Adoption of organic farming through cluster approach under Participatory Guarantee System (PGS) certification.	Rs. 20,000/- per ha subject to maximum of Rs. 40,000/- per beneficiary for 3 year term.
6.	Support to PGS system for on-line data management and residue analysis	Rs. 200 per farmer subject to maximum of Rs. 5000/- per group/year restricted to Rs. 1.00 lakh per Regional Council. Up to Rs. 10,000/- per sample for residue testing (Residue analysis to be done in NABL Labs)

Sl. No.	Component	Pattern of assistance
7.	Organic Village adoption for manure management and biological nitrogen harvesting	Rs. 10 lakhs/village for adoption of integrated manure management, planting of fertilizer trees on bunds and promotion of legume intercropping through groups/ SHGs etc. (Maximum 10 village per annum/State will be supported)
8.	Training and demonstration on Organic Farming	Capacity building of stakeholders on organic farming, Participatory Guarantee System (PGS), quality control of organic input etc. Rs. 20,000/- per demonstration for a group of 50 participants or more
9.	Support to research for development of organic package of practices specific to state and cropping system	Against specific proposal
10.	Setting up of separate Organic Agriculture Research and Teaching Department	Against specific proposal

C. Activities to be implemented by GOI Institutes /Centres

Sl. No.	Component	Institute/Centre
1.	Soil survey& capacity building of stakeholders.	Will be implemented by Soil and Land Use Survey of India (SLUSI). Soil and land resource surveys and develops soil-related database for the planning and implementation of land development programmes, Soil resource mapping, developing a GIS-based web server, support training and skill development in the areas of soil health management, water management, integrated farming etc.
2.	Promotion of Organic farming.	Will be implemented by National Centre for Organic Farming (NCOF) and its regional Centers.

Sl. No.	Component	Institute/Centre
		Promotion of organic farming through technical capacity building of stakeholders, technology development, transfer of technology, promotion & production of quality organic and biological inputs, awareness creation & publicity, quality control requirements of bio-fertilizers & organic fertilizers including revision of standards & testing protocols, organic input resource management and market development.
3.	Fertilizer quality control.	Will be implemented by Central Fertilizer Quality Control & Training Institute (CFQC&TI). Inspection and analysis of indigenous and imported fertilizers, standardization of methods of analysis and providing technical guidance to the State Governments on integrated nutrient management.

ANNEXURE-IV

Admissible items including illustrative list of equipment for setting up of Mobile/Static Soil Testing Laboratory with annual analyzing capacity of 10,000 samples per annum (For analyzing NPK, secondary nutrients & micronutrients in soil and water)

List of suggestive Equipments for Static STLs

Sl. No.	Item	Quantity
1.	Inductively coupled Plasma SpectrophotometerAtomic Spectrophotometre (ICP/AAS) Conductivity	1
2.	Meter	2
3.	pH Meter	2
4.	Shaking Apparatus	2
5.	Electronic Balance	1
6.	Analytical Balance/Top Loading balance	2
7.	Drying Oven	1
8.	Computer with appropriate software	1
9.	Table Top Centrifuge	1
10.	GPS System with Mobile Phone Miscellaneous equipments such as distillation unit, Sieving system, Auto titrators, bar code scanner & printer etc.	1 – –

The States May Take up ICP based or AAS based equipment depending upon their requirement for analysis of Zn, Fe, Cu, Mn, B etc.

ANNEXURE-V**List of Suggestive Equipments for MSTL**

Sl. No.	Item	Quantity
1.	Atomic Absorption Spectrophotometer (AAS) for MSTL	1
2.	Flame Photometer	1
3.	Conductivity Meter	2
4.	pH Meter	2
5.	Shaking Apparatus	2
6.	Electronic Balance	1
7.	Analytical Balance/Top Loading balance	2
8.	Drying Oven	1
9.	Computer with appropriate software	1
10.	Table Top Centrifuge	1
11.	GPS System with Mobile Phone	1
12.	Portable Genset of 7.5 KVA silent type	-
13.	Portable Kit	2
14.	Customized vehicle	1

ANNEXURE-VI**List of admissible items and equipment for strengthening of Soil Testing Laboratory (Items to be procured from the following list only)**

Sl. No.	Item	Quantity
1.	Inductively coupled Plasma Spectrophotometer/Atomic Spectrophotometre ICP/AAS)	1
2.	Conductivity Meter	1
3.	pH Meter	1
4.	Shaking Apparatus	1
5.	Electronic Balance	1
6.	Analytical Balance/Top Loading balance	1
7.	Drying Oven	1
8.	Computer with appropriate software	1
9.	Table Top Centrifuge	1
10.	GPS System with Mobile Phone	1
11.	Portable Genset of 7.5 KVA silent type	1
12.	Miscellaneous equipments such as distillation unit, Sieving system, Auto titrators, bar code scanner & printer, etc.	1

ANNEXURE-VII**Two days training for staff and Field functionaries**

Sl. No.	Component	Amount (in Rs.)
1.	Lodging and Boarding @ Rs. 400/-per person/day for 20 participants	16000.00
2.	Folder/Stationery/Literature	5000.00
3.	Honorarium to Guest Speakers @ Rs. 500 per speaker - 4Nos	2000.00
4.	Tea/Coffee/Misc. expenses including POL, Transport	2000.00
	Total	25000.00

Two days Farmers training

Sl. No.	Component	Amount (in Rs.)
1.	Working lunch/tea/training arrangements @ Rs. 150/- per person/day for 20 participants	6000.00
2.	Stationery/literature	2000.00
3.	Honorarium to Guest Speakers @ Rs. 500 per speaker including miscellaneous expenses	2000.00
	Total	10000.00

Field Demonstration

Sl. No.	Component	Amount (in Rs.)
1.	Assistance to farmer for inputs, labour etc.	5000.00
2.	Field Day expenses (a) Refreshment to 50 farmers @ Rs. 50/ farmer (b) Miscellaneous expenses such as POL/Transport/ Honorarium etc.	2500.00 2500.00
	Total	10000.00

ANNEXURE-VIII**Norms for Assistance for village adoption through Frontline Field Demonstrations**

Sl. No.	Component	Amount (in Rs.)
1.	Subsidy on inputs	
	(a) Soil amendments @ Rs. 200/acre x10	2000.00
	(b) Micronutrient @ Rs. 200/acre x10	2000.00
	(c) Organic inputs @ Rs. 200/acre x10	2000.00
	(d) Fertilizer @ Rs.1000/acre x10	10000.00
2.	Field Day-cum-Farmers Fair (one day)	
	(a) Tea snacks etc for 50 farmers @ Rs. 50/ farmer	2500.00
	(b) Misc expenses for field day	1500.00
	Total	20000.00

ANNEXURE-IX**Illustrative list of Equipments for strengthening of existing State Govt Fertilizer Testing Labs**

Sl. No.	Item	No.
1.	Inductively Coupled Plasma Spectrophotometer/Atomic Spectrophotometre (ICP)/AAS)	1
2.	Auto N-Analyzer	1
3.	Waster Bath-cum-shaker	1
4.	Muffle Furnace + Oven	1
5.	pH Meter	2
6.	Vacuum Pump	2
7.	Electronic Balance	2
8.	Analytical Balance	1
9.	Digestion/Distillation set	2
10.	Karl Fisher Apparatus	2
11.	Deionizer	1
12.	Computer with appropriate software	1
13.	Lab. Articles Misc equipments such as auto titrators, bar code scanner & printer, etc.	1 -

ANNEXURE-X**Illustrative list of Equipments for setting up of new State Govt. Fertilizer Testing Labs**

Sl. No.	Item	No.
1.	Inductively Coupled Plasma Spectrophotometer/Atomic Spectrophotometre (ICP/AAS)	1
2.	Auto N-Analyzer	1
3.	Waster Bath-cum-shaker	1
4.	Muffle Furnace + Oven	1
5.	pH Meter	2
6.	Vacuum Pump	2
7.	Electronic Balance	2
8.	Analytical Balance	1
9.	Digestion/Distillation set	2
10.	Karl Fisher Apparatus	2
11.	Deionizer	1
12.	Computer with appropriate software	1
13.	Lab. Articles Miscequipments such as auto titratorsetc	1 -

ANNEXURE-XI

List of Equipments and Plant and Machinery For Setting up New Biofertilizer and organic fertilizer (organic manures) Quality Control Laboratory for Capacity of 1000 samples/year

(Essential equipments, for strain maintenance and quality control glassware, plastic ware etc. (Rs. lakh)

Sl. No.	Item	Quantity required (No.)	Rate	Amount
1.	Vertical Autoclave 600x350 mm	2	0.8	1.600
2.	Hot air Oven 24x24x24"	2	0.6	1.200
3.	Refrigerator 300 lit	1	0.3	0.300
4.	BOD Incubator 290 lit	2	1.2	2.400
5.	Laminar air flow work station, working table size 3'x2'	2	1.5	3.000
6.	Rotary shaker (capable of holding 25no., flasks of 100-500 ml capacity)	2	1.25	2.500
7.	Binocular research microscope with phase contrast attachment (MOST IMPORTANT) having turret condenser and matching phase objectives of 10x, 40x and 100x magnification, 10x wide field eye pieces and telescopic centering eyepiece.	1	2.20	2.200
8.	pH Meter(Micro Processor based) and conductivity meter	1 each	0.3	0.600
9.	Small oil free air compressor	2	0.5	1.000
10.	Airconditioners 1.5 ton split type	4	0.3	1.200
11.	Miscelleneousequipments and tools such as colony counter, balances, microliter pipettes/Deionizer etc	-	LS	4.000
12.	Glassware and plastic ware aids		LS	2.500
13.	Centrifuge 15,000 rpm	1	1.50	1.50
14.	ICP	1	30	30.00
15.	Auto N-Analyzer	1	10.00	10.00
16.	Moisture analyzer	1	2.0	2.0
17.	Chemicals etc.	LS	-	2.50
18.	Assistance for hired manpower on contract	LS		10.00
19.	Computer with appropriate software	1	1.50	1.500
20.	Contigencies	LS	-	5.000
Total for A				85.00 lakh

For strengthening of existing BOQCL assistance shall be limited to Rs. 45.00 lakh. Any of the equipments mentioned above shall be the admissible items for strengthening.

ANNEXURE-XII**Project Outlay-Model Project on 100 TPD Fruit & Vegetable Waste composting Unit**

Sl. No.	Particulars	Quantity	Rate (Rs.)	Cost (Rs. lakh)	Remarks
1.	Cost of land	2-3 ha			on lease
2.	Civil Works				
	Land development including approach & internal road		LS	5.00	
	Processing shed	1000 sqm	2000	20.00	
	Concrete yard	2000 sqm	1000	20.00	
	Drainage for storm water & leachate collection system		LS	3.00	
	Green belt & buffer zone development & environmental requirements		LS	3.00	
	Office & Store	100 sqm	8000	8.00	
	Water source supply system including over head tank		LS	2.00	
	Sub total			61.00	
3.	Plant & Machinery				
	Rotary trauma screens with screen cloth of spring steel and suitable drives and chutes	4	1.50 lakh	6.00	
	Different sieve size as per requirement	4	7.50 lakh	30.00	
	Inclined belt conveyor with drive, feed hopper, chutes, scrappers, cover plates, guards etc.	1	4.00 lakh	4.00	
	Belt feeder, inclined, full seurt board with VFD and discharge chutes	1	3.00 lakh	3.00	
	Hoppers for additives	2	1.00 lakh	2.00	
	Bucket elevators, paddle mixers, cutters and crushers	1	4.00 lakh	4.00	
	Stitching bag conveyor, stitching machine, weighing scale etc.	1	4.00 lakh	4.00	
	De-stoner	1	3.00 lakh	3.00	
	Vehicle/JCV/Tractor/DCM	3	16.00 lakh	48.00	
	Misc. Equipments /other attachments		LS	2.00	
	Sub total			106.00	

Sl. No.	Particulars	Quantity	Rate (Rs.)	Cost (Rs. lakh)	Remarks
4	Misc. fixed assets				
	Plant and machinery erection, commissioning	LS	LS	7.00	
	Power connection, transformers & electrical fixtures etc.		LS	8.00	
	Lab equipments, chemicals, glassware etc.		LS	3.00	
	Furniture, fixture, computers with accessories and tools etc		LS	5.00	
	Sub total			23.00	
5	Total project cost			190.00	
Grant in aid for 3000 MT finished compost/annum capacity 190.00 lakh					

ANNEXURE-XIII**List of Equipments and project outlay for 200 MT/annum or 50,000 Liters Per Annum (LPA) production capacity bio-fertilizer/ bio-pesticide units**

Essential equipments, for strain maintenance and quality control glassware, plastic ware etc. (Rs. lakh)

Sl. No.	Item	Quantity required (No.)	Rate	Amount
1.	Vertical Autoclave 600x350 mm	2	0.8	1.600
2.	Hot air Oven 24x24x24"	1	0.3	0.300
3.	Refrigerator 300 lit	2	0.3	0.600
4.	BOD Incubator 290 lit	2	1.2	2.400
5.	Laminar air flow work station, working table size 3' x 2'	2	1.5	3.000
6.	Rotary shaker (capable of holding 25no., flasks of 100-500 ml capacity)	2	1.25	2.500
7.	Binocular research microscope with phase contrast attachment (MOST IMPORTANT) having turret condenser and matching phase objectives of 10x, 40x and 100x magnification, 10x wide field eye pieces and telescopic centering eyepiece.	1	2	2.000
8.	pH Meter (Micro Processor based)	1	0.3	0.300
9.	Small oil free air compressor	2	0.5	1.000
10.	Airconditioners 1.5 ton split type	4	0.3	1.200
11.	Miscelleneousequipments and tools such as colony counter, balances, microliter pipettes etc.	-	LS	2.500
12.	Glassware and plastic ware aids		LS	2.200
13.	Centrifuge	1	0.5	0.50
14.	Deep Freeze - 300 lit capacity (For culture storage or culture Bank)	1	0.4	0.400
	Total for A			21.00

Sl. No.	Item	Quantity required (No.)	Rate	Amount
B. Fermentation and biomass up-scaling equipments and machines				
1.	Mother culture glass vessels/fermenters 1-2 lit cap.	30	0.05	1.500
2.	Stainless steel seed fermenters 50 lit cap., aerated, stirred type with auto pH, aeration and temperature control	4	4.0	16.000
3.	Stainless steel fermenters, aerated, stirred type, with auto pH, aeration and temperature control. Total vessel cap 750 lit and working cap. 500 lit.	3	10.0	30.000
5.	Chiller 1 ton cap	2	2.0	4.000
6.	Automatic steam generator 100 kg cap.	1	6.5	6.500
7.	Fittings, pipe lines, filters, miscellaneous items		LS	3.000
Total for B				65.000
C. Product handling, packaging equipments and machines and storage equipments				
1.	Autoclave Horizontal 2x2x4 ft chamber size	1	6.0	6.00
2.	Automatic bottle filling machine with necessary conveyor system and laminar air-flow provision at filling chamber	1	13.5	13.500
3.	Capping and labeling machines and miscellaneous items	1	5.0	5.000
4.	Miscellaneous fittings, electrical installation, other tools and equipments		LS	3.000
5.	Air conditioners for storage	4	0.5	2.000
6.	Peddal Mixer or Ribbon Blender	1	0.5	0.500
7.	Generator (DG Set of 65 KVA)	1	4.0	9.000
Total for C				39.00
Grand total for A+B+C				125.00
Grant in aid for 200MT/annum production capacity				176.00 lakh

**Project Outlay - Model Project on 200 TPA/Shift Bio-fertiliser Unit
(Rs.lakh)**

Sl. No.	Particulars	Quantity	Rate	Cost
Land and Building				
1.	Cost of Land	2000 sq.mt.	0	0
2.	Land Levelling	Lumpsum	Lumpsum	1.000
3.	Fencing and Compound Wall and Gates	Lumpsum	Lumpsum	5.000
4.	Civil Structure	5,000 sq ft	600/sq ft	30.000
	Sub Total			36.000
Plant, Machinery and Equipments				
5.	As per Annexure I			125.00
Other expenses capitalised				
6.	Interest during gestation/construction period and first year expenses capitalised		Lumpsum	5.0
14.	Margin money for working capital			5.0
15.	Preliminary and Pre-op. Expenses		Lumpsum	5.0
16.	Total Project outlay			176.00
	Say			176.00

