

Directorate of Agriculture Development and Farmers' Welfare

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CIRCULAR

Sub: Annual Plan 2024-25 – Scheme for Soil Health Management and Productivity Improvement – Working Instruction issued – reg.

- Ref:-
- 1)GO(Rt) No 476/2024/AGRI dated 30/05/2024
 - 2)MoU between Additional Director(CP) on behalf of Director of Agriculture and Registrar,NIPHM,Hyderabad signed on 28/03/2024
 - 3) Minutes of Online meeting with NIPHM on 20.11.2023.
 - 4) ADFW/9931/2023-TF2 dated 08.09.2023.
 - 5)GO (Rt) No. 766/2023/AGRI dated 03.08.2023.

As per reference cited (1) Administrative Sanction has been accorded for implementation of Scheme for Soil Health Management and Productivity Improvement. This scheme is operated under the Head of Account 2401-00-800-28 (P) for which a budget provision of ₹ 550 Lakhs is earmarked during 2024-25. Long term sustainable agricultural production is aimed under this scheme by improving physical, chemical and biological features of soil.

Following instructions are issued for compliance at field level for smooth and successful implementation of the scheme.

1. Promotion of On-farm production technology for mass production of *Trichoderma spp.* and *Pseudomonas spp* using the NIPHM low-cost technology (₹ 80.00 lakh).

Trichoderma and *Pseudomas* are effective bio control agents against various plant pathogens like *Phytophthora spp*, *Pythium spp*, *Fusarium spp*, *Rhizoctonia spp*, etc. By utilizing on farm production technology for mass production of these bio control agents ,farmers can efficiently produce and utilize *Trichoderma* and *Pseudomonas* to improve crop health ,increase yield and promote sustainable farming practices.

As per the MoU signed between NIPHM & Director of Agriculture , Kerala,

NIPHM will undertake the programme at a total cost of ₹ 75 lakhs (Rupees Seventy Five Lakhs only) for the supply of brown and white media and inoculum of *Trichoderma spp* and *Pseudomonas spp* as part of implementing the scheme. Necessary technical support and guidance will be provided by NIPHM in this regard. The growth medium and inoculum will be provided by NIPHM for demonstration purpose in farmers fields of Kerala in a phased manner as follows.

Phase	Month /Period	No of Units (Ha)	White Media(Kg)	Brown Media (Kg)	Inoculum <i>Trichoderma</i> (Ltr)	Inoculum <i>Pseudomonas</i> (Ltr)	Remarks
I	May 2024	300	63	30	21	21	
II	Sept 2024	4700	987	180	330	330	
III	Mar 2025	5000	1050	200	350	350	
	Additional Requirement			590			
	TOTAL	10000	2100	1000	701	701	

NIPHM shall supply the growth medium and inoculum to concerned districts for which the cost will be met from the fund provided to NIPHM at actuals. The details of receipt of product in good condition will have to be intimated to directorate by the district offices. The material shall be supplied to block offices as tested by district head quarters in larger packets containing smaller packing required for one unit ie. one hectare.

The details of targets given to districts is given in **Annexure 1**. However change in target area can be made depending upon the supply of inputs from NIPHM.

Directions for Mass production of *Trichoderma* and *Pseudomonas* using low cost technology of NIPHM

(a). The National Institute of Plant Health Management (NIPHM) has a revolutionary and patented low-cost technology for the on-farm mass production of *Trichoderma spp* and *Pseudomonas spp*. This technology uses the specific growing media such as 'Brown media' for *Pseudomonas* and 'White media' for *Trichoderma*.

(b)The mass production of bio control agents need to be undertaken by individual farmers, *KrishiKootams* , *Uthama Krishi Kudumbam* etc.The amenities and service of Plant Health Clinics and its working capital can be

b). Method of mass production of soil-less arbuscular mycorrhizal fungal inoculum.

As per the Bureau of Indian Standards (BIS) specifications, an AM fungal inoculum should contain a minimum of 100 propagules per gram of substrate. The inoculum for the same shall be obtained from KAU or any other State Agricultural Universities. Usually, 200 g of the inoculum is sufficient for inoculating plants grown in 100 pots of 30 cm size ideally. The potting medium in the standard ratio shall be prepared and solarization shall be done. The seeds of sorghum, maize etc., shall be used for mass production of VAM. The procedure as published by KAU, NIPHM and other Government Agencies shall be followed for the on farm production programme.

c). The indicative cost for the mass production of one unit of VAM is as follows.

Sl No	Item	Quantity	Rate (Rs)	Amount (Rs)
1	Plastic pots of medium size	100 no	50.00	5000
2	Starter inoculums	200g	1000/200g	1000
3	Seed material of rice /ragi/maize/sorghum	250g		100
4	Carrier material- vermicompost/ Arka fermented cocopeat	500kg	12/kg	6000
5	Labour charges	10mandays	500/manday	5000
6	Miscellaneous			2900
	Total			20,000

Alterations in the above components are permitted except labour charges, where it shall not be beyond ₹ 5000.00 per unit.

(d). Individual farmers, Krishikoottams, farmer clusters, farm clubs, Kudumbasree units can be supported for the start of such small ventures. It is sanctioned to establish a total of 100 numbers of on-farm production units of VAM in the state during 2024-25. Top priority should be given to the panchayaths implementing "Jaiva karshikamisson" and "Krishi Samrudhi". Parasite breeding stations can also take up the programme if there is no sufficient beneficiaries at the time of implementation. The district wise targets

utilized wherever possible .Proper storage of the prepared cultured solutions could be done in refrigerated conditions.DD(E&T) have to monitor the smooth accomplishment of mass production procedures in Plant Health Clinics in concerned districts.

(d) Top priority for implementation should be given to the panchayaths under "Jaiva karshikamisson " and "Krishi Samrudhi".

(c) An amount of ₹50/- (Rupees Fifty Only) will be provided per unit for purchase of trays.

(d) The maximum assistance for the adoption of this technology is limited to maximum ₹ 750.00 per hectare .

Financial Abstract of Mass production unit of *Trichoderma* spp and *Pseudomonas* spp using NIPHM low cost technology .

Sl No	Component	Amount earmarked (in Lakh)	Payable to whom
1	Cost of inoculum and media, Training of master trainers & Other expenses	75	NIPHM ,Hyderabad
2	Cost of trays	5	To beneficiary farmers /Agency
	TOTAL	80	

(e) Hands-on training has to be given to Master Trainers at NIPHM, Hyderabad for mass multiplication of bio control agents .Thereafter the technology has to be disseminated in farmers field under the proper guidance of Master Trainers.

2. Establishment of On-farm VAM production units(₹20.00)

(a). The main benefits of Vesicular-arbuscular mycorrhizae (VAM).

The VAM promotes the increased uptake of nutrients especially phosphorus and transport them to the host plant. Vesicular arbuscular mycorrhizal fungi belong to the Class Zygomycetes and are responsible for improving the growth of host plant species. Hence On-farm production of VAM is important for improving the nutrient use efficiency and cut down the cost of production.

are appended as **Annexure 2** of this circular. The VAM units established as part of other schemes shall not be provided assistance under this programme.

e)The VAM produced in monocot roots and soil medium shall be tested for quality in reputed laboratories before application to next crop.

3. Conducting soil test campaigns.(₹38.00)

(a). Soil testing is an important tool to practice balanced fertilization, which differs from region to region and from crop to crop. Farmers would be able to know the type and quantity of fertilizers and nutrients which are to be applied to the field for improving the efficiency and reducing the cost of production.

b). All the Krishi bhavans of the State shall conduct a soil test campaign during the Rabi Season of 2024-25 without fail. The Chief Soil Chemist is hereby directed to issue orders to all Mobile Soil Testing units to conduct such campaigns in consultation with respective AOS / AFOS. The campaign shall have live soil testing sessions, short classes and demonstrations. The campaigns can also be arranged in consultation with the officials of the Soil Survey and Soil conservation Department.

(c) The maximum amount sanctioned for one such campaign is ₹ 3500 per Krishi bhavan. The amount can be used for light refreshments, honorarium for experts (@ ₹ 500 per session / campaign), small banner, materials for demonstration and any other connected expenses. A minimum of ₹ 1000 per campaign as fuel charges can be utilized from the above amount for the mobile unit. The minimum number of participant farmers shall be 25.

(d). Four numbers of need-based Block level campaigns are also sanctioned at the rate of ₹ 8500.00 per campaign. The components are as described under 3 (c) of this circular and the minimum number of participants shall be 50. This campaign are to be arranged as one day programme and arrangements shall be done to ensure maximum publicity for campaign. The district wise / Block level targets of Soil Testing Campaigns is given in **Annexure 3** .

4. Support for Secondary and Micro nutrients(₹412.00)

(a). Soils in Kerala are generally deficient in essential secondary and micro nutrients. The joint survey conducted by the State Planning Board and the Department of Agriculture under the "Soil based plant nutrient management plan

for Agro-Eco systems of Kerala" reveals that Kerala soils are deficient in micro nutrients. Micro nutrient availability generally decreases as the soil pH increases with the exception of Molybdenum. There are seven micro nutrients which are needed for proper growth and productivity of crops namely, Zinc, Copper, Boron, Iron, Manganese, Molybdenum and Chlorine. The essential secondary nutrients are Calcium, Magnesium and Sulphur. This component of the scheme is to provide assistance for the use of secondary and micro- nutrients.

(b). It is hereby sanctioned to provide assistance for micro nutrients and secondary nutrients under the scheme. The scheme component applies to all crops other than paddy. Assistance to the tune of maximum ₹ 500.00 per hectare or 50% of the cost whichever less is allowed. Soil test results are necessary and the deficient element / (s) are only permitted.

(c)The materials shall be supplied in kind and no direct cash subsidy for the beneficiaries are allowed.

(d). The district wise targets are appended as **Annexure 4** of this circular.

5. Financial abstract of the scheme

(a)The component wise financial allocation is as follows .

Sl No	Component	Financial Outlay (in Lakh)
1	Promotion of On farm production technology for mass production of <i>Trichoderma</i> spp and <i>Pseudomonas</i> spp	80.00
2	Establishment of Onfarm VAM production Units	20.00
3	Conduct of Soil Test Campaigns	38.00
4	Support for integrated nutrient management in non paddy crops included soil ameliorates, Secondary and Micro nutrients	412.00
	TOTAL	550.00

b). The budget provision available for the scheme "Soil and Root Health Management & Productivity Improvement" under Head of Account 2401-00-800-28 Plan is ₹ 550.00 lakhs..

6. Scheme Management

- a). The scheme shall be managed by the Additional Director (CP) at the State level. The Principal Agricultural Officers of the Districts shall closely watch the progress of implementation of the scheme. The DDA (WM) shall be the district level monitoring official.
- (b). The Chief Soil Chemist shall assure that the campaigns are taking place in time. The DSTLs shall be given directions for conducting soil testing campaigns wherever MSTLs are not available.
- (c). All formalities regarding Store Purchase Rules shall be followed for purchases and procurements.
- (d) Do not park funds at any level. Implementation of the scheme shall be strictly in accordance with the instructions issued and as per release of funds. Progress report of the same shall be submitted to the undersigned.

ANNEXURE 1

Physical and Financial target for the establishment of mass production units of *Trichoderma* spp and *Pseudomonas* spp using NIPHM low cost technology (80 Lakhs)

Sl No	Districts	Physical Target (Ha)	Financial Target to NIPHM (in Lakh)	Financial Target to Districts (in Lakh)	Total Target(in Lakh)
1	Thiruvananthapuram	650	4.875	0.325	5.2
2	Kollam	650	4.875	0.325	5.2
3	Pathanamthitta	700	5.25	0.35	5.6
4	Alappuzha	650	4.875	0.325	5.2
5	Kottayam	700	5.25	0.35	5.6
6	Idukki	900	6.75	0.45	7.2
7	Ernakulam	650	4.875	0.325	5.2
8	Thrissur	700	5.25	0.35	5.6
9	Palakkad	700	5.25	0.35	5.6
10	Malappuram	700	5.25	0.35	5.6
11	Kozhikode	700	5.25	0.35	5.6
12	Wayanad	900	6.75	0.45	7.2
13	Kannur	700	5.25	0.35	5.6
14	Kasargode	700	5.25	0.35	5.6
	TOTAL	10000 Ha	75 *	5	80

***Rs 75 Lakh (Rupees Seventy Five Lakh only) payable to NIPHM as per the MoU between NIPHM & Director of Agriculture, Kerala.**

ANNEXURE 2

Physical and Financial target for the establishment of VAM onfarm production Units

SI No	Districts	Physical Target	Financial Target(in Lakh)
1	Thiruvananthapuram	8	1.60
2	Kollam	7	1.40
3	Pathanamthitta	7	1.40
4	Alappuzha	8	1.60
5	Kottayam	8	1.60
6	Idukki	7	1.40
7	Ernakulam	7	1.40
8	Thrissur	8	1.60
9	Palakkad	7	1.40
10	Malappuram	7	1.40
11	Kozhikode	6	1.20
12	Wayanad	7	1.40
13	Kannur	7	1.40
14	Kasargode	6	1.20
	TOTAL	100	20.00

ANNEXURE 3

District wise target for Soil Testing Campaigns

Krishi Bhavan level Campaigns			
SI No	Districts	Target (No of Campaigns)	Financial Target(in Lakh)
1	Thiruvananthapuram	89	3.115
2	Kollam	78	2.73
3	Pathanamthitta	57	1.995
4	Alappuzha	78	2.73
5	Kottayam	79	2.765
6	Idukki	53	1.855
7	Ernakulam	97	3.395
8	Thrissur	105	3.675
9	Palakkad	95	3.325

10	Malappuram	108	3.78
11	Kozhikode	81	2.835
12	Wayanad	26	0.91
13	Kannur	89	3.115
14	Kasargode	41	1.435
	SUB TOTAL	1076	37.66
	Block level Campaigns		
	Districts	Target No of Campaigns	Financial Target (in Lakh)
1	Palakkad	1	0.085
2	Ernakulam	1	0.085
3	Thrissur	1	0.085
4	Alappuzha	1	0.085
	SUB TOTAL	4	0.34
	GRAND TOTAL	1080	38

ANNEXURE 4

Physical and Financial target for the Support of Secondary and Micro -nutrient

SINo	Districts	Target Area(Ha)	Financial Target (Rs in Lakh)
1	Thiruvananthapuram	4470	22.35
2	Kollam	4470	22.35
3	Pathanamthitta	4470	22.35
4	Alappuzha	4470	22.35
5	Kottayam	4470	22.35
6	Idukki	4470	22.35
7	Ernakulam	4470	22.35
8	Thrissur	4470	22.35
9	Palakkad	4523.24	22.61621
10	Malappuram	4470	22.35
11	Kozhikode	4470	22.35
12	Wayanad	4470	22.35
13	Kannur	4470	22.35
14	Kasargode	4470	22.35
	TOTAL	62,633.24	313.16621

SEERAM SAMBASIVA RAO IAS
DIRECTOR

Director of Agriculture

Copy to: 1) All Additional Directors of Agriculture & SAE

- 2)All PAOs and PD(ATMA)
- 3)Chief soil chemist
- 4)Senior finance officer
- 5)All Assistant soil chemists
- 6)SW section ,Planning ,Audit &Accounts
- 7)stock file /spare