

TS(2) 18997/16

Directorate of Agricultural
Development & Farmers Welfare
Vikas bhavan
Dated : 18/5/16

CIRCULAR

Sub:- Annual Plan 2016-17 – Scheme on “**Integrated Pepper Development under Wayanad Package**” – working instructions issued – reg.

- Ref :-
- 1) Order No. TP(2) 14673/16 dated 27/04/2016 of Director of Agriculture
 - 2) G.O (Rt.) No.1493/2012/AD dated 23-07-2012 of Agriculture (PB) Department.
 - 3) G.O (Rt.) No.1786/2012/AD dated 11-09-2012 of Agriculture (PB) Department.
 - 4) G.O (Rt.) No.1519/2012/AD dated 25-07-2012 of Agriculture (PB) Department.
 - 5) GO (Ms) No. 302/2013/AD dated: 04-10-2013
 - 6) Order No. TP (2) 16615 /15 dated: 04/5/2015 & 08/07/2015.
 - 7) G.O (Rt.) No.1945/2015/AD dated 21-11-2015 of Agriculture (Agri) Department.
 - 8) G.O (Rt.) No.334/2016/AD dated 31-03-2016 of Agriculture (Agri) Department.
 - 9) G.O (Rt.) No.1759/2015/AD dated 13-10-2015 of Agriculture (Agri) Department.
 - 10) GO (Rt.) No. 39/2011/AD dated: 18-01-2016

As per the reference cited first administrative sanction has been accorded for implementation of **Integrated Pepper Development** for an amount of **Rs.1330.00 lakhs** out of the budget provision of Rs.1900.00 lakhs for **Wayanad Package** under head of account **2401-00-800-27 Plan**.

During 2013-14 and 2014-15 the components of the programmes viz. Integrated Pepper Development, Project Implementation Unit and Support to soil ameliorants had been sanctioned for implementation as per the G.O's read as 1 to 4 above. Continuous Sanction was accorded for the same during 2015-16 as per reference (5) cited. Additional components were sanctioned under 'Integrated Pepper Development' as per G.O. read as reference 6,7 & 8 above. All these components will be continued during 2016 -17 also with the same norms and conditions mentioned in the respective G.Os. The details of continuing components of the scheme are given below.

(I) INTEGRATED PEPPER DEVELOPMENT (1330.00 lakhs)

1) Pepper Rehabilitation (Rs.603.95 lakhs)

(a) Promotion of organic farming (Rs.83.95 lakhs)

The organic farming is gaining momentum in the Wayanad district. Organically produced pepper has good demand in the international market. State Agriculture Department and NGO's are creating awareness in organic farming among the farmers. From 2002-03

onwards the State Department of Agriculture is implementing schemes for the promotion of organic farming.

An assistance of Rs.10,000/- per ha. has been provided to farmers to produce pepper organically during the first and second years and Rs.5000/ha during the third year during previous years. Assistance is provided for input costs i.e. for lime, compost/farmyard manure/wood ash and bio-fertiliser application and plant protection measures using bio-control agents. The financial assistance of Rs.10000/ha during the first and second years include the compensation for yield drop in the transition period also.

During 2016-17, it is proposed to provide financial assistance to already laid out plots of 2014-15 as third year assistance @ Rs.5000/- per hectare. Total area to be covered is 1679 Ha. An amount of **Rs.83.95 lakhs** is earmarked for this component as shown below.

Component	Physical Target (ha)	Rate of Assistance (Rs per ha)	Financial Target (₹ In lakhs)
Organic cultivation of pepper III year	1679 ha	5000.00	83.95
Total			83.95

(b) Assistance for planting of new standards (Rs.20.00 lakhs)

In order to promote alternate standards like Glyricidia, Silver oak, Ailantus, Kilingil etc. which are more resistant to pest attack, assistance will be provided to the farmers @ **Rs.10/- per standard**. During 2016-17, it is proposed to distribute **2.00 lakh** numbers of planting materials to the farmers. The total amount earmarked is **Rs 20.00 lakhs**.

(c) Integrated Management of Quick wilt of Pepper (Rs.500.00 lakhs)

Quick wilt, which is a fungal disease, is one of the main reasons for inflicting heavy losses in the pepper production in the traditional pepper producing areas of Wayanad. The fungus attacks both the root system as well as the aerial parts of the pepper plant. The attack on the root system causes complete damage of the plant within months.

During 2012-13, a massive programme has been implemented in Wayanad district for the management of quick wilt disease. Department proposes to continue the programme during 2016-17 as a prophylactic measure to protect pepper cultivation in Wayanad district.

The details of components and estimate of expenditure is detailed below

Sl.No	Components	Rate	Quantity	Amount (Rs.)
1	Application of <u>Dolomite</u> @ 1kg/plant(Considering 1000plants/ha, 600 bearing and 400 non bearing)	Rs 5/- per kg	600 kg	3000
2	Application of neem cake @ 5 kg for 1 kg Trichoderma (600 plants)	Rs.17/- per kg	150 kg	2550
3	Application of copper	Rs. 60/- for 100 g	60 packets (100 g)	3600

	oxychloride @ 2%			
4	Application of Bordeaux mixture (1%) 10g/l	Rs. 200 per kg	30 kg	6000
5	a) Trichoderma application	Rs. 50/- per kg	30 kg	1500
	b) Trichoderma application and multiplication		54 kg	2700
6	Pseudomonas (2times) talc based - 5g/l - 3 l per plant x 600 plants	Rs.90/- per kg	18 kg	1620
	Grand Total			20970

The assistance for spraying will be 50% of the cost of expenditure subject to a maximum of **Rs. 10000/- per hectare**. The total area to be covered is **5000 ha** and the total financial allocation is **Rs. 500.00 lakhs**. The scheme should be implemented on a campaign mode in the affected area by Krishi bhavans including the farmers, pepper samithies , KVK, Kerala Agricultural University, LSGs etc. Necessary steps would be taken from the part of the department to assure the supply of the required inputs for carrying out the spraying operations. The trichoderma and pseudomonas should be made available preferably from the State Biocontrol Lab Mannuthy , Kerala Agricultural University and KVKs.

An abstract of the programme is furnished below.

SI No	Sub components	Financial Target (Rs. in lakhs)
	Pepper rehabilitation	
a)	Promotion of Organic farming	83.95
b)	Assistance for planting new standards - 20 lakhs @ Rs.10/- per standard	20.00
c)	Integrated Management of Quick Wilt of Pepper - 5000 ha @ Rs.10000/- per ha	500.00
	Total	603.95

2) Whole farm Development (Rs.500.00 lakhs)

Administrative Sanction was accorded for this component as per Government Order read as reference (6) above for an amount of Rs.500.00 lakhs. Financial assistance sanctioned is 50% of the total cost limited to @ Rs.20,000/Ha to cover a total area of Rs.2500 Ha. The component will be continued during 2016-17 also with the same norms and conditions mentioned in the Government Order. The detail are as follows:

Objectives

1. To provide financial assistance for adoption of good management practices in 2500 Ha. of pepper.
2. To rejuvenate pepper plantations through proper crop health management giving emphasis to organic methods.
3. To increase production and productivity of pepper.
4. To provide good financial returns to farmer.

The activities will cover all the 25 grama panchayats in Wayanad district.

Financial assistance will be provided to following activities in pepper gardens:

- ❖ Terracing as per contour in uneven lands
- ❖ Digging around the standards twice a year before the onset of the 2 monsoons
- ❖ Pruning and training standards in March-April every year.
- ❖ Under planting on steady yield reduction or after 20 years of planting with removal of old and senile vines 3-5 years after under planting
- ❖ Organic manure application around basin @ 10kg/year with the onset of SW monsoon. application of lime 50g/vine during April-May and NPK application @50:50:150 NPK g/vine/year applied in 2 doses as a general recommendation.
- ❖ Plant protection including phytosanitation - Removal and burning of infested vines, facilitating drainage in water stagnation areas, pruning of runner shoots or their tying back to the main trunk are some of the practices that can be adopted society. Integrated Pest Management (IPM) is the most suitable way where chemical pest control methods are advocated only as a last resort and that too in a very judicious manner. Promotion of Integrated Pest /Disease Management Integrated Pest/Disease Management involves a combination of various measures to ensure effective pest /disease management without disturbing the eco system, reducing environment pollution and eliminating direct and indirect health hazards to human beings. The methods employed are observation, prevention and intervention. Identification, surveillance and forecasting of pests/disease can be done through observation whereas scientific cultural operations like use of tolerant varieties, water management etc. can be used as preventive measures. Pest management can be done through intervention method like mechanical control, biological control and need based chemical control.

Against fungal diseases, drenching of the soil with 0.20 % Copper oxychloride 5-10 l/vine or 1% Bordeaux mixture twice a year is the general recommendation. Application of Biocontrol agents like Trichoderma and Pseudomonas around the basin of vines is also recommended. Kerala Agricultural University and Indian Institute of Spices Research has recommended IPM strategies for pepper which can be applied in the field to get desired results.

- ❖ Replanting/rejuvenation: Under planting on yield reduction observed regularly or after 20 years of planting can be done with replacement of standards wherever necessary. Removal of old and senile vines can be done 3-5 years after under planting.

As per cost norms and pattern of assistance under MIDH during 12th plan for NHM & HMNEM sub schemes, for rejuvenation of existing senile plantations, the total cost is estimated to be Rs.40,000/- per ha. Assistance given is 50% of the total cost limited to Rs.20,000 per Ha.

5

Following this pattern the total cost of management of existing pepper garden is estimated as follows:

Sl. No.	Components	Estimated cost (Rs. per ha)
1	Hired human labour, mainly for manure and fertilizer application, plant protection and harvesting	11000
2	Planting materials & standards	1000
3	Organic manures and chemical fertilizers	16000
4	Plant protection	10000
5	Other expenses	2000
	Total	40000

Financial assistance sanctioned is @ 50% of the above limited to Rs.20,000/- per Ha. An area of 2500 Ha. is to be covered with total budget outlay of Rs.500.00 lakhs.

3) **Introduction of New Planting Material Production Techniques And Popularization of Local Varieties In Pepper (Rs.43.25 lakhs)**

As per Government Order read as reference (7) above, Administrative sanction has been accorded for implementing new components for introduction of new planting material production techniques and popularization of local varieties in Pepper.

The components will be continued during 2016-17 also in all the 25 grama panchayats in Wayanad district. Cluster approach will be followed in implementing the scheme which will increase efficiency of agricultural practices, instil confidence in the members of the group, ensure adoption of technology and reduce the management cost of gardens.

Components of the programme

- ❖ Development of planting materials using orthotropic shoots and grafts
- ❖ Support for onfarm production units of Trichoderma
- ❖ Demonstration of farmer developed varieties
- ❖ Promotion of soil-less pepper nurseries

(i) Development of planting materials using orthotropic shoots and grafts (Rs.13.75 lakhs)

Quality Planting materials form the basis of any crop production improvement programme. Another method recently developed is allowing orthotropic shoots to spread over a cylindrical chicken wire mesh column filled with rooting medium upto 3m height. The vines will strike roots at every node. Laterals and basal runners are also produced. By adopting this method, single noded rooted planting materials from orthotropic shoots, laterals and runners can be produced and transferred to portrays for establishment.

Another method of planting material production is by grafting using *Piper colubrinum* (wild pepper) as rootstock. This technology has been developed almost 2 decades ago. February and March has been found to be the best period for graft production. Grafted plants are found to be resistant to soil-borne pathogens like Phytophthora and also exhibit good virility and high yield. The method has been successful in bush pepper also.

Column Method : Orthotropic shoots can be used for quality planting material production by using vertical columns with soil less media. The technique involves growing orthotropes on vertical columns (2m height, 0.3m diameter) made of half an inch plastic coated welded wire mesh. The column is filled with partially decomposed coir pith and vermicompost @ 3:1 ratio fortified with bio control agent Trichoderma. Growing the vine on vertical column can be effectively utilised for the production of three types of planting material ie, single node cuttings, top shoots with lateral branch (use of top shoots for field planting is having the advantage of producing fruit bearing branch from the base of the support and start yielding early.) and reproductive branch (laterals or plagiotropes) which can be used for production of bush pepper.

The hi-tech poly house (temperature of 25-28 C and relative humidity 75-80% with intermittent misting) is advisable for the above production system. Eight to ten cuttings can be planted around each vertical column. The cuttings are allowed to trail on the column ensuring that each node comes in contact with the medium. It takes about four to five months for the cutting to reach the top of the column. At this stage each vine will have around 20 nodes with few lateral branches (at 12th -15th node). The top 5-7 nodes with lateral branches can be used as orthotropic shoots for field planting.

In four to five months time, about 150 single node cuttings , 10-15 laterals and 10 top shoots can be produced per column in this method. These cuttings can be rooted further for field planting using pro-trays.

Cost for establishing single column

Sl No	Item	Amount
1	Cost of one vertical column (1.8m height with 22cm width) made of GI wire mesh (GI wire mesh size: 1" x 0.5" x 10 gauge(10G)	Rs.600/-
2	Cost of potting mixture made of well/ partially decomposed coir pith and FYM / Vermicompost and Installation charge	Rs.400/-
	Total	Rs.1000/-

Two hundred and fifty such columns taken as one unit can be installed in 10 cents(400 sq.m) area at a spacing of 1.5m x 1.0 m at a cost of Rs.2.65 lakhs. From 250 columns, about 2500 top shoots, 2500 – 3750 laterals and 37500 single node cuttings can be produced.

Cost for establishing One unit of 10 cents (250 columns)

Sl No	Item	Amount
1	Cost of establishing 250 vertical columns (1.8m height with 22cm width) made of GI wire mesh (GI wire mesh size: 1" x 0.5" x 10 gauge(10G)	Rs.250000/-
2	Cost for transferring single node cuttings to protrays (Cost of protrays, potting mixture and other expenses)	Rs.25000/-
	Total	Rs.275000/-

An amount of Rs.13.75 lakhs is set apart for this component for establishing 5 units to be implemented in Farmers Field with technical assistance of Indian Institute of Spices Research (IISR), Kozhikode. 25% farmers contribution shall be ensured by way of labour and other expenses.

An agreement should be obtained from the beneficiaries selected that the cuttings so produced will be distributed to the farmers at rates fixed by the Department and as per the directions issued from the Department .

(ii) **Support for establishment of onfarm production units of Trichoderma (Rs.5.00 lakhs)**

Trichoderma has been found to be an effective bio control agent against many fungal diseases. Establishing small units of Trichoderma production by pepper samithies/ individual farmers / SHGs for their own use can meet the local requirements to a very extent. The essential materials required for the unit are the following:

- ❖ Inoculation chamber
- ❖ Pressure cooker – 20 lit (for sterilization)
- ❖ Mixer
- ❖ LPG Gas connection with stove
- ❖ Mother culture
- ❖ Media for growing inoculums (Wheat/Sorghum)
- ❖ Autoclaved bags (polythene)
- ❖ Plastic trays
- ❖ Cotton, Spirit, PVC pipes, Rubber band etc.

Onfarm Production of Trichoderma at Farm Level (Approx. cost for 1 unit)				
Sl No	Item	Quantity	Rate	Amount
1	Pressure cooker (20 litres capacity)/Autoclave(mini)	1	7000	7000
2	Incubation chamber for inoculation	1	3000	3000
3	Stove	1	4000	4000
4	Plastic trays	10	70	700
5	Autoclavable bags	500 nos	4/bag	2000
6	Absorbant cotton	1 bundle	200	200
7	Non absorbant cotton	1 bundle	150	150
8	PVC pipe pieces for making plugs			100
9	Rubberband			100
10	Packaging bags			1000
11	Spirit lamp/ candle	1 no	100	250
12	Miscellaneous if any			1500
	Grand Total			20000

Labour charges and other expenses are to be met by the farmers / samithies . 1 test tube of mother culture can be used for inoculating the medium which will develop fully as a green mass within a week. This can be powdered, packed and distributed for large scale multiplication in suitable substratum like cowdung. Depending on the nature of medium used, only Rs.5-20 is required as cost of medium for preparing 1 kg. of Trichoderma 100 % culture. This can be mixed with talc @50g. culture in 1 kg.talc, for producing 20 kg of Trichoderma.

Individual farmers, farmer clusters, farmclubs, Kudumbasree/janasree units can start such small ventures, under the technical guidance of Agricultural Officers of Krishi Bhavans. The secretary/Convenor of the samithi will be incharge of the equipments and other assets created. Agricultural officer should conduct periodic verification, give necessary technical guidance and see that the unit is running smoothly.

The following operational guidelines are to be followed .

1. Mother culture of Trichoderma has to be obtained from KAU / NIPHM /NCRMI
2. Never use cultures from any other source without permission.
3. Before using a culture the genetic purity of the culture should be studied. Steps are being taken at Directorate to sign MOU with NCRMI for the supply of cultures and for quality analysis of bio control agents produced by farmers at regular intervals.
Always start mass production of Trichoderma from original mother culture.
Random checking of the purity of bulked Trichoderma must be done once in three months to confirm the purity of the isolate.
4. If the purity of the biocontrol agent is in doubt, then the centre should restart the production only after complete sterilization of the unit is done under the supervision of trained officers.
5. Mass multiplied Trichoderma can be distributed to farmers in sorghum grains with or without powdering. It can also be distributed after enriching it.
6. The Trichoderma produced can be distributed to the participating or member farmers of the cluster/samithy. A bit notice giving the details such as date of production, source of the mother culture used, method of application ,etc. can be kept inside the packet.
7. Bio control agents shall be produced only under the supervision of Agricultural officers who have been trained in onfarm production. Once the trained Agricultural officer is transferred from the Panchayath where a production centre is functioning , then the unit must stop production until the service of a trained officer is ensured to oversee the production.
8. Safety precautions to be followed at the production centre should be strictly adhered to. A chart should be prepared and exhibited in all the centre.
9. The bio control agent produced should not be stored for more than two months.
10. All the production centres should keep a register showing all the details related to production of bio control agents such as name of bio control agent , source of culture, date of production, quantity produced etc.
11. A register should be maintained at Krishi bhavan also showing the details of pepper samithies engaged in on farm production of bio control agents.

Financial assistance @ Rs.20,000/ per unit will be provided for establishing a small scale on farm production unit of Trichoderma. Financial assistance should be limited in such a manner that atleast 25% of the total cost of the unit should be borne by the

beneficiary. 25 such units are proposed in the district with a total financial assistance of Rs.5.00 lakhs.

(iii) Demonstration of farmer developed varieties (Rs.12.50 lakhs)

There are around 75 no, of pepper varieties in cultivation now. These include both indigenous/local varieties like Aimpiyian, Kottanandan, Vellamunda and high yielding varieties like Panniyoor series developed in research stations. There are farmer developed varieties also like Aswathy and Suvarna which have special qualities like disease/pest resistance, superior morphological characters, yield parameters etc. Such varieties can be made popular among cultivators by establishing demonstration plots. Farmers can visit these plots and get a first hand information on the superior qualities of the variety concerned. This will also be a encouragement and recognition to the farmer who developed such varieties. There are 5 no.s of farmer developed varieties in Wayanad now. *Financial assistance will be provided @ Rs.25000/- to establish a demonstration plot of 0.40 Ha on condition that 25% of the total cost of establishment of Demonstration plot should be beneficiary contribution. Moreover, the beneficiary shall provide facilities for visit for other farmers to this plot and he/she should be willing to sell the produce of the as per direction given by the Department. 50 such plots are proposed, with 5 plots for each variety, for which Rs.12.50 lakhs is set apart.*

(iv) Promotion of soil-less pepper nurseries (Rs.12.00 lakhs)

Availability of quality planting material is a major constraint in all pepper growing areas. The conventional propagation methods have limitations due to low success rate, poor rooting ,spread of soil borne pathogens and nematodes,poor survival and growth of transplanted cuttings. Transportation of cuttings in nursery bags containing potting mixture to distant places is difficult due to its bulky nature.

Soil less media have the basic advantage of avoiding soil pathogens like Phytophthora which is the most common pathogen causing much damage to pepper vines. Use of soil less media thus avoids the use of copper based chemical fungicides and thus encourages organic farming. Research done at IISR, Kozhikode have found out that partially decomposed Coirpith and Vermicompost in the ratio 75:25 enriched with Trichoderma is the best soil-less nursery mixture for healthy planting material production using plug trays.(cell dimension of 7.5x7.5x10.0cm) compared to conventional multiplication. The cost of production is Rs.6.50 paise/plant.

Facilities like rainshelter can be established in such nurseries to ensure round the year production for which assistance may be sourced from suitable plan schemes. Column method of trailing pepper vines may also be promoted for the production of single node planting materials which can be transferred to protrays for easy handling and management.

Method

- *Partially composted coirpith and vermicompost (75:25) enriched with Trichoderma (in talc formulation @ 10g/kg)*
- *Initial multiplication of high yielding varieties of black pepper runners on modified serpentine method , by allowing to strike root on coir bed.*

- After 45 days (15-20 nodes), the single node rooted cuttings are transferred to plug trays (cell dimension of 7.5x7.5x10.0cm) filled with above medium in the fully controlled green house (27 +2c) with intermittent mist.
- The cuttings are retained in the green house for 45-60 days (4-5 leaf stage)
- The cuttings are transferred to shadenet/ naturally ventilated green house for hardening (45-60 days)
- Cuttings will be ready for planting after 120-150 days

Advantages

- Ease in transportation, allowing efficient movement of quality planting materials
- Better nursery (plant and root) growth in coir pith, vermicompost and Trichoderma due to higher moisture retention capacity, better texture, porosity and nutrient status.
- Successful vine establishment – starting with healthy planting material
- Use of Trichoderma enriched vermicompost and coirpith in black pepper nurseries minimises use of chemical fungicides, as Trichoderma colonizes the root system of cuttings which will help in preventing the infection by pathogens in the main field.

4 no. of model nurseries of this type is proposed to be established in Farmers Field with technical assistance of IISR, Kozhikode. An amount of Rs.12.00 lakhs, @ Rs.3.00 lakhs/unit is earmarked for this component. While providing assistance, it should be ensured that atleast 25% of the total cost shall be borne by the beneficiary farmer.

Financial Outlay

Abstract of the project is furnished below.

Sl. No.	Component	Physical target (Ha./No. of units)	Unit cost (Rs.)	Total amount required (Rs.in lakhs)
i.	Development of planting materials using orthotropic shoots and grafts	5 units	275000	13.75
ii.	Support for onfarm production units of Trichoderma	25 units	20000	5.00
iii.	Demonstration of farmer developed varieties	50 units	25000	12.50
iv.	Promotion of soil-less pepper nurseries.	4 No.	3.00	12.00
	G.Total			43.25

(Rupees Forty Three Lakhs and Twenty Five Thousand Only)

4) **Other components under Integrated Pepper Development (Rs.182.80 lakhs)**

As per G.O. read as reference (8) above, Administrative sanction has been accorded for implementing of new components for incorporating new technologies for the integrated development of pepper gardens. It aims at restructuring pepper development activities in the State for augmenting production and productivity in Wayanad district which can be replicated throughout the State.

The components will be continued during 2016-17 also, the details of which are as follows:

Objectives

- ❖ To increase production and productivity of pepper.
- ❖ To increase and popularize high yielding planting materials with latest technology.
- ❖ To ensure local availability of quality planting materials by promoting local nurseries.
- ❖ To utilize latest technology in the production of planting materials with high vigour and yield potential.
- ❖ To rejuvenate pepper plantations through proper crop health management.
- ❖ To create model plots adopting latest technology so that farmers get first hand awareness of technology which will enhance the rate of adoption.

The activities are proposed to cover all the 25 grama panchayats in Wayanad district. Cluster approach is proposed in implementing the scheme which will increase efficiency of agricultural practices, instil confidence in the members of the group, ensure adoption of technology and reduce the management cost of gardens.

Components of the programme

(i) Support for maintenance of mother gardens (Rs.50.00 lakhs)

Sufficient cuttings of popular varieties should be available for multiplication and also for research purpose. Maintenance and conversion of existing mother gardens of varieties assumes much importance in this perspective. It is proposed to maintain existing mother gardens of different varieties of pepper in an area of 20 Ha. An assistance of Rs.250/standard is proposed towards expenses involved for maintenance of mother gardens like cost of standards cultural operations, cost of inputs etc.

Financial assistance will be provided for maintenance of 5 ha of pepper mother garden in each block @ Rs.2.50 lakh/ha (Rs. 250/- per standard for 1000 standards). There are 4 blocks in the district. Thus a total amount of Rs.50.00 lakhs is required for implementing this component in an area of 20 ha.

(ii) Establishing Farmers Field School (FFS) (Rs.5.60 lakhs)

Establishing Farmers Field Schools has been successful tool of Agricultural Extension in educating farmers on various aspects of cultivation. FFS started under 'ATMA' has been very effective in transfer of agricultural technology. FFS shall be conducted for a period of 14 working days in a model farm of a selected farmer following integrated farming practices with emphasis on organic farming methods. 25 farmers selected from various grama panchayats of the block shall be brought to the farm to attend classes on various farming activities conducted by experts in the field.

Critical stages of crop growth and activities to be undertaken at each stage, which are listed below, can be explained in detail in the FFS and also demonstrated to the farmers attending the FFS.

Critical stages of crop growth, viz.

☐ For new planting

- ❖ **Planting** – season, quality of planting material, method of planting, mulching, shade regulation etc.
- ❖ Basal application of manures and fertilizers
- ❖ Prophylactic spraying with Bordeaux mixture 1%, Trichoderma application in plant base
- ❖ Irrigation during summer months

☐ For Adult pepper Vines

- ❖ With the onset of rains, removal of runner shoots, manurial and fertilizer application at critical stages of nutrient requirement
- ❖ As preventive measures, cleaning the garden, removal of dead vines of previous years, pruning of standards for sunlight and aeration, removal of mulch to improve soil aeration, application of trichoderma/COC at base, spraying Bordeaux mixture
- ❖ Irrigation at critical stages like spike emergence and fruit set
- ❖ In General - important local and HYV in pepper with their special characteristics, availability, research findings in pepper cultivation that can be adopted by farmers for cultivation, harvesting and processing etc.

Expenses for conducting the school can be met from the provision of Rs.70000/- per FFS which is earmarked for the purpose @ Rs.200/- per farmer per day (for 25 farmers for 14 days) including refreshment charges, honorarium to experts, TA to farmers and miscellaneous expenses. There are 4 blocks in Wayanad district and it is proposed to establish 2 FFS/ block, totaling 8 no for which a total amount of Rs.5.60 lakhs is required.

(iii) Frontline Demonstration (FLD) of new technologies (Rs.0.80 lakhs)

Demonstration of technologies is the best way of making farmers convinced of their benefits. FLD gives an opportunity for farmers to visit and learn on his own, the merits of innovations demonstrated. New varieties, new agronomic and plant protection practices etc. can be demonstrated in FLDs of plot size 0.20 Ha. FLDs (8 No.s) will be established with assistance @Rs.10000/ each for which the total amount of **Rs.0.80 lakhs** is earmarked.

Frontline demonstrations shall be done in farms where FFS are organized, with the involvement of research institutions.

(iv) Exposure Visit to Model Farms (Rs.10.80 lakhs)

Farmers can be grouped into batches of 25 each and taken for exposure visits to model farms to give an opportunity to interact with the model farmer and among themselves regarding the practices carried out in the farm. This help them to get information on newer technologies which can be adopted in their farms as well. Thus Exposure Visit helps in effective technology transfer to more number of farmers within a short period. *In the district*

as a whole, 108 such visits will be carried out for which a total amount of Rs.10.80 lakhs @ Rs.10,000/ per visit is proposed.

(v) Varietal Survey at panchayat level (Rs.3.20 lakhs)

Pepper is a crop endowed with numerous indigenous varieties having high potential suitable for cultivation and breeding purposes. Notwithstanding the efforts taken by various Central and State institutions working in this field, many wild/ indigenous varieties are being slowly eliminated due to lack of proper identification and conservation measures. To prevent this loss further, a database of the Pepper varieties existing in the district has to be prepared and documented.

The above component has been implemented during 2015-16. An amount of Rs.3.20 lakhs is set apart for the same during 2016-17 to cover the expenditure of any of the grama panchayats where this has not been implemented or not completed during 2015-16. The details of implementation are as follows;

A varietal survey regarding Pepper at the grama panchayat level is to be conducted. A batch of 10 youth, with minimum qualification of SSLC can be selected from each panchayat. They will be given training on identification and recording of traits of different pepper varieties, both cultivated and wild, in their locality. The name, location, approximate area/number of plants, morphological characters and other relevant information will be collected and recorded. The surveyors can seek the help of farmers, scientists, officials of agriculture department and those among the public having interest and knowledge regarding the local cultivars in collecting information. The training may be given in a uniform manner utilising the services of ARS, Ambalavayal so that the data collection also is carried out in such a manner. The survey should be completed within a period of one month. Remuneration of Rs.3000/ per survey personnel is proposed for a month. In addition, training expenses including stationery for recording survey details, honorarium to faculty and miscellaneous expenses @2000/ grama panchayat is proposed. Thus *a total amount of Rs.3.20 lakhs @ Rs.0.32 lakhs/grama panchayat is set apart for conducting varietal survey in 10 panchayats.*

(vi) Documentation including Indigenous Technical Knowledge (ITK) (Rs.2.00 lakhs)

Documentation of activities carried out under a project helps in evaluating the project and also in future reference. An amount of Rs.0.50 lakhs is proposed per block for documentation of the project activities including digital documentation. *A total amount of Rs.2.00 lakhs will be utilised for this purpose.*

(vii) Constitution of Expert Committee and strengthening of Multi Disciplinary Diagnostic Team (MDDT) (Rs.0.60 lakhs)

An expert committee will be formed to act as MDDT involving 3 experts, one each from KAU, IISR and Department of Agriculture to conduct field visits and suggest remedies for field problems which cannot be solved at the district level. The Technical Committee already constituted under Wayanad Package Scheme can take up this role also. *An amount of Rs. 4000/expert/visit is proposed, total coming to Rs.12000/ visit. Five such visits shall be conducted per year. A total of Rs. 0.60 lakhs is required for this purpose.*

(viii) External Monitoring (Rs.40.00 lakhs)

Monitoring and evaluation of a project by an external agency helps in assessment of project effectiveness in an unbiased manner. Schemes like Vegetable Development and

Strengthening of Agricultural Extension of the Department of Agriculture are being monitored at present by the Centre for Management and Development (CMD), Thiruvananthapuram. Hence the monitoring of Wayanad package project can also be entrusted to CMD for which *an amount of Rs.40.00 lakhs is set apart.*

(ix) Untied funds for new local initiatives (Rs.11.80 lakhs)

Innovations and local initiatives by farmers in pepper cultivation may be encouraged and taken up for evaluation and adoption as per the merit and suitability of the initiative. This can be a new method of propagation, new cultivation/ crop management method, variety etc. An amount of Rs.1.00 lakh/grama panchayat is earmarked to assist one or more of such initiatives. The amount will be disbursed on a project mode. The projects prepared by Agricultural Officers should be approved by a District level committee comprising Principal Agricultural Officer , DDA (H) and Assistant Directors of the concerned blocks. *An amount of Rs.11.80 lakhs is set apart for this purpose.*

(x) Strengthening Pepper Development samithies (Rs.50.00 lakhs)

There are 200 Pepper Development samithies working at the grass root level in various gramam panchayats of Wayanad district. They are actively involved in arranging and distributing planting materials and other inputs received from various government agencies like Department of Agriculture, KAU and IISR to pepper cultivators. Also they act as a link between such institutions and farmers in transfer of technology. At present these samithies have no fund of their own to carry out their activities. It is therefore proposed to give *an assistance of Rs.25000/- per samithy* for carrying out basic functions like registration, maintenance of records, for meeting expenses in organising meetings, arranging inputs etc. Expenditure for activities related to organic farming can also be met from this provision. *An amount of Rs.50.00 lakhs is earmarked for 200 samithies.*

(xi) Information/publicity materials, advisories and campaigns (Rs.4.00 lakhs)

Implementation of such a massive project involves transfer of technical information and publicity materials regarding activities under the project. **An amount of Rs.4.00 lakhs @ Rs.1.00 lakh/block is earmarked for this purpose.**

(xii) Operational Expenses (Rs.4.00 lakhs)

For effective implementation of the project, operational expenses including fuel charge and hiring of vehicles is to met from the project funds. An amount of **Rs.2.00 lakhs at district level and Rs.0.50 lakhs/block, totalling to Rs.4.00 lakhs is set apart for the purpose.**

Abstract

Sl. No.	Component	Physical target (Ha./No. of units)	Unit cost (Rs.)	Total amount required (Rs.in lakhs)
i.	Support for maintenance of mother gardens	20 Ha. (20000 stds.)	250/std.	50.00
ii.	Establishing Farmers Field School (FFS)	8 no.s	70000/FFS	5.60
iii.	Frontline Demonstration (FLD) of new technologies	8 nos	10000	0.80

iv.	Exposure Visit to Model Farms	108 visits	10000/- per visit	10.80
v.	Varietal survey at panchayat level	10 panchayats	0.32/ panchayat	3.20
vi.	Documentation including ITK	4 blocks	50000/block	2.00
vii.	Constitution of Expert Committee and strengthening of Multi Disciplinary Diagnostic Team (MDDT)	5 visits	4000/expert/visit 3 experts	0.60
viii.	External Monitoring by CMD	LS		40.00
ix.	Untied funds for new local initiatives	25	1 lakh/ grama panchayat	Limited to 11.80
x.	Strengthening pepper Development samithies	200	25000/Samithy	50.00
xi.	Information/publicity materials, advisories and campaigns	4	1 lakh/block	4.00
xii.	Operational Expenses			
	a. District	1		2.00
	b. Block	4	50,000/- per block	2.00
	G. Total			182.80

(Rupees One Crore and Eighty Two Lakhs Eighty Thousand Only)

Mode of implementation

The Principal Agricultural Officer Wayanad will take necessary steps to implement the scheme successfully. Small and marginal farmers only should be considered for providing assistance. Ten percent of the total assistance should be extended to SC/ST farmers. Wide publicity should be given for collecting eligible applications. Proper publicity is to be made for the success of the programme as the spraying against quick wilt of pepper is to be carried out in a campaign mode involving local leadership in definite time frame.

The scheme will be implemented effectively by the Agricultural officer at Krishibhavan level, Asst Director of Agriculture at block level and Deputy Director of Agriculture(H) and the Principal Agricultural Officer at the district level. The details of the scheme should be maintained in separate register in the Krishibhavan where the scheme is implemented. Assistance under the programme should be given to the beneficiaries through e-payment to the bank account of the beneficiary. For implementing the component Quick wilt Management, organic pepper cultivation and Plant protection activities & lime under Whole farm development, Principal Agricultural Officer is permitted to delink from e-payment

schedule on condition that the inputs are arranged through Primary Agricultural Credit Cooperative Societies/ Banks. The scheme should be implemented through mobilising Pepper Samithies and Local leadership in a campaign mode.

Assistance under all other components of the package will be implemented through e-payment only. Principal Agricultural Officer should take utmost vigil in implementing the programme through effective monitoring and control to reach the inputs to individual farmers and proper adoption. Agricultural Assistants should verify all the plots before releasing of assistance to ensure proper adoption of technology. Agricultural Officers should inspect 30% of the plots and Assistant Director of Agriculture should inspect 20% of the plots at block level . Deputy Director of Agriculture (H) will inspect 10% of the plots at district level .

Additional Director of Agriculture (CP) will be in charge of the programme at the state level. The Principal Agricultural Officer , Wayanad will do the district level monitoring of the scheme. The Assistant Directors of Agriculture at block level will be monitoring the implementation of the programme through respective Krishibhavans. The field level implementation will be done by the Agricultural Officers of the concerned Krishibhavans. The supervision of the spraying programme is to be carried out by deploying Agricultural Assistants in the field and necessary certificates in this regard is to be obtained as and when the claim is entertained for sanctioning financial assistance.

Progress of implementation should be reported to the Director of Agriculture in the name cover of Addnl. Director of Agriculture(CP) on or before 5th of every month. The Principal Agri Officer should take maximum effort for the effective and timely implementation of the scheme.

Abstract of the Scheme

SI No	Components	Rate(Rs)	Phy .target	Fin.Target (Rs. in lakhs)
I	Pepper rehabilitation			
a)	Promotion of Organic farming	5000/-	1697	83.95
b)	Assistance for planting new standards	10/-	20 lakhs	20.00

c)	Integrated Management of Quick Wilt of Pepper	10000/-	5000 ha	500.00
	Sub Total			603.95
II	Whole Farm development	20000/-	2500 ha	500.00
	Sub Total			500.00
III	Introduction of New Planting Material Production Techniques And Popularization of Local Varieties In Pepper			
a.	Development of planting materials using orthotropic shoots and grafts	275000/-	4 unit	13.75
b.	Support for onfarm production units of Trichoderma	20000/-	25 nos	5.00
c.	Demonstration of farmer developed varieties	25000/-	50 units	12.50
d.	Promotion of soil-less pepper nurseries.	300000/-	4 nos	12.00
	Sub Total			43.25
IV	Other components of Integrated Pepper Development			
1	Support for maintenance of mother gardens	250/std.	20 Ha. (20000 stds.)	50.00
2	Establishing Farmers Field School (FFS)	70000/FFS	8 no.s	5.60
3	Frontline Demonstration (FLD) of new technologies	10000	8 nos	0.80
4	Exposure Visit to Model Farms	10000/- per visit	108 visits	10.80
5	Varietal survey at panchayat level	0.32/ panchayat	10 panchayats	3.20
6	Documentation including ITK	50000/block	4 blocks	2.00
7	Constitution of Expert Committee and strengthening of Multi Disciplinary Diagnostic Team (MDDT)	4000/expert/visit 3 experts	5 visits	0.60
8	External Monitoring by CMD		LS	40.00
9	Untied funds for new local initiatives	1lakh/ grama panchayat		Limited to 11.80

10	Strengthening pepper Development samithies	25000/Samithy	200	50.00
11	Information/publicity materials, advisories and campaigns	1 lakh/block	4	4.00
12	Operational Expenses			
	c. District		1	2.00
	d. Block	50,000/- per block	4	2.00
	Sub Total			182.80
	G.Total			1330.00

Expert committee

An expert committee with the following persons is constituted for overseeing and guiding the implementation of Integrated Pepper Development in Wayanad District and also to ensure quality.

1. Dr.J.Thomas, Director (Rtd) of ICRI, Spices Board
2. Dr. P.J. Joseph, Former Professor of Plant Pathology, Kerala Agricultural University
3. Dr.Sarma, Former Director of IISR
4. Director, IISR, Kozhikode

Principal Agricultural Officer should implement the scheme with the technical guidance of the expert committee and quarterly meetings are to be conducted for the purpose.

Budget

During 2016-17, an amount of **Rs.1900.00 lakhs** has been set apart for the implementation of Wayanad Package under the head of account **2401-00-800-27(Plan)**. The amount required for implementing this scheme **Rs.1330.00 lakhs** will be met from the budget provision under the above head.

The receipt of the circular should be acknowledged by return.

Sd/-

Director of Agriculture

To

Principal Agricultural Officer, Wayanad

The image shows a handwritten signature in black ink over a circular official stamp. The stamp contains the text 'DIRECTOR OF AGRICULTURE' and 'WAYANAD DISTRICT' around the perimeter. The signature is written across the center of the stamp.

Copy to

1. CA to Director of Agriculture
2. CA to all Additional DAs
3. All JDAs at HQ / SFO
4. PIO, FIB, Thiruvananthapuram
5. Planning section
6. Stock file/Spare
7. IT Cell for publishing in web site.

