

Operational Guidelines
of
Per Drop More Crop (Micro Irrigation)
Component of PMKSY



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Abbreviations

AC&FW	Agriculture Cooperation & Farmers Welfare
AIBP	Accelerated Irrigation Benefit Programme
ATMA	Agriculture Technology Management Agency
BIS	Bureau of Indian Standards
CIPET	Central Institute of Plastics Engineering and Technology
CST	Central Sales Tax
DAC&FW	Department of Agriculture, Cooperation & Farmers Welfare
DBT	Direct Benefit Transfer
DIP	District Irrigation Plan
DLIC	District Level Implementation Committee
DoLR	Department of Land Resources
DONER	Development of North Eastern Region
DPR	Detailed Project Report
DRDA	District Rural Development Agency
GoI	Government of India
HDPE	High Density Polyethylene
HP	Horse Power
HRD	Human Resource Development
ICAR	Indian Council of Agricultural Research
ICT	Information Communication Technology
IDWG	Inter Departmental Working Group
IMD	Indian Meteorological Department
IPPE	Intensive Participatory Planning Exercise
ISRO	Indian Space Research Organisation
IWMP	Integrated Watershed Management Programme
KVK	KrishiVigyan Kendra
LST	Local Sales Tax
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
Mha	Million Hectare
MI	Micro Irrigation
MIS	Micro Irrigation System
MLALAD	Member of Legislative Assembly Local Area Development
MoA	Ministry of Agriculture
MoRD	Ministry of Rural Development
MoWR	Ministry of Water Resources
MPLAD	Member of Parliament Local Area Development
NABARD	National Bank for Agriculture & Rural Development
NABCONS	NABARD Consultancy Services
NCPAH	National Committee on Plasticulture Applications in Horticulture
NEC	National Executive Committee
NEH	North Eastern & Himalayan States
NGO	Non-Governmental Organisation
NRAA	National Rain-fed Area Authority
NRM	Natural Resource Management
NSC	National Steering Committee

PFDCs	Precision Farming Development Centres
PMKSY	Pradhan MantriKrishiSinchayeeYojana
PRI	Panchayati Raj Institutions
PVC	Poly Vinyl Chloride
RIDF	Rural Infrastructure Development Fund
RKVY	RashtriyaKrishiVikasYojana
SAC	Space Application Centre
SAGY	SansadAdarsh Gram Yojana
SAU	State Agricultural university
SC	Schedule Caste
SCP	Special Component Plan
SIP	State Irrigation Plan
SLNA	State Level Nodal Agency
SLSC	State Level Sanctioning Committee
S&MF	Small & Marginal Farmers
ST	Schedule Tribe
TIN	Tax Identification Number
TSP	Tribal Sub – Plan
UC	Utilisation Certificate

Salient Features of the Scheme

- Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) has been launched with the motto of providing "Har Khet Ko Paani" and end-to-end solutions in irrigation supply chain, viz. water sources, distribution network and farm level applications. It comprises of four components, namely (i) Accelerated Irrigation Benefit Programme (AIBP), (ii) Har Khet Ko Paani, (iii) Watershed Development and (iv) Per Drop More Crop.
- PMKSY has a two-tier structure at the Central level with National Steering Committee (NSC) under the Chairmanship of Hon'ble Prime Minister and National Executive Committee (NEC) under the Chairmanship of Vice Chairman, Niti Aayog.
- PMKSY Mission Directorate has been established in Ministry of Water Resources, River Development and Ganga Rejuvenation for mission mode implementation of 99 major and medium irrigation projects. The Mission is also responsible for overall coordination and outcome focused monitoring of all components of PMKSY for achieving its target.
- At the state level, PMKSY has a three-tier structure with State Level Sanctioning Committee (SLSC) under the Chairmanship of Chief Secretary; Inter-departmental Working Group (IDWG) under the Chairmanship of Agriculture Production Commissioner (APC)/Development Commissioner; and District Level Implementation Committee (DLIC) under the Chairmanship of District Collector/Magistrate.
- District Irrigation Plans (DIP) is the cornerstone for planning and implementation of different components of PMKSY which identifies gaps in irrigation chain after taking into consideration currently available resources and resources that would be added from ongoing schemes, both State and Central.
- The annual action plans is to be drawn from district irrigation plans/state irrigation plan focusing on cluster based approach and integrated development of different components in the irrigation chain.
- The scheme is to be implemented through the mechanism of Direct Benefit Transfer (DBT). Aadhar details of the beneficiary is required to access the benefit of the programme. Aadhar details need to be linked through a web based registration process.
- The scheme will be monitored through web-portal of PMKSY. Physical and Financial progress achieved during the preceding month is required to be uploaded by states on the web-portal of PMKSY by 5th of every month.
- More focus be given on promotion of micro irrigation for water intensive/guzzling crops to minimise water requirement.
- The pattern of assistance payable to the beneficiary under the micro irrigation scheme will be 55% for small and marginal farmers and 45% for other farmers which will be met by both Central Government and State Government in the ratio of 60:40 for all states except the North Eastern and Himalayan

states. In the case of these states, ratio of sharing is 90:10. For the Union Territories, funding pattern is 100% grant by the Central Government.

- The subsidy payable to the beneficiary will be limited to an overall ceiling of 5 hectare per beneficiary.
- The subsidy payment will be limited to the unit costs specified in the scheme guidelines. 25% higher amounts have been taken into calculation of subsidy for the North Eastern and Himalayan states and 15% higher for states with low penetration of MI namely Bihar, Chhattisgarh, Jharkhand, Odisha, Uttar Pradesh and West Bengal.
- The registration of manufacturers/companies under the scheme will be for a period of 5 years. The registration will be open round the year. The registration will, however, be subject to satisfactory performance by the company. In case of violations, penalty provisions have been specified in the guidelines. Repeated failures will lead to de-registration of the company with approval of SLSC.
- Only BIS marked systems/components can be supplied under the scheme.
- The company will provide free after sales service to the beneficiary for a period of at least three years from the date of installation of the system. If it fails to provide free after sales service, action as appropriate similar to other consumer products may be initiated.
- In case the company intends to supply imported components, it shall obtain prior approval from DAC&FW, MoA&FW, New Delhi subject to indigenization of manufacturing of the component within the country in a period of two years.
- Human resource development is an important component of the scheme and suitable provisions have been made in the guidelines for creating awareness, organizing training programmes, and exposure visits etc.

1. Introduction

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) was launched on 1st July, 2015 with the objective to achieve convergence of investments in irrigation sector at field level. The scheme aims at providing end-to-end solutions in irrigation supply chain, viz. water sources, distribution network and farm level applications. PMKSY not only focuses on creating water sources for assured irrigation, but it is also creating protective irrigation by harnessing rain water at micro level through 'Jal Sanchay' and 'Jal Sinchan'. Micro irrigation is an integral component of the scheme to maximise water use efficiency at farm level. PMKSY adopts state level planning and projectised execution that allows states to draw up their own irrigation development based on District irrigation Plans and State Irrigation Plan.

2. Programme components of PMKSY

Components of the PMKSY are as under:

- 2.1. **Accelerated Irrigation Benefit Programme (AIBP)** – to focus on faster completion of ongoing Major and Medium Irrigation projects – being implemented by MOWR, RD&GR.
- 2.2. **PMKSY (Har Khet KoPani)** – to focus on source augmentation, distribution, ground water development, lift irrigation, diversion of water from water plenty to water scarce areas, supplementing rain water harvesting beyond IWMP & MGNREGA, repair, restoration, renovation of traditional water bodies etc. – being implemented by MoWR, RD&GR.
- 2.3. **PMKSY (Per Drop More Crop)** – to focus on micro level storage structures, efficient water conveyance & application, precision irrigation systems, topping up of input cost beyond MGNREGA permissible limits, secondary storage, water lifting devices, extension activities, coordination & management - being implemented by DAC&FW.
- 2.4. **PMKSY (Watershed Development)** - to focus on ridge area treatment, drainage line treatment, soil and moisture conservation, water harvesting structure, livelihood support activities and other watershed works being implemented by DoLR.

3. Programme Architecture

- 3.1. Per Drop More Crops (Micro Irrigation) will adopt the institutional set up and architecture of overall PMKSY framework as given in the Operational Guidelines of PMKSY. The broad institutional structure as per PMKSY Guideline are:
 - a) National Steering Committee (NSC) under the Chairmanship of Hon'ble Prime Minister with Union Ministers from concerned ministries and Vice chairman, NITI Aayog as members to provide general policy strategic directions for programme implementation and overall supervision addressing national priorities etc.

- b) National Executive Committee (NEC) under the Chairmanship of Vice Chairman, Niti Aayog with Secretaries of concerned ministries/departments and Chief Secretaries of selected States as members to oversee programme implementation, allocation of resources, Inter-ministerial coordination, monitoring & performance assessment, addressing administrative issues etc.
- c) PMKSY Mission Directorate has been established in Ministry of Water Resources, River Development and Ganga Rejuvenation for mission mode implementation of 99 major and medium irrigation projects. The Mission is also responsible for overall coordination and outcome focused monitoring of all components of PMKSY for achieving its target.
- d) State Level Sanctioning Committee (SLSC) under the Chairmanship of Chief Secretary of the State to sanction projects and activities as recommended by IDWG.
- e) Inter Departmental Working Group (IDWG) under the Chairmanship of Agriculture Production Commissioner/ Development Commissioner with Secretaries of line departments as members. States, if they feel, may take the advice /input of MI manufacturers by inviting representative from manufacturers/ Micro Irrigation Industries as special invitee.
- f) District Level Implementation Committee (DLIC) under the Chairmanship of Collector/District Magistrate / CEO of Zila Parishad/ PD DRDA, Joint Director/Deputy director of line departments in the district and progressive farmers, representative of MI industry, and leading NGO as members to oversee PMKSY implementation and inter-departmental coordination.

4. Nodal Department

- 4.1 Since the final outcome of PMKSY is to ensure access to efficient delivery and application of water at every farm thereby enhancing agricultural production & productivity, State Agriculture Department may be the Nodal Department for implementation of PMKSY (Per Drop More Crop). However, State Govt. is free to identify the nodal department based on the established institutional set up and mandate of the department. All communication between Ministry of Agriculture (MoA) and State Government would be with and through the nodal department.
- 4.2 States are free to identify dedicated implementing agencies/departments for implementation of Per Drop More Crop (Micro Irrigation). If two departments are assigned for implementation, one department be designated as the nodal department.

5. District and State Irrigation Plans (DIPs& SIPs)

- 5.1. District Irrigation Plans (DIPs) are the cornerstone for planning and implementation of different components of PMKSY which will identify gaps in irrigation infrastructure after taking into consideration the District Agriculture Plans (DAPs) vis-à-vis irrigation infrastructure currently available and resources that would be added from ongoing schemes, both State and Central.

- 5.2. DIPs present holistic irrigation development perspective of the district outlining medium to long term development plans integrating three components viz. water sources, distribution network and water use applications.
- 5.3. The annual action plans for **Per Drop More Crop (Micro Irrigation)** will be drawn from DIPs and implemented in conjunction with the water sources created under PMKSY in cluster mode for holistic development as far as possible.

6. Objectives of Per Drop More Crop (Micro Irrigation)

The main objectives of Per Drop More Crop (Micro Irrigation) are as under

- 6.1 Increase the area under micro irrigation technologies to enhance water use efficiency in the country.
- 6.2 Increase productivity of crops and income of farmers through precision water management.
- 6.3 Promote micro irrigation technologies in water intensive/consuming crops like sugarcane, banana, cotton etc and give adequate focus to extend coverage of field crops under micro irrigation technologies.
- 6.4 Make potential use of micro irrigation systems for promoting fertigation.
- 6.5 Promote micro irrigation technologies in water scarce, water stressed and critical ground water blocks/districts
- 6.6 Link tube-well / river-lift irrigation projects with micro irrigation technologies for best use of energy both for lifting and pressurised irrigation as far as possible.
- 6.7 Establish convergence and synergy with activities of on-going programmes and schemes, particularly with created water source for its potential use, integration of solar energy for pressurised irrigation etc.
- 6.8 Promote, develop and disseminate micro irrigation technology for agriculture and horticulture development with modern scientific knowledge.
- 6.9 Create employment opportunities for skilled and unskilled persons, especially unemployed youth for installation and maintenance of micro irrigation systems.

7. Implementation Strategies

- 7.1. Water is becoming scarce commodity these days due to competitive demand and also due to the change in climatic behaviour, particularly the erratic nature of rainfall. The available water sources or the new sources those are being created need to be used in best possible manner to fulfil the vision of "Har Khet Ko Pani" and "Per Drop More Crop" of PMKSY through efficient water conservation(Jal Sanchaya) and water management (Jal Sinchan) practices. It is in this context more vital to link most of the water sources with micro irrigation to get extended coverage for a longer duration. Cluster approach may be

adopted in irrigation chain development, to have effective integration of source, connectivity, distribution and application.

- 7.2. It is desirable to make potential use of the available water for sustained growth in agriculture sector. Preference should be given to adopt Micro Irrigation technology in water guzzling crops like sugarcane, cotton, banana, etc. and the state implementing agencies should take suitable steps like publicity campaigns, policy provisions & sharing responsibilities with the Micro Irrigation industry so that adoption of technology is initiated in such crops. Industry related to the specific crops like sugar factories should be actively involved in promotion of micro irrigation to their farmers through incentivisation and technical supervision. Apart from horticulture and water guzzling crops, cereals and pulses may also be brought under the ambit of Micro irrigation.
- 7.3. In all the new irrigation commands where hydraulic heads are available, drip irrigation systems need to be encouraged as it can be operated without additional energy support.
- 7.4. Facilities of micro irrigation is underutilised if it is not used for fertigation. States should encourage the use of liquid fertilizers using micro irrigation systems. Availability of liquid fertilisers, awareness among farmers on the benefits of fertigation need to given desired attention for promoting fertigation.
- 7.5. Efforts may be made for integration of micro irrigation with solar pumping units. A solar water pump has a mini power house at its heart and consists of a calibrated and matching solar array of modules – tuned with the equivalent power of pump for that particular application. The solar water pumping system is capable of running all types of electrical water pumps with applications varying from irrigation to household demands. Irrigation pumps such as submersible, surface or deep well can also be coupled with drip irrigation systems to enhance the returns from this configuration. A 2000 Watt Peak (WP) solar water pump is capable of drawing and pumping approximately 80,000 litres of water per day from a source that is up to 10 meters deep. This is sufficient to irrigate about 1 ha of land with regular crops.
- 7.6. More focus and priority be given for promoting micro irrigation technologies in water scarce, water stressed and critical ground water blocks/districts to conserve water and get extended coverage in terms of area and time period for live saving irrigation. Where ever feasible efforts be made to Link tube-well / river-lift irrigation projects with micro irrigation technologies for best use of energy both for lifting and pressurised irrigation.
- 7.7. Assistance for installation of micro irrigation system is limited to five hectares per beneficiary. The land holding of a beneficiary to be covered under drip/sprinkler system could be located in one contiguous area or at different locations, but the financial assistance will be limited to the overall ceiling of 5 ha. Those beneficiaries, who have already availed subsidy benefits for his /her farm, can not avail the assistance for the next seven years. A beneficiary if availed the benefit of subsidy for micro irrigation for a particular farm would be eligible for subsidy again for the same land only after the end of projected life of the micro irrigation system which is 7 years.

- 7.8. In case of Cooperative/group farming, members of cooperative societies, self-help groups, incorporated companies, panchayatiraj institutions, NGOs, Trusts, growers' associations will be entitled to avail financial assistance through their respective bodies. In such cases, the individual beneficiary will receive financial assistance only through the respective organizations with in the overall ceiling of 5 ha per beneficiary.
- 7.9. Beneficiaries/Institutions that have opted for contract farming or taken land on lease are also eligible for obtaining financial assistance under the scheme. However, to become eligible, the beneficiary/institution shall have to produce lease agreement for a minimum period of seven years from the date of approval of application by the MI implementing agency.
- 7.10. Raw material price of polymers & other costs varies a lot because of fluctuation in national/international prices. Accordingly, the Ministry of Agriculture, Government of India would consider revision of unit cost norms periodically if found necessary.
- 7.11. PFDCs, ICAR, CIPET, ATMA etc and other reputed NGOs may be involved in planning, implementation, demonstration, training and evaluation under the scheme. The implementing agency at the district level will ensure convergence of activities under the programme with the activities of various departments on water management to get the desired output.

8. Drip Irrigation System for states where it has been well accepted by farmers and good infrastructure is available

- 8.1. The scheme is well accepted by the farmers and substantial coverage has been made under micro irrigation system compared to other parts of the country with required infrastructure and service facilities in the States namely Andhra Pradesh, Delhi, Gujarat, Goa, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu and Telangana. These states are considered to be category "A" States with comparatively better penetration of micro irrigation technologies.
- 8.2. Drip Irrigation technology involves irrigating root zone through emitters fitted on a lateral tube as well as inserted within the tubing as emitting pipe. The use of different emitters will depend upon specific requirements, which may vary from crop to crop.
- 8.3. Fertigation is important for getting the maximum benefits out of the micro irrigation technology. Therefore, it is mandatory to use a fertigation device by the farmers such as venturi injector or fertilizer tank on which the subsidy is available.
- 8.4. Water requirement, age of plant, plant to plant spacing, soil type, water quality and availability etc are some of the factors which decide the choice of emitting system. The indicative cost of drip irrigation systems (assuming peak water requirement with source of water at the corner of plot), for different lateral spacing and plot sizes has been provided in the guidelines. An indicative list of system components required for installing a drip irrigation system in the areas

ranging from 0.4 ha to 5 ha is at **Annexure-IV a to f**, on the basis of which subsidy will be calculated as per Table 1:

Table 1: Indicative cost of Drip Irrigation System for calculation of subsidy

Spacing	(Cost in Rs.)					
	0.4 ha	1 ha	2 ha	3 ha	4 ha	5 ha
12x12	15853	21643	34417	53437	66480	84653
10x10	16419	23047	37171	57647	72205	91806
9x9	16826	24035	39145	60610	76238	96852
8x8	17351	25332	41650	64500	81527	103459
6x6	19096	30534	51045	82472	100016	125498
5x5	20674	34664	59154	85484	108635	145964
4x4	21414	36562	64084	99965	130884	155778
3x3	23055	42034	72759	112065	140936	176457
2.5x2.5	31156	60065	109345	167011	234396	286297
2x2	36358	73138	141957	206232	286504	351667
1.5x1.5	41369	85603	163137	243633	336484	414002
2.5x0.6	30810	63145	116042	177345	246276	302318
1.8x0.6	37845	80599	152551	229637	312784	389511
1.2x0.6	40000	100000	200000	323019	435788	545181

- 8.5. The unit cost of Drip Irrigation system varies with respect to plant spacing and location of the water source.
- 8.6. Assistance under the scheme is available for all types of drip irrigation systems such as on-line & in-line drip irrigation systems.
- 8.7. In case of crops with plant spacing other than those mentioned in Table-1a, the amount of assistance could be calculated on pro rata/average basis of the nearest plant spacing. Alternatively, assistance amount may be calculated as per the unit cost of the nearest spacing of plants.
- 8.8. As small farm holdings may not have individual source of water, it would be preferable to encourage a group of farmers to avail the benefits of drip irrigation through a common water source.
- 8.9. A beneficiary having farms located at different places and having different water source may avail the subsidy as per the guidelines. However, a beneficiary cannot split area at one location into small pockets of the same crop for claiming assistance under the scheme. If a beneficiary has more than one crop with different crop spacing being grown separately in his/her land holding, assistance will be available for installing the drip irrigation system as per the individual crop spacing, the combined area of which will not exceed 2 ha per beneficiary.
- 8.10. In case of inter-cropping, assistance will be available for the prescribed plant spacing/ area, subject to the condition that the assistance will be provided only for one crop as per the farmers' choice.

9. Drip Irrigation System in states with low penetration

9.1 Based on the prevailing coverage and acceptance by farmers, states namely Bihar, Chhattisgarh, Jharkhand, Odisha, Uttar Pradesh, West Bengal and Union Territories have been identified as states with low penetration of micro irrigation technology. These states are considered as category "B" in terms of implementation of micro irrigation. The cost of drip system is likely to be higher in these states due to various factors such as lesser presence of manufacturing companies in these states leading to higher cost of transportation, the companies will have to make considerable efforts in making the farmers ready for adoption of technology, and higher cost involved in providing after sales service in these states etc. Thus, 15% higher cost has been taken in consideration while working out the unit cost of drip system in the table below for these states for the purpose of subsidy calculation as per indicative list of system components given at Annexure - IV a to f.

Table 2: Indicative cost of Drip Irrigation System for calculation of subsidy in the states where penetration level is low

(Cost in Rs.)

Spacing	0.4 ha	1 ha	2 ha	3 ha	4 ha	5 ha
12x12	18231	24889	39579	61453	76452	97351
10x10	18882	26504	42747	66294	83036	105577
9x9	19350	27640	45017	69702	87674	111380
8x8	19954	29132	47897	74175	93756	118978
6x6	21960	35114	58702	94843	115018	144323
5x5	23775	39864	68027	98307	124930	167859
4x4	24626	42046	73697	114960	150517	179145
3x3	26513	48339	83673	128875	162076	202926
2.5x2.5	35829	69075	125747	192063	269555	329242
2x2	41812	84109	163251	237167	329480	404417
1.5x1.5	47574	98443	187608	280178	386957	476102
2.5x0.6	35431	72617	133448	203947	283217	347666
1.8x0.6	43522	92689	175434	264083	359702	447938
1.2x0.6	46000	115000	230000	371472	501156	626958

- 9.2 The assistance will be available for all types of drip irrigation systems - on-line and in-line drip irrigation systems.
- 9.3 In case of crops with plant spacing other than those mentioned in the Table above, the amount of assistance could be calculated on pro rata/average basis of the nearest plant spacing. Alternatively, assistance amount may be calculated as per the unit cost of the nearest spacing of plants.
- 9.4 In case of inter-cropping, assistance will be available for the prescribed plant spacing/area, subject to the condition that the assistance will be provided only for one crop as per the farmers' choice.

10. Drip Irrigation System for North Eastern and Himalayan States

10.1. The coverage of MI system in North Eastern and hilly region is much low due to poor infrastructure and difficult terrain. The states namely Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Sikkim, Jammu & Kashmir, Himachal Pradesh and Uttarakhand are considered under category "C". In the Hilly states, following points need to be kept in mind while designing a drip irrigation system keeping in view the sloppy and terraced land:

- It is difficult to lay PVC main and sub-main lines below the ground surface and therefore HDPE pipes are required in place of PVC.
- The undulating and vertical slopes would lead to comparatively larger length of pipes.
- To maintain uniform pressure and to irrigate upper most terrace of land, control valve should be provided at sub-main/main lines at 4m vertical drop. Accordingly, the number of flush valves will also increase.

10.2. The cost of drip system is likely to be higher in North Eastern & Himalayan states because of the terrain, higher transport cost, lesser presence of manufacturing companies etc. Therefore, unit cost of micro irrigation systems is taken 25% higher in these states for the purpose of subsidy calculations and is given in table 1b below (including 25%) for the indicative list of system components is at **Annexure -IV g to I**.

Table 3: Unit cost for NEH states

(Cost in Rs.)

Spacing (mxm)	0.4	1	2	3	4	5
12x12	20279	27158	46000	73591	111441	144264
10x10	20976	28920	50458	78775	119138	153071
9x9	21480	30486	52905	82438	123475	159309
8x8	22133	31809	56041	87264	130037	165828
6x6	24310	40360	67434	139730	159652	200611
5x5	26295	45339	77616	142545	169569	225871
4x4	27076	47365	81486	160455	197524	236371
3x3	29214	58655	92858	176213	209935	263341
2.5x2.5	40981	77990	136683	226489	333912	414657
2x2	47085	94259	179140	275295	398722	494350
1.5x1.5	52700	108205	204438	317146	454682	564102
2.5x0.6	41079	91160	163016	225796	368375	454067
1.8x0.6	50193	113788	210371	293601	454622	567120
1.2x0.6	66444	158489	289296	414684	614137	768964

11. Sprinkler Irrigation

11.1. In sprinkler irrigation, water is discharged under pressure in the air through a set of nozzles attached to a network of High Density Poly Ethylene (HDPE) pipes, simulating the rainfall. Sprinkler irrigation systems are suitable for

irrigating crops where the plant density is very high. It is widely used for cereals; pulses; seeds; spices; and field crops.

- 11.2. Financial assistance would be restricted as per the cost of High Density Poly Ethylene (HDPE) pipes used in sprinkler irrigation systems, even though, the beneficiaries may use aluminium pipes as well. The sprinkler irrigation systems may be portable, mini sprinklers, micro sprinklers, semi-permanent sprinklers or large volume sprinkler systems (Rain-guns). Additional 25% and 15% on the indicated unit cost may be considered for calculation of subsidy for Hilly states including NE region and low penetrating state respectively.

11.3 Portable Sprinkler Irrigation System

11.3.1 In portable sprinkler irrigation systems the HDPE pipes are used for mains and sub-mains which can be shifted from one place to another as per the irrigation schedule with respect to design layout. These types of sprinklers have a radius of throw from 12 to 18m with a discharge of 1200 lph to 1800 lph. These can be used in both, plains as well as in undulating terrains.

11.3.2 The indicative number of components required for various area range of sprinkler irrigation system is annexed. Financial assistance will be provided based on the number of pipes procured by the beneficiary for the area under reference. An indicative list of system components required for installing portable sprinkler irrigation system is at Annexure-V on the basis of which subsidy will be calculated. The indicative cost for various area ranges and pipe sizes is given below in Table 4 below:

Table-4: Indicative Cost of Portable Sprinkler Irrigation System

(Cost in Rs)

Area	63 mm	75 mm	90 mm
Upto 1 ha	19542	21901	0
Upto 2 ha	28213	31372	0
Upto 3 ha	NA	NA	42345
Upto 4 ha	NA	NA	53404
Upto 5 ha	NA	NA	60459

Note: In case of low penetrating states and hilly states including NE region, 15% and 25% higher indicative cost respectively may be taken for calculation of subsidy.

11.4 Micro Sprinklers (up to 3 m radius of throw)

11.4.1 Micro Sprinklers are mostly used for irrigating leafy vegetables, nurseries, hardening of seedlings and a few vegetables. Apart from providing irrigation, the micro sprinkler also helps in changing the micro climatic conditions near the plant. Micro sprinklers are low radius sprinklers which have a radius of throw upto 3 m. Discharge of micro sprinkler varies from 20 lph to 150 lph. The selection of micro sprinklers depends on the type of crop, soil, types, etc.

11.4.2 An indicative list of system components required for installing a micro sprinkler system is at **Annexure-VI**. The indicative cost of Micro Sprinkler irrigation system at different lateral spacing & area is given in **Table 5** below:

Table5: Indicative cost of Micro Sprinkler Irrigation System

(Cost in Rs)

Area (ha)/ spacing (mxm)	5x5	3x3
0.4	29613	34637
1	58932	67221
2	103581	121138
3	149305	172968
4	201612	238845
5	254872	290995

Note: In case of low penetrating states and hilly states including NE region, 15% and 25% higher indicative cost respectively may be taken for calculation of subsidy.

11.5 Mini Sprinklers (more than 3 m up-to 10 m radius of throw)

11.5.1 Mini Sprinklers have radius of throw between 3 m to 10m. The discharge of these sprinklers varies from 150 lph to 600 lph. They are commonly used for close growing crops like groundnut, potato, onion, ginger, short statured fodder crops, etc. Mini sprinklers are also suitable for frost protection. An indicative list of system components required for installing a mini sprinkler irrigation system is enclosed at **Annexure VII**. The indicative cost of Mini Sprinkler irrigation system at different lateral spacing and area is given below in **Table 6** below:

Table 6:- Indicative Cost of Mini Sprinkler Irrigation System

(Cost in Rs)

Area (ha)/ spacing (mxm)	10x10	8x8
0.4	41363	43023
1	85212	94028
2	160013	170118
3	242982	263361
4	312752	344013
5	383123	425355

Note: In case of low penetrating states and hilly states including NE region, 15% and 25% higher indicative cost respectively may be taken for calculation of subsidy.

11.6 Semi-Permanent Sprinkler Irrigation System

11.6.1 In Semi-Permanent Sprinkler System, the piping network for main line and lateral lines are permanently buried with risers fitted on the lateral lines. The sprinkler nozzles are fitted on each riser pipe and can be easily shifted from one place to another to irrigate the required area in shifts as per the irrigation schedule or the crop water requirement.

- 11.6.2 The indicative number of components required for various area ranges of semi-permanent sprinkler irrigation systems is enclosed at **Annexure VIII**. The estimated unit cost for various area ranges is given below in **Table 7 below**:

Table 7: Indicative Cost of Semi-Permanent Sprinkler System.

(Cost in Rs)

Area (Ha)	Cost (in Rs)
0.4	22557
1	36607
2	69804
3	94218
4	120392
5	146053

Note: In case of low penetrating states and hilly states including NE region, 15% and 25% higher indicative cost respectively may be taken for calculation of subsidy.

11.7 Large Volume Sprinkler Irrigation System (Rain gun)

11.7.1 Large volume sprinkler irrigation systems (Rain guns) are used where larger areas are to be covered with one or two sprinklers. These sprinklers have a discharge ranging from 10,000 lph to 32,000 lph and radius of throw from 24 m to 36 m. These systems require high pressure and high discharge pipes & pumps to operate them. These are preferred for irrigating crops spread over large areas in short time. The indicative list of components is enclosed at **Annexure IX**.

11.7.2 Pivot Irrigation system is used for a much larger area & are not suitable for the beneficiaries targeted under PMKSY. However, if some beneficiary is interested, may avail financial assistance as per unit cost norms of rain-gun system.

11.7.3 The estimated unit cost for various area ranges is given below in **Table 8**

Table: 8 Indicative Cost of Large Volume Sprinklers (Rain-gun)

(Cost in Rs)

Area / Pipe (mm)	63 mm	75 mm	90 mm
1	28681	34513	NA
2	NA	43786	NA
3	NA	NA	56818
4	NA	NA	65856
5	NA	NA	72322

Note: In case of low penetrating states and hilly states including NE region, 15% and 25% higher indicative cost respectively may be taken for calculation of subsidy.

12 Optional Components

- 12.1 The use of optional components depends upon the agro climatic conditions of the place & requirement of the beneficiary. The provision is kept to provide the said component on the then existing rate of subsidy to the beneficiary; if required & provided. These components are:
- 12.2 Fertilizer tank - to increase fertilizer use efficiency, fertilizer tanks have been included in the list of equipment eligible for financial assistance. The beneficiary can opt for either fertilizer tank or venturi system or automated dosing system equipment and financial assistance will be provided for either of those components.
- 12.3 Sand filters/media filters - to remove organic matter and inorganic contaminants from water sources like rivers, tanks and open wells. Sand/media filters have been included the financial assistance.
- 12.4 Hydro Cyclone Filters/Sand Separators - to remove particles of the size of 75 microns (200 mesh) which have a higher density than water, hydro cyclone filters/sand separators have been introduced as an optional item for which financial assistance will be provided. These equipments require minimum maintenance and are useful for cleaning river water, canal water and tube well water which may contain sand.
- 12.5 The detailed guideline for water quality & filters selection is provided at **Annexure X & XI** respectively. The indicative cost of optional components such as sand filters, hydro cyclone filters and fertilizer tanks is annexed at **Annexure XII**.

13 Key Administrative requirements

- 13.1 The unit cost norms indicated in the guidelines for various technologies/ specifications are for the purpose of calculating subsidy ceiling amount only i.e. it can be less but not more than the indicated amount if the cost is more. The actual cost of the system, however, would vary as per design of the field and other agro climatic conditions. The unit cost for subsidy purpose would be exclusive of any taxes & fiscal levies. However, it is to be ensured that all compulsory system components are provided to the farmer.
- 13.2 An individual eligible to receive the benefits under the scheme is required to furnish proof of possession of Adhaar Number or undergo Adhaar registration. If one individual is eligible but do not possess the Adhaar number she/he can get enrolled visiting the Adhaar enrolment centre. State Government/Union Territories Administration is required to offer Adhaar registration facilities to the beneficiaries who are not enrolled and in case no Adhaar enrolment centre is available in certain blocks/ taluka/ tahshil, the nodal department through its implementing agency is required to provide enrolment facilities at convenient locations in coordination with the

Registrars of UIDAI. Till the time Adhaar is assigned to individual, she/he can avail the benefit of the scheme on production of the following documents Adhaar enrolment ID slip/ Copy of request for Adhaar enrolment and Votor Identity Card/ PAN/ Passport/ Ration Card /Employee Govt. ID/Passbook of bank or post office/MGNREGS card/ Kissan photo passbook/ Driving Licence/ any other document as specified by State/UT.

13.3 Adhaar details need to be linked through a web based registration process. The assistance if given in cash, need to be transferred to the bank account of the beneficiary and in case it is given in terms of kind through Companies, the intimation be conveyed as SMS to the beneficiary mobile phone with details of assistance. It should be ensured that no eligible beneficiary suffers for want of Aadhar and it would be the responsibility of implementing agency to ensure that Aadhar enrolment of such beneficiaries is carried out on priority. The notification issued in this respect is given at **Annexure-XIII**

13.4 It must be ensured that at least 50% of the allocation is utilised for small, marginal farmers of which, at-least 30% should be women beneficiaries/farmers. Further, 16% and 8% of the total allocation or in proportion of SC/ST population in the district should be utilised for Special Component Plan (SCP) & Tribal Sub Plan (TSP) respectively.

13.5 Transparency in beneficiary selection – It should be ensured that the Implementing Agency follows uniform procedures and full transparency in selection of beneficiaries and release of assistance to the beneficiaries in an efficient manner. Enlisting of the beneficiaries should be open round the year facilitating submission of applications by beneficiaries any time for availing the benefit of financial assistance under the scheme. The state implementing agency need to adopt a web based IT model for implementation of the scheme. Implementing Agency should ensure that selection of beneficiaries is done as per details included in the Annual Action Plan for the component for the year which has been derived from the DIP.

13.6 Pre-installation activities

- The Implementing Agency need to widely publicise the scheme at the block and village levels through its existing networks.
- Appoint a nodal officer who is responsible for coordination of the scheme implementation with the districts.
- Disseminate the list of suppliers and rate list approved by SLSC to the farmers.
- Organize at least one District Level Seminar/Workshop with the participation of Industry.
- Compile the application submitted by the farmers and scrutinize, codify and forward the same to the company's/Manufacturer's local office indicated by the farmer.
- The beneficiary share may be deposited with manufacturer/their representative or the state nodal agency as per the practices to be adopted by the state with the approval of SLSC
- The beneficiary shall be free to purchase MI equipment from any MI manufacture out of the approved list of registered manufacturers

13.7 The manufacturer company will do/provide the following:

- Assess the crop water requirement as per the crop for which the system is to be provided.
- Design the system as per the crop water requirement.
- Prepare an estimate of cost and submit it to Implementing agency duly indicating the time frame in which the system will be installed in the farmer's field once work order is issued.
- The Implementing agency will approve the estimate, issue work order and ensure installation

13.8 The Company will install the system and commission it to the satisfaction of the beneficiary duly ensuring that:

- Quality components having BIS marking are installed in the farmer's field, and while making payment the implementing agency will ensure the BIS standard of supplied equipment, whichever the BIS standard exists.
- The installed system should match the water requirement of the crop.
- Necessary orientation and training is given to the beneficiary on the system maintenance & irrigating the crop with drip/sprinkler irrigation.
- Proper warranty and a user's manual for running & maintenance of the system - whether drip or sprinkler or both as the case may be is provided to the beneficiary.
- A certificate towards successful installation/commissioning of the system is obtained from the beneficiary.

13.9 Disbursement of assistance post installation

- Financial assistance to the beneficiary will be limited to the prescribed subsidy as per unit cost as prescribed under the guidelines or the actual Bill of Quantities (BoQ) whichever is less. On physical verification of satisfactory installation of the system & a certificate to that effect from the beneficiary, Implementing Agency will release payment to the beneficiary electronically in his/ her bank account.
- The Implementing Agency shall ensure proper invoice with statutory commercial details i.e. Serial number, CST/LST/TIN number etc. printed on it and countersigned by the authorized representative of the MI System manufacturer is issued to the beneficiary & subsidy released on the same.
- The manufacturer will install the system as per the agreement with the state nodal agency and the procedure for payment as decided by the SLSC may be adopted. Electronic mode of payment is required to be followed for most of the transactions for implementation of the programme. In case the amount is placed with manufacturers/ companies/financial institutions on behalf of beneficiary, the consent of beneficiary is required and the transaction details need to be conveyed to him over SMS immediately and subsequently in writing too.

13.9 Micro irrigation system may be insured for the period of its expected life and the premium may be borne by beneficiary/state government based on the decisions to be taken by States.

14 Registration of manufacturing companies

- 14.1 Registration of micro irrigation system manufacturers shall be done with the approval of SLSC for a period of five years. The registration will be open round the year and a company can apply at any time. Only those manufacturing companies, which have all the facilities to ensure supply of quality product as per BIS standards and can provide prompt after sales services will be registered. The registration will be subject to the satisfactory performance of the company as assessed by the state implementing agency and repeated failures will lead to the de-registration by SLSC.
- 14.2 The companies willing to participate in the scheme should be manufacturing below mentioned components and own BIS in their name:
- 14.3 In the case of drip irrigation, company must manufacture at least laterals and emitting devices as specified conforming to BIS standards. For online drip irrigation systems the company should be manufacturing lateral tubing as well as drippers as per BIS and for inline drip irrigation systems, the company should be a manufacturer of inline emitting pipe.
- 14.4 In the case of portable sprinkler irrigation system the company should manufacture either coupled HDPE pipes or sprinklers and should possess respective BIS.
- 14.5 In the case of other sprinkler irrigation systems viz mini, micro, semi-permanent sprinkler systems the company should manufacture either of HDPE/PVC/PE pipes/nozzles and should possess respective BIS.
- 14.6 In the case of large volume sprinkler irrigation system (rain gun sprinklers) the company should manufacture HDPE pipes and nozzle and should possess respective BIS.
- 14.7 The company must provide guarantee of quality assurance of other components which are not manufactured by them in various technologies covered under the scheme.
- 14.8 The company must provide free after sales service to the farmers for three years from the date of installation of system. Moreover, they should set up service centres for providing technological support at the grass root level.
- 14.9 The registration under the scheme should be open throughout the year to enable maximum flexibility and open participation.
- 14.10 The company will supply only BIS marked material. The list of relevant BIS components is given at **Annexure XIV**
- 14.11 In case the company intends to supply imported components, it should obtain prior approval of DAC&FW subject to indigenize the manufacturing of component within a period of two years. In case of imported equipment, the techno- economic analysis report will be provided by NCPAH after proper examination and verification and submit report to DAC&FW for consideration.

- 14.12 The material should be supplied directly by the manufacturer or their authorized distributors/dealers. In all cases, the manufacturer should authenticate the invoices. Such manufacturers shall furnish a Bank Guarantee of quantum of which will be prescribed by SLSC valid for the period of registration.
- 14.13 Each company may have its own pricing system. However, the company would be required to submit the same to the Registering Authority/SLSC at the beginning of the year and as and when the prices are revised by the company.

15 After sales services & campaigns

- 15.1 Operation and Maintenance of the system requires adequate training of beneficiaries for system operation etc. The manufacturers should have required network for providing training and after sales service in their areas of operation. The manufacturers should provide detailed operational and maintenance manual in the local vernacular language at the time of installation of the system. The beneficiaries should be advised to follow the instructions provided by the manufacturers for the operation and maintenance of drip/sprinkler irrigation systems.
- 15.2 Service centres and / or offices of drip / sprinkler system manufacturers / authorised distributors should have facilities to provide technical guidance on system maintenance schedules, supply spare parts and ensure satisfactory performance of the system during the warranty period. The manufacturer should also operate a toll free customer care number where beneficiaries can register their complaints. List of service centres/offices/offices of authorised distributors with full address/telephone numbers/e-mail should be widely published.
- 15.3 After sales service should be provided by the manufacturer/authorized distributor, free of cost for at least a period of three years. The company shall repair or replace any components/instruments of the MI system free of cost within warranty period, if they are found to have manufacturing defects or workmanship defects.
- 15.4 Due to normal wear and tear, if any parts/components require repairing/replacement, the company shall supply the same and recover the cost from the beneficiary after the free period is over. The company or its authorised representatives shall provide acid/chlorine treatment to drip system once during the first year of operation of the system.
- 15.5 If any system manufacturer fails to provide such service, the same should be brought to the notice of district level committee and SLSC. The manufacturer would be responsible for any dispute arising from the supply of their product/component directly or through their authorised distributors/dealers. The Implementing Agency/ SLSC of each State shall evolve a process and modus operandi to redress the disputes, if any. In cases where product quality related complaints from beneficiaries are received due sampling process mentioned in the guidelines shall be followed.
- 15.6 The SLSC may take measures against erring companies or their authorized dealers, as well as their own staff after due hearing in order to safeguard the

interests of farmers/beneficiaries and to ensure effective utilization of public funds. However, before initiating any action, principle of natural justice should be followed.

- 15.7 There could be extension campaigns by the MI companies at a centralized location having area nodal officials, farmers & other related officials. Various aspects of system maintenance, acid treatment, fertigation etc. could be covered.
- 15.8 The campaigns by companies should cover all beneficiaries under warranty period & could be as under:

More than 5000 ha area coverage in the state	6 campaigns
1000-5000 ha area coverage in the state	4 campaigns
Less than 1000 ha area coverage in the state	2 campaigns

16 Violations & Penalties

- 16.1 The Central & State Governments, micro irrigation suppliers/manufacturers and other stake holders are putting in a lot of efforts for effective operations of micro irrigation systems. Any wrong operations could lead to system failure & financial loss to the beneficiary apart from loss of faith in the technology. It is, therefore, important to have well defined measures / terms for violation of norms by the stake-holders. Any violation to the quality, maintenance and other parameters need be viewed seriously. The list of violations mentioned below is not exhaustive and any other deviations, which affect the implementation of the scheme adversely may be considered by the DMIC/SLC as deemed fit for smooth functioning of the same.
- 16.2 A due process, where show cause is issued and adequate time is allowed for response, shall be followed and the MI companies as well as the beneficiary shall be adequately heard and natural justice provided.
- 16.3 In case of violations in respect of failure in quality control & quality assurance and to provide maintenance & after sales service, following penalties shall be imposed:
- First time in a year, a warning letter may be issued to the manufacturer instructing to rectify the shortcoming immediately.
 - Second time in same year, a warning letter may be issued to the manufacturer instructing to rectify the shortcoming immediately with a penalty of 10% of invoice value.
 - Third time in same year, a penalty of 25% of invoice value may be charged.
 - Fourth time in same year, a show cause notice may be issued to the company and the case may be refer to SLSC for de-listing the company for a period of one year or more as decided by SLSC.
- 16.4 The violations with regard to submission of bills without installation/partial installation, wrong invoicing, variations in component specifications, submission of wrong documents with reference to pump/system discharge, improper installation, quoting higher price than approved, deviations from prescribed material specifications etc. may be dealt with by the SLSC suitably

apart from initiating suitable action under the relevant sections of Indian penal code and other relevant/ appropriate statutory enactments.

- 16.5 In case of sale of the MI system to other farmers before expiry of average life of the system, for which subsidy has been claimed by the beneficiary, legal proceedings against the beneficiary as per applicable law may be initiated and the beneficiary may be blacklisted from availing any government assistance in future.

17 Quality Control

- 17.1 Crucial aspect of supply of micro irrigation systems is the quality of hardware which is delivered to the farmer. It needs to be ensured that quality components having BIS marking (wherever applicable) are installed in the beneficiary field. Poor quality has an adverse impact on performance of the system which may affect yield of the crop, quantity of water applied, quantity of fertilizer delivered to the plant etc. It may also increase energy consumption. In fact, sub-standard system will not only adversely impact performance, but could also reduce the durability and the life of the components and/or system.
- 17.2 The SLSC shall form joint inspection teams for field inspection and frequent surveillance by inspection teams will be a regular feature under the Scheme. They will draw random samples periodically from the field, within a period of three years from the date of installation of the system. At the time of inspection, the system should be fully functional. The report should be submitted to the competent authority under SLSC for further action.
- 17.3 While one surveillance visit per operative year shall be kept as the general norm, more or less inspections may be planned depending on the performance or specific guidelines issued by SLSC.
- 17.4 Samples for testing should be collected jointly by the joint inspection team, state nodal official and the company representatives in triplicate and properly labelled, sealed and signed. The samples are collected for all major system components, especially pipes & tubing. One set of samples should be sent to CIPET/BIS or any other approved product testing laboratory for testing as the SLSC may deem fit, another set is to be preserved in the custody of nodal officer and the third one is to be with the manufacturer. After collection of samples at random, they should be coded as per BIS guidelines for the purpose of security and further reference.
- 17.5 Collection of samples with batch number is mandatory. The samples may be collected from the beneficiaries' fields as well as the supply chain of the manufacturer after the product has been dispatched from the manufacturing unit.

17.6 The quantity of material required for conducting the test is as detailed below:

Sl. No.	Test	Test samples required
Laterals as per IS : 12786 & Emitting Pipes as per IS : 13488		
1	Identification & composition analysis	20 meters for laterals. 50 meters for emitting pipe.
2	Thickness	
3	Pressure Test	
4	Dimensions	
HDPE Pipes IS: 4984 & IS: 14151 (Pt.2)		
1	Identification & composition analysis	1 mts
2	Thickness	
3	Pressure Test	
4	Dimensions	
UPVC Pipes IS: 4985		
1	Identification & composition analysis	1 mts
2	Thickness	
3	Pressure Test	
4	Dimensions	
Emitters / drippers as per IS : 13487		
1	Identification & composition analysis	50 Nos
2	Flow Rate	

17.7 The expenditure towards the testing charges shall be met from the administrative charges under the scheme.

17.8 The state nodal officer will do proper scrutiny of the test report provided by the testing laboratory and draw conclusion from the findings regarding conformity or otherwise of the samples under the test. After scrutiny, the details of test report and results of conformity/non-conformity shall be placed before SLSC for consideration. In case of non-conformity, SLSC may take action against the company/its authorised dealers as per penalty clause mentioned in the scheme guidelines. The SLSC shall follow principle of natural justice and the company as well as the beneficiary shall be heard before taking a final action in the matter.

18 Human Resource Development and Media

18.1.1 Human resource development is an important component of the scheme. Under the programme training of farmers, entrepreneurs, field level workers, officers, micro irrigation technician and farm pond lining technician and trainers' training may be taken up.

The financial provisions for the same would be as under:

a) Training of stake holders		
i) Within the State	Rs. 1000/day per farmer including transport	100% of the cost.
ii) Outside the State	Project based as per actual	100% of the cost.

b) Exposure visit of stake holders		
i) Outside the State	Project based as per actual	100% of the cost.
ii) Outside India	Rs. 4.00 lakh/ participants	Project Based 100% of air/rail travel. Course fee cost to be funded under Mission Management
c) Study tour of technical staff/ field functionaries		
i) Within the State	Rs. 300/day per participant plus TA/ DA as admissible	100% of the cost.
ii) Study tour to progressive States/units (group of minimum 5 participants)	Rs. 800/day per participant plus TA/ DA as admissible	100% of the cost
iii) Outside India	Rs. 4.00 lakh per participant	100% of air/rail travel and course fee cost to be funded under Mission Management

18.2 For organization of a workshop/conference or participation in an international event the financial provision is given below. However, prior approval of DAC&FW will be required for participation in international events.

International level event	Rs. 7.50 lakh per event.	100% of the cost per event of 4 days, on pro rata basis.
National level event	Rs. 5.00 lakh per event.	100% of the cost per event of two days.
State level event	Rs. 3.00 lakh per event	100% of the cost per event of two days.
District level event	Rs. 2.00 lakh per event	100% of the cost per event of two days.

18.3 Area wise/District wise Awareness/Publicity creation - awareness creation and publicity of the micro irrigation technology will be undertaken through print and electronic media and other methods. The publicity campaigns at block/ district/state level need be undertaken by the state nodal agencies and expenses for the same will be met from the administrative expenses earmarked under PMKSY.

19 Pattern of Assistance & funding pattern

19.1 The total financial assistance available to the beneficiary under the micro irrigation scheme from both Central and State Governments would be 55% for small & marginal farmers & 45% for other farmers. The unit cost would be limited to the Indicative costs mentioned in the guidelines for various technologies and areas as given at Annexure Nos. IV to IX.

19.2 Funding of financial assistance - under the Per Drop More Crop (Micro Irrigation) component of PMKSY the subsidy amount payable to the beneficiary will be shared in the ratio of 60:40 between the Central & State Governments for all states except North Eastern & Himalayan states, where the sharing will

be in the ratio of 90:10. In the case of Union Territories, the scheme will be funded 100% by the Central Government.

20. Progress reporting, monitoring and evaluation

20.1 Government of India has been emphasising on the use of modern tools for online reporting and sharing of information. Accordingly, a web-based portal and information management system has been developed and operationalised for different components of PMKSY. The objective of this web-portal is to have effective monitoring of the progress under different components of PMKSY and sharing of information and documents. Therefore, the states must use this website for reporting the physical & financial progress under different components of PMKSY including micro irrigation scheme and get information/documents like fund release orders, circular letters etc. and other useful information through the web-portal. The web-portal links are as under:-

<http://pmksy.gov.in>Components>PerDropMoreCrop-MI>ProgressMonitoring>

<http://aps.DAC&FW.gov.in/MI/Login.aspx>

20.2 The physical & financial progress must be uploaded on web-portal on monthly basis by 5th of every month for the preceding month. It may be noted that annual data of the preceding year will be free-zed by 30th June and thereafter no changes could be made. It may also be ensured that "each micro irrigation installation will be given a unique digital code and the same will appear on the web portal of PMKSY". The physical/ financial progress report is to be submitted by 5th of next month as per the format at Annexure-IIIa and IIIb. Biometric registration of beneficiary & geo tagging should be made compulsory.

20.3 National Committee on Plasticulture Application in Horticulture (NCPAH) will be involved in monitoring and reviewing the progress of scheme at the National level. NCPAH secretariat will provide necessary logistic support to the ministry for this purpose and maintain statistical data base/information on various aspects of the Micro Irrigation.

20.4 DAC&FW will evolve suitable mechanism for concurrent evaluation of implementation of PMKSY (Per Drop More Crop). DAC&FW may also engage suitable agency for conducting state specific/pan-India/ implementation monitoring and/or mid-term/end-term evaluation of the scheme. NRAA will be involved in the process of mid-term/end-term evaluation of the programme. An Impact Evaluation Study on Micro Irrigation at the National level will also be undertaken through an independent Agency with involvement of NCPAH once in every three years of implementation to assess the impact of the scheme in increasing water use efficiency, productivity, enhancement of farmers' income, technology adoption and other parameters. Twenty five percent (25%) of the projects sanctioned by the State shall have to be compulsorily taken up for third party monitoring and evaluation by the implementing states.

20.5 Action plan for monitoring and evaluation will be decided by SLSC at the beginning of every year based on project cost, importance of the project and other parameters, preferably covering all sectors. The State Government will be free to choose any reputed agencies for conducting the monitoring and evaluation work in their states. Requisite fees/cost towards monitoring & evaluation will be met by the state government from 5% allocation retained by them for administrative expenses. The performance of the states will be reflected in the Outcome Budget document of the respective Ministry/Department.

21. Release of Funds

21.1 Funds to the tune of 60% of annual allocation to the state under different components of PMKSY will be released as first instalment to the State upon receipt of proposal in the prescribed format along with specified documents including annual action plan approved by state level sanctioning committee (SLSC) along with minutes of SLSC meeting approving the annual action plan of the state. Suggestive formats for annual action plan are enclosed at **Annexure-II**. The concerned implementing ministry/department at the Centre will be responsible to ensure receipt of utilisation certificate and corresponding physical and financial progress report while releasing the funds for the specific component. The utilisation certificate is to be submitted by the respective implementing department/agency in the state.

21.2 Release of the second and final instalment would be considered on receipt of the following:

- More than 90% Utilisation Certificates (UCs) for the funds released up to previous financial year;
- Utilisation Certificates (UCs) of at least 50% of funds released in first instalment during current year;
- Performance report in terms of physical and financial achievements as well as outcomes, within the stipulated time frame in specified format.

21.3 If a State fails to submit proposal for release of funds with specified documents within reasonable period of time, the balance funds may be re-allocated to better performing States.

22. Administrative Expenses and Contingencies

22.1 Administrative expenses may be met on pro-rata basis from the programme not exceeding 5 percent at each level to strengthen coordination, scientific planning and technical support for effective implementation of different components of PMKSY including micro irrigation at the field level. Administrative expenditure for functioning of coordinating agency/Institutions responsible for implementing the components of PMKSY, engagement of contractual staff for monitoring and operating the MI System, payments to consultants, outsourcing of specific activities, recurring expenses of various kinds, procurement of android driven smart phones/tablets for uploading of App for geo tagging in Bhuvan Platform, staff costs etc. are admissible. However, no permanent employment can be created, nor vehicles can be purchased. States may supplement any administrative expenditure in excess of the 5% limit, from their own resources.

22.2 Govt. of India may retain 1.5% of the PMKSY provision for IEC activities and another 1.5% of the scheme allocation for administrative, monitoring, evaluation and any contingencies that may arise during the implementation of the scheme by each participating departments. DAC&FW may set up a technical support group by assigning dedicated officers and staff from its existing strength and engaging consultants, experts etc. DAC&FW may outsource some technical assignments to specific agencies including studies, training programmes relating to PMKSY activities and conduct activities such as workshops, conferences, awareness campaign, publicity, documentation etc.

Annexure-I

Recommended norms for use of treated sewage quality for specified activities at point of use

S.N	Parameter	Toilet flushing	Fire Protection	Vehicle Exterior washing	Non-contact impoundments	Landscaping, Horticulture & Agriculture			
						Horticulture, Golf course	Crops		
							Non edible crops	Raw	Cooked
1	Turbidity (NTU)	<2	<2	<2	<2	<2	AA	<2	AA
2	SS	nil	Nil	nil	nil	nil	30	nil	30
3	TDS	2100							
4	pH	6.5 to 8.3							
5	Temperature °C	Ambient							
6	Oil & Grease	10	nil	nil	nil	10	10	nil	nil
7	Minimum Residual Chlorine	1	1	1	0.5	0	nil	nil	nil
8	Total Kjeldahi Nitrogen as N	10	10	10	10	10	10	10	10
9	BOD	10	10	10	10	10	20	10	20
10	COD	AA	AA	AA	AA	AA	30	AA	30
11	Dissolved Phosphorous as P	1	1	1	1	2	5	2	5
12	Nitrate Nitrogen as N	10	10	10	5	10	10	10	10
13	Faecal Coliform in 100 ml	nil	Nil	nil	nil	nil	230	nil	230
14	Helminthic Eggs/ litre	AA	AA	AA	AA	AA	<1	<1	<1
15	Colour	Colourless	Colourless	Colourless	Colourless	Colourless	AA	Colourless	Colourless
16	Odour	Aseptic which means mot septic and no foul odour							

All units in mg/l unless specified; AA-as arising when other parameters are satisfied;

A tolerance of plus 5% is allowable when yearly average values are considered.

Format for Micro-irrigation Action Plan in synchronisation with the Clusters identified for Other Interventions

Sr.No.	District	No. of Clusters	Drip irrigation						Sprinkler irrigation						Total			Other Costs (administrative/Contingency)	Grand total
			Field Crops			Horticultural Crops			Field Crops			Horticultural Crops			Area	Farmers to be benefitted	Cost		
			Area	Farmers benefitted	Cost	Area	Farmers to be benefitted	Cost	Area	Farmers to be benefitted	Cost	Area	Farmers to be benefitted	Cost					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16=4+7+10+13	17=5+8+11+14	18=6+9+12+15	19	20=18+19
Total AAP						Note: Major Cropwise details of both field & horticultural crops may be mentioned													
Central Allocation																			
State Share																			
Deficit/ Convergence/ farmers Share																			

Format for Physical Progress Monitoring Report for Per Drop More Crop (Micro Irrigation) component of PMKSY

	Name of the State:				Period of the report:							
	Area in hectare											
Name of District	Physical Target				Total Physical Target	Physical Achievement				Total Physical Achievement	% Achievement	
	Horticulture		Agriculture			Horticulture		Agriculture				
	Drip	Sprinkler	Drip	Sprinkler		Drip	Sprinkler	Drip	Sprinkler			

Format for Financial Progress Monitoring Report for Per Drop More Crop (Micro Irrigation) component of PMKSY

Name of District	Name of the State:													Period of the report:		
	` in Lakh															
	Financial Target								Financial Achievement							% Achievement
	Horticulture		Agriculture		Training	Seminar/ Exhibition	Scheme Admin. Cost	Total Financial Target	Horticulture		Agriculture		Training	Seminar/ Exhibition	Scheme Admin. Cost	
Drip	Sprinkler	Drip	Sprinkler	Drip					Sprinkler	Drip	Sprinkler					

Drip Irrigation Technology - Indicative Bill of Quantities for 0.4 ha

SN	Component/ Lateral to Lateral x Dripper spacing	Unit	12 X 12	10 X10	9x9	8X8	6 X 6	5 X5	4 X 4	3 X3	2.5 X 2.5	2 X 2	1.5 X 1.5	2.5 X 0.6	1.8 X 0.6	1.2 X 0.6
	Control Unit															
1	Screen filter 10 m3/HR	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Ventury& manifold (1 1/2")	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	Air release Valve 1"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Non Return Valve - 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	By-pass Assembly - 1.5"x1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Field Unit															
6	PVC Pipe 63 mm, class-II; 4 kg/cm2	m	0	0	0	0	0	0	0	0	30	30	30	0	0	0
7	PVC Pipe 50 mm, class-III; 6 kg/cm2	m	96	96	96	96	96	96	96	96	66	66	66	96	96	96
8	Lateral 16 mm, Class II; 2.5 kg/cm2	m	0	0	0	0	0	0	0	0	1638	2048	2731	0	0	0
9	Emmitting Pipe 12 mm; Class 2 (0.6 m x 1 to 4 lph)	m	0	0	0	0	0	0	0	0	0	0	0	1638	2276	3413
10	Lateral 12 mm, Class II ; 2.5 kg/cm2	m	339	406	452	508	677	813	1016	1355	0	0	0	51	71	107
11	Emitter 4/ 8 LPH	No.	111	160	198	250	444	480	750	1333	1280	2000	3556	0	0	0
12	Control Valve 63 mm	No.	0	0	0	0	0	0	0	0	1	1	1	0	0	0
13	Control Valve 50 mm	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	Flush Valve 63 mm	No.	0	0	0	0	0	0	0	0	1	1	1	0	0	0
15	Flush Valve 50 mm	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	Throttle Valve - 2"	No.	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17	Throttle Valve - 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	0
18	Fittings & Accessories @5%	set	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

Drip Irrigation Technology - Indicative Bill of Quantities for 1.0 ha

SN	Component/ Lateral to Lateral x Dripper spacing	Unit	12 X 12	10 X 10	9 x 9	8X8	6 X 6	5 X5	4 X 4	3 X 3	2.5 X 2.5	2 X 2	1.5 X 1.5	2.5 X 0.6	1.8 X 0.6	1.2 X 0.6
Control Unit																
1	Screen filter 20 / 25 m ³ / hr	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Ventury& manifold (2")	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	Air release Valve 1"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Non Return Valve - 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	By-pass Assembly - 1.5"x1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Field Unit																
6	PVC Pipe 75 mm, class-II; 4 kg/cm ²	m	0	0	0	0	0	0	0	54	54	54	54	54	54	54
7	PVC Pipe 63 mm, class-II; 4 kg/cm ²	m	0	0	0	0	54	156	156	102	102	102	102	102	102	102
8	PVC Pipe 50 mm, class-III; 6 kg/cm ²	m	156	156	156	156	102	0	0	0	0	0	0	0	0	0
9	Lateral 16 mm, Class II; 2.5 kg/cm ²	m	0	0	0	0	0	0	0	0	4000	5000	6667	80	111	167
10	Emmitting Pipe 16 mm; Class 2 (0.6 m x 1 to 4 lph)	m	0	0	0	0	0	0	0	0	0	0	0	4000	5556	8333
11	Lateral 12 mm, Class II ; 2.5 kg/cm ²	m	833	1000	1111	1250	850	1000	1250	3300	0	0	0	0	0	0
12	Emitter 4/ 8 LPH	No.	278	400	494	625	1111	1200	1875	3333	3200	5000	8889	0	0	0
13	Control Valve 75 mm	No.	0	0	0	0	0	0	0	1	1	1	1	0	0	0
14	Control Valve 63 mm	No.	0	0	0	0	1	1	1	0	0	0	0	1	1	1
15	Control Valve 50 mm	No.	1	1	1	1	0	0	0	0	1	1	1	1	1	2
16	Flush Valve 63 mm	No.	0	0	0	0	1	1	1	1	1	1	1	1	1	2
17	Flush Valve 50 mm	No.	1	1	1	1	0	0	0	0	0	0	0	0	0	0
18	Throttle Valve - 2"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	Fittings & Accessories @5%	set	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

Drip Irrigation Technology - Indicative Bill of Quantities for 2.0 ha

S N	Component/ Lateral to Lateral x Dripper spacing	Unit	12 X 12	10 X10	9x9	8X8	6 X 6	5 X5	4 X 4	3 X3	2.5 X 2.5	2 X 2	1.5 X 1.5	2.5 X 0.6	1.8 X 0.6	1.2 X 0.6
Control Unit																
1	Screen filter 20 / 25 m ³ / hr	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Ventury& manifold (2")	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	Air release Valve 1"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Non Return Valve - 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	By-pass Assembly - 1.5"x1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Field Unit																
6	PVC Pipe 75 mm, class-II; 4 kg/cm ²	m	78	78	78	78	78	78	78	78	78	78	78	78	78	78
7	PVC Pipe 63 mm, class-II; 4 kg/cm ²	m	150	150	150	150	150	150	150	150	150	150	150	150	150	150
8	Lateral 16 mm, Class II; 2.5 kg/cm ²	m	0	0	0	0	0	0	0	0	800 0	1000 0	1333 3	114	158	237
9	Emmitting Pipe 16 mm; Class 2 (0.6 m x 1 to 4 lph)	m	0	0	0	0	0	0	0	0	0	0	0	800 0	11111	16667
10	Lateral 12 mm, Class II ; 2.5 kg/cm ²	m	1667	2000	222 2	250 0	336 1	403 3	504 1	672 1	0	0	0	0	0	0
11	Emitter 4/ 8 LPH	No.	556	800	988	125 0	222 2	240 0	375 0	666 7	640 0	1000 0	1777 8	0	0	0
12	Control Valve 75 mm	No.	1	1	1	1	1	1	2	2	1	1	1	1	1	1
13	Control Valve 63 mm	No.	0	0	0	0	0	0	0	0	2	2	2	2	2	2
14	Flush Valve 63 mm	No.	1	1	1	1	1	1	2	2	2	2	2	2	2	2
15	Throttle Valve - 2"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	Fittings & Accessories @5%	set	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

Drip Irrigation Technology- Indicative Bill of Quantities 3.0 ha

SN	Component/ Lateral to Lateral x Drinker spacing	Unit	12 X 12	10 X10	9x9	8X8	6 X 6	5 X5	4 X 4	3 X3	2.5 X 2.5	2 X 2	1.5 X 1.5	2.5 X 0.6	1.8 X 0.6	1.2 X 0.6
Control Unit																
1	Screen filter 30 m ³ / hr	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
2	Screen filter 10 m ³ /HR	No.	1	1	1	1	1	0	0	0	0	0	0	0	0	0
3	Ventury & manifold (2")	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Air release Valve 1"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	Non Return Valve - 2"	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
6	Non Return Valve - 1.5"	No.	1	1	1	1	1	1	1	1	0	0	0	0	0	0
7	By-pass Assembly - 2"x1,5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Field Unit																
8	PVC Pipe 90 mm, class-II; 4 kg/cm ²	m	0	0	0	0	0	0	0	0	90	90	90	90	90	90
9	PVC Pipe 75 mm, class-II; 4 kg/cm ²	m	0	0	0	0	216	216	216	216	132	132	132	132	132	132
10	PVC Pipe 63 mm, class-II; 4 kg/cm ²	m	216	216	216	216	336	336	336	336	174	174	174	174	174	174
11	PVC Pipe 50 mm, class-III; 6 kg/cm ²	m	336	336	336	336	0	0	0	0	0	0	0	0	0	0
12	Lateral 16 mm, Class I; 2.5 kg/cm ²	m	0	0	0	0	0	0	0	0	12110	15138	20184	139	193	290
13	Emmiting Pipe 16 mm; Class 2 (0.6 m x 1 to 4 lph)	m	0	0	0	0	0	0	0	0	0	0	0	12110	16820	25230
14	Lateral 12 mm, Class I; 2.5 kg/cm ²	m	5023	5523	6697	7534	5046	6055	7569	10092	0	0	0	0	0	0
15	Emitter Pressure regulating 4/ 8 LPH	No.	833	1200	1481	1875	3333	3600	5625	10000	9600	15000	26667			
16	Control Valve 90 mm	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
17	Control Valve 75 mm	No.	0	0	0	0	1	1	1	1	2	2	2	2	2	2
18	Control Valve 63 mm	No.	1	1	1	1	4	4	4	4	4	4	4	4	4	4
19	Control Valve 50 mm	No.	4	4	4	4	0	0	0	0	0	0	0	0	0	0
20	Flush Valve 75 mm	No.	0	0	0	0	0	0	0		1	1	1	1	1	1
21	Flush Valve 63 mm	No.	4	4	4	4	4	4	4	4	4	4	4	4	4	4
22	Throttle Valve - 2"	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
23	Throttle Valve - 1.5"	No.	1	1	1	1	1	1	1	1	0	0	0	0	0	0
24	Fittings & Accessories @5%	set	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

Drip Irrigation Technology- Indicative Bill of Quantities 4.0 ha

SN	Component/ Lateral to Lateral x Dripper spacing	Unit	12 X 12	10 X 10	9x9	8X8	6 X 6	5 X 5	4 X 4	3 X 3	2.5 X 2.5	2 X 2	1.5 X 1.5	2.5 X 0.6	1.8 X 0.6	1.2 X 0.6
Control Unit																
1	Screen filter 30 m ³ /hr	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
2	Screen filter 20/25 m ³ /hr	No.	1	1	1	1	1	1	1	1	1	1	1	0	0	0
3	Ventury & manifold (2")	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Air release Valve - 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	Non Return Valve - 2"	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
6	Non Return Valve - 1.5"	No.	1	1	1	1	1	1	1	1	0	0	0	0	0	0
7	By-pass Assembly - 2"x1.5"	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
8	By-pass Assembly - 1.5"x1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	0	0	0
Field Unit																
9	PVC Pipe 90 mm, class-II; 4 kg/cm ²	m	0	0	0	0	0	0	0	0	138	138	138	138	138	138
10	PVC Pipe 75 mm, class-II; 4 kg/cm ²	m	222	222	222	222	222	222	222	222	276	276	276	276	276	276
11	PVC Pipe 63 mm, class-II; 4 kg/cm ²	m	402	402	402	402	402	402	402	402	402	402	402	402	402	402
12	Lateral 16 mm, Class I; 2.5 kg/cm ²	m	0	0	0	0	0	0	0	0	16000	20000	26667	160	222	333
13	Emmitting Pipe 16 mm; Class 2 (0.6 m x 1 to 4	m	0	0	0	0	0	0	0	0	0	0	0	16000	22222	33333
14	Lateral 12 mm, Class I ; 2.5 kg/cm ²	m	6667	8000	8889	10000	6667	8000	10000	13333	0	0	0	0	0	0
15	Emitter Pressure regulating 4/ 8 LPH	No.	1111	1600	1975	2500	4444	4800	7500	13333	12800	20000	35556	0	0	0
16	Control Valve 90 mm	No.	0								2	2	2	2	2	2
17	Control Valve 75 mm	No.	0	0	0	0					2	2	2	2	2	2
18	Control Valve 63 mm	No.	2	2	2	2	2	2	2	2	4	4	4	4	4	4
19	Flush Valve 75 mm	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	Flush Valve 63 mm	No.	4	4	4	4	4	4	4	4	4	4	4	4	4	4
21	Throttle Valve - 2"	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
22	Throttle Valve - 1.5"	No.	1	1	1	1	1	1	1	1	0	0	0	0	0	0
23	Fittings & Accessories @5%	set	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

Drip Irrigation Technology- Indicative Bill of Quantities 5.0 ha

SN	Component/ Lateral to Lateral x Dripper spacing	Unit	12 X 12	10 X10	9x9	8X8	6 X 6	5 X5	4 X 4	3 X3	2.5 X 2.5	2 X 2	1.5 X 1.5	2.5 X 0.6	1.8 X 0.6	1.2 X 0.6
Control Unit																
1	Screen filter 30 m ³ /hr	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
2	Screen filter 20/25 m ³ /hr	No.	1	1	1	1	1	1	1	1	1	1	1	0	0	0
3	Ventury & manifold (2 1/2")	No.	0	0	0	0	0	1	1	1	1	1	1	1	1	1
4	Ventury & manifold (2")	No.	1	1	1	1	1	0	0	0	0	0	0	0	0	0
5	Air release Valve - 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	Non Return Valve - 2.5"	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
7	Non Return Valve - 2"	No.	1	1	1	1	1	1	1	1	0	0	0	0	0	0
8	By-pass Assembly - 2 .5"x2"	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
9	By-pass Assembly - 2"x1,5"	No.	1	1	1	1	1	1	1	1	0	0	0	0	0	0
Field Unit																
10	PVC Pipe 90 mm, class-II; 4 kg/cm ²	m	114	114	114	114	114	114	114	114	168	168	168	168	168	168
11	PVC Pipe 75 mm, class-II; 4 kg/cm ²	m	168	168	168	168	168	168	168	168	342	342	342	342	342	342
12	PVC Pipe 63 mm, class-II; 4 kg/cm ²	m	450	450	450	450	450	450	450	450	456	456	456	456	456	456
13	Lateral 16 mm, Class I; 2.5 kg/cm ²	m	0	0	0	0	0	0	0	0	20000	25000	33333	179	249	373
14	Emmitting Pipe 16 mm; Class 2 (0.6 m x 1 to 4 lph)	m	0	0	0	0	0	0	0	0	0	0	0	20000	27778	41667
15	Lateral 12 mm, Class I; 2.5 kg/cm ²	m	8333	10000	11111	12500	8333	10000	12500	16667	0	0	0	0	0	0
16	Emitter Pressure regulating 4/ 8 LPH	No.	1389	2000	2469	3125	5556	6000	9375	16667	16000	25000	44444	0	0	0
17	Control Valve 90 mm	No.									2	2	2	2	2	2
18	Control Valve 75 mm	No.	2	2	2	2	2	2	2	2	2	2	2	2	2	2
19	Control Valve 63 mm	No.	4	4	4	4	4	4	4	4	4	4	4	4	4	4
20	Flush Valve 75 mm	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
21	Flush Valve 63 mm	No.	4	4	4	4	4	4	4	4	4	4	4	4	4	4
22	Throttle Valve - 2 .5"	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
23	Throttle Valve - 2"	No.	1	1	1	1	1	1	1	1	0	0	0	0	0	0
24	Fittings & Accessories @5%	set	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

NEH States- Drip Irrigation Technology- Indicative Bill of Quantities for 0.4 ha

SN	Component Lateral to Lateral x Dripper spacing (m xm)	Unit	12 x 12	10x 10	9 x 9	8 x 8	6 x 6	5 x 5	4 x 4	3 x 3	2.5 x 2.5	2 x 2	1.5 x 1.5	2.5 x 0.6	1.8x 0.6	1.2x 0.6
1	HDPE Pipe 50mm; 6 kg/cm ²	m	104	104	104	104	104	104	104	104	104	104	104	104	104	104
2	HDPE Pipe 63mm; 4g/cm ²	m	0	0	0	0	0	0	0	0	30	30	30	0	0	0
3	Lateral 12 mm	m	339	406	452	508	677	813	1016	1355	0	0	0	0	0	0
4	Lateral 16 mm Class II, 2.5 kg/cm ²	m	0	0	0	0	0	0	0	0	1616	2020	2693	38	53	79
5	Emitting Pipe 16 mm Class II; (0.2-0.3 m x 1 to 2- 4 lph)30cm	m	0	0	0	0	0	0	0	0	0	0	0	1616	2245	3367
6	Pressure Compensating Emitter 2/4/8 lph	No.	113	163	201	255	453	653	510	907	1393	2010	1796	0	0	0
7	Control Valve * 50 mm	No.	6	6	6	6	6	6	6	6	6	6	6	4	4	4
8	Control Valve * 63 mm	No.	0	0	0	0	0	0	0	0	1	1	1	0	0	0
9	Flush Valve 50 mm	No.	1	1	1	1	1	1	1	1	1	1	1	4	4	4
10	Air Release Valve 1"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	Non Return Valve 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	Throttle Valve 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	Screen Filter 10 m ³ /hr	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	By-pass Assembly-1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	Venturi & Manifold 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	Fittings & Accessories	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

NEH States - Drip Irrigation Technology- Indicative Bill of Quantities for 1.0 ha

SN	Component Lateral to Lateral x Dripper spacing (mxm)	Unit	12 x 12	10x 10	9 x 9	8 x8	6 x6	5 x5	4 x 4	3 x 3	2.5 x 2.5	2 x 2	1.5 x 1.5	2.5 x 0.6	1.8x 0.6	1.2x 0.6
1	HDPE Pipe 40 mm 6 kg/cm ²	m	172	172	172	172	112	0	0	0	0	0	0	0	0	0
2	HDPE Pipe 50mm; 6 kg/cm ²	m	0	0	0	0	60	172	172	172	172	172	172	0	0	0
3	HDPE Pipe 63mm; 4g/cm ²	m	0	0	0	0	0	0	0	60	60	60	60	118	118	118
4	HDPE Pipe 75mm; 4g/cm ²	m	0	0	0	0	0	0	0	0	0	0	0	62	62	62
5	Lateral 12 mm	m	980	1150	1300	1400	1800	2000	2500	3333	0	0	0	0	0	0
6	Lateral 16 mm Class II, 2.5 kg/cm ²	m	0	0	0	0	0	0	0	0	4040	5050	6733	60	83	125
7	Emitting Pipe 16 mm Class II; (0.2-0.3 m x 1 to 2- 4 lph)30cm	m	0	0	0	0	0	0	0	0	0	0	0	4040	5611	8717
8	Pressure Compensating Emitter 2/4/8 lph	No.	350	440	540	650	1150	1600	1275	2267	3232	5050	4489	0	0	0
9	Control Valve* 40 mm	No.	10	10	10	10	0	0	0	0	7	7	7	0	0	0
10	Control Valve * 50 mm	No.	0	0	0	0	10	10	10	0	3	3	3	4	4	4
11	Control Valve * 63 mm	No.	0	0	0	0	0	0	0	10	0	0	0	1	1	1
12	Control Valve * 75 mm	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
13	Flush Valve 50 mm	No.	1	1	1	1	1	0	0	0	1	1	1	4	4	4
14	Flush Valve 63 mm	No.	0	0	0	0	0	1	1	1	0	0	0	1	1	1
15	Air Release Valve 1"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	Non Return Valve 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	Throttle Valve 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	Screen Filter 10 m ³ /hr	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	By-pass Assembly-1.5"	No.	1	1	1	1	0	0	0	1	1	1	1	1	1	1
20	By-pass Assembly-2"	No.	0	0	0	0	1	1	1	0	0	0	0	0	0	0
21	Venturi & Manifold 1.5"	No.	1	1	1	1	0	0	0	0	1	1	1	1	1	1
22	Venturi & Manifold 2"	No.	0	0	0	0	1	1	1	1	0	0	0	0	0	0
23	Fittings & Accessories	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

NEH States-Drip Irrigation Technology - Indicative Bill of Quantities for 2.0 ha

SN	Component Lateral to Lateral x Dripper spacing (mxm)	Unit	12 x 12	10x 10	9 x 9	8 x 8	6 x 6	5 x 5	4 x 4	3 x 3	2.5 x 2.5	2 x 2	1.5 x 1.5	2.5 x 0.6	1.8x 0.6	1.2x 0.6
1	HDPE Pipe 50mm; 6 kg/cm ²	m	165	165	165	165	165	165	165	165	165	165	165	120	120	120
2	HDPE Pipe 63mm; 4g/cm ²	m	88	88	88	88	88	88	88	88	88	88	88	80	80	80
3	HDPE Pipe 75mm; 4g/cm ²	m	0	0	0	0	0	0	0	0	0	0	0	90	90	90
4	Lateral 12 mm	m	1850	2130	2350	2600	3500	4200	5200	6900	0	0	0	0	0	0
5	Lateral 16 mm Class II, 2.5 kg/cm ²	m	0	0	0	0	0	0	0	0	8400	11400	14600	120	150	200
6	Emitting Pipe 16 mm Class II; (0.2-0.3 m x 1 to 2- 4 lph)30cm	m	0	0	0	0	0	0	0	0	0	0	0	8200	11500	17000
7	Pressure Compensating Emitters 2/4/8 lph	No.	600	800	1000	1300	2300	3300	2600	4800	6600	10400	9000	0	0	0
8	Control Valve * 50 mm	No.	12	12	12	12	12	12	12	12	12	12	12	8	8	8
9	Control Valve * 63 mm	No.	3	3	3	3	3	3	3	3	3	3	3	4	4	4
10	Control Valve * 75 mm	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
11	Flush Valve 50 mm	No.	3	3	3	3	3	3	3	3	3	3	3	8	8	8
12	Flush Valve 63 mm	No.	1	1	1	1	1	1	1	1	1	1	1	4	4	4
13	Air Release Valve 1"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	Non Return Valve 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	Throttle Valve 1.5"	No.	1	1	1	1	0	0	0	0	1	1	1	1	1	1
16	Throttle Valve 2"	No.	0	0	0	0	1	1	1	1	0	0	0	0	0	0
17	Screen Filter 10 m ³ /hr	No.	1	1	1	1	1	1	1	1	1	1	1	0	0	0
18	Screen Filter 30 m ³ /hr	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
19	By-pass Assembly-2"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	Venturi & Manifold 1.5"	No.	1	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Venturi & Manifold 2"	No.	0	1	1	1	1	1	1	1	1	1	1	1	1	1
22	Fittings & Accessories	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

Annexure- IV j

NEH States- Drip Irrigation Technology- Indicative Bill of Quantities 3.0 ha

SN	Component Lateral to Lateral x Dripper spacing (mxm)	Unit	12 x 12	10x 10	9 x 9	8 x 8	6 x 6	5 x 5	4 x 4	3 x 3	2.5 x 2.5	2 x 2	1.5 x 1.5	2.5 x 0.6	1.8 x 0.6	1.2 x 0.6
1	HDPE Pipe 90mm; 4 kg/cm ²	m	0	0	0	0	0	0	0	0	105	105	105	0	0	0
2	HDPE Pipe 75mm; 4 kg/cm ²	m	0	0	0	0	240	240	240	240	144	144	144	105	105	105
3	HDPE Pipe 63mm; 4 kg/cm ²	m	240	240	240	240	380	380	380	380	190	190	190	150	150	150
4	HDPE Pipe 50mm; 4 kg/cm ²	m	380	380	380	380	0	0	0	0	0	0	0	200	200	200
5	Lateral 16 mm Class II, 2.5 kg/cm ²	m	0	0	0	0	0	0	0	0	12120	15150	20200	156	217	325
6	Lateral 12 mm Class II, 2.5 kg/cm ²	m	2500	3000	3333	3750	5000	6000	7500	10000	0	0	0	0	0	0
7	Emitting Pipe 16 mm Class II; (0.2/ 0.3m x 1 t, 2- 4 lph)	m	0	0	0	0	0	0	0	0	0	0	0	12120	16833	25250
8	Emitter 2/4/6 lph	No.	833	1200	1481	1875	3333	2400	3750	6667	9696	15150	13467	0	0	0
9	Micro/Pol tube 6 mm	m	625	900	1111	1406	2500	2400	3750	0	0	0	0	0	0	0
10	Control Valve 90 mm	No	0	0	0	0	0	0	0	0	1	1	1	0	0	0
11	Control Valve 75 mm	No	3	3	3	3	3	3	3	3	5	5	5	1	1	1
12	Control Valve 63 mm	No.	8	8	8	8	8	8	8	8	8	8	8	2	2	2
13	Control Valve 50 mm	No.	0	0	0	0	0	0	0	0	0	0	0	8	8	8
14	Flush Valve 75mm	No.	3	3	3	3	3	3	3	3	5	5	5	0	0	0
15	Flush Valve 63mm	No.	8	8	8	8	8	8	8	8	8	8	8	1	1	1
16	Flush Valve 50mm	No.	0	0	0	0	0	0	0	0	0	0	0	4	4	4
17	Air Release Valve 1"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	Non Return Valve 1.5"	No.	1	1	1	1	1	1	1	1	0	0	0	0	0	0
19	Non Return Valve 2"	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
20	Throttle Valve 1.5"	No.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Throttle Valve 2"	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
22	Screen Filter 30m ³ /hr	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
23	Screen Filter 20/25 m ³ /hr	No.	0	0	0	0	0	1	1	1	0	0	0	0	0	0
24	Screen Filter 10m ³ /hr	No.	1	1	1	1	1	0	0	0	1	1	1	0	0	0
25	By-pass Assembly-2"	No.	1	1	1	1	0	0	0	0	1	1	1	1	1	1
26	By-pass Assembly-1.5"	No.	0	0	0	0	1	1	1	1	0	0	0	0	0	0
27	Venturi & Manifold 2 "	No.	0	0	0	0	1	1	1	1	0	0	0	0	0	0
28	Fittings & Accessories	5%	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Annexure- IV k

NEH States- Drip Irrigation Technology- Indicative Bill of Quantities 4.0 ha

SN.	Component Lateral to Lateral x Dripper spacing (mxm)	Unit	12 x 12	10x 10	9 x 9	8 x 8	6 x 6	5 x 5	4 x 4	3 x 3	2.5 x 2.5	2 x 2	1.5 x 1.5	2.5 x 0.6	1.8 x 0.6	1.2 x 0.6
1	HDPE Pipe 90mm; 4 kg/cm ²	m	0	0	0	0	0	0	0	0	160	160	160	150	150	150
2	HDPE Pipe 75mm; 4 kg/cm ²	m	245	245	245	245	245	245	245	245	300	300	300	300	300	300
3	HDPE Pipe 63mm; 4 kg/cm ²	m	275	275	275	275	275	275	275	275	275	275	275	275	275	275
4	HDPE Pipe 50 mm; 4 kg/cm ²	m	167	167	167	167	167	167	167	167	167	167	167	167	167	167
5	Lateral 16 mm Class II, 2.5 kg/cm ²	m	0	0	0	0	0	0	0	0	16160	20200	26933	180	250	375
6	Emitting Pipe 16 mm Class II; (0.2/ 0.3m x 1 t, 2- 4 lph)	m	0	0	0	0	0	0	0	0	0	0	0	16000	22000	33100
7	Lateral 12 mm Class II, 2.5 kg/cm ²	m	3400	4080	4533	5100	6800	8160	10200	13600	0	0	0	0	0	0
8	Emitter 2/4/6 lph	No.	1133	1632	2015	2550	4533	4896	7700	9244	12800	20000	17800	0	0	0
9	Micro/Pol tube 6 mm	m	850	1224	1511	1913	3400	3296	5150	0	0	0	0	0	0	0
10	Control Valve 90 mm	No	0	2	0	0	0	0	0	0	2	2	2	2	2	2
11	Control Valve 75 mm	No	0	0	0	0	3	3	3	3	3	3	3	2	2	2
12	Control Valve 63mm	No.	5	5	5	5	3	3	3	3	8	8	8	5	5	5
13	Control Valve 50mm	No.	3	3	3	3	2	2	2	2	4	4	4	3	3	3
14	Flush Valve 75mm	No.	3	3	3	3	3	3	3	3	3	3	3	1	1	1
15	Flush Valve 63mm	No.	5	5	5	5	5	5	5	5	5	5	5	4	4	4
16	Flush Valve 50mm	No.	3	3	3	3	3	3	3	3	3	3	3	2	2	2
17	Air Release Valve 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	Non Return Valve 1.5"	No.	1	1	1	1	1	1	1	1	0	0	0	0	0	0
19	Non Return Valve 2"	No.	0	0	0	0	0	0	0	0	1	1	1	0	0	0
20	Non Return Valve 2.5"	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
21	Throttle Valve 1.5"	No.	1	1	1	1	1	0	0	0	0	0	0	0	0	0
22	Throttle Valve 2"	No.	0	0	0	0	0	1	1	1	1	1	1	0	0	0
23	Throttle Valve 2.5"	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
24	Screen Filter 30m ³ /hr	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
25	Screen Filter 20/25 m ³ /hr	No.	0	0	0	0	0	1	1	1	1	1	1	0	0	0
26	Screen Filter 10m ³ /hr	No.	1	1	1	1	1	0	0	0	0	0	0	0	0	0
27	By-pass Assembly-2.5"	No	0	0	0	0	0	0	0	0	1	1	1	1	1	1
28	By-pass Assembly-2"	No.	1	1	1	1	0	0	0	0	0	0	0	0	0	0
29	By-pass Assembly-1.5"	No.	0	0	0	0	1	1	1	1	0	0	0	0	0	0
30	Venturi & Manifold 2 "	No.	0	0	0	0	1	1	1	1	0	0	0	1	1	1
31	Fittings & Accessories	5%	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Annexure- IV I

NEH States- Drip Irrigation Technology- Indicative Bill of Quantities 5.0 ha

SN	Component Lateral to Lateral x Dripper spacing (mxm)	Unit	12 x 12	10x 10	9 x 9	8 x8	6 x6	5 x5	4 x 4	3 x 3	2.5 x 2.5	2 x 2	1.5 x 1.5	2.5 x 0.6	1.8 x 0.6	1.2 x 0.6
1	HDPE Pipe 90mm; 4 kg/cm ²	m	124	124	124	124	124	124	124	124	180	180	180	180	180	180
2	HDPE Pipe 75mm; 4 kg/cm ²	m	180	180	180	180	180	180	180	180	372	372	372	375	375	375
3	HDPE Pipe 63mm; 4 kg/cm ²	m	300	300	300	300	300	300	300	300	300	300	300	310	310	310
4	HDPE Pipe 50mm; 4 kg/cm ²	m	212	212	212	212	212	212	212	212	212	212	212	200	200	200
5	Lateral 16 mm Class II, 2.5 kg/cm ²	m	0	0	0	0	0	0	0	0	20200	25250	33667	268	373	559
6	Emitting Pipe 16 mm Class II; (0.2/ 0.3m x 1 t, 2- 4 lph)	m	0	0	0	0	0	0	0	0	0	0	0	20200	28056	42083
7	Lateral 12 mm Class II, 2.5 kg/cm ²	m	4250	5100	5667	6375	8500	10200	12750	17000	0	0	0	0	0	0
8	Emitter 2/4/6 lph	No.	1417	2040	2519	3188	5667	8160	6500	11556	16610	25250	22444	0	0	0
9	Micro tube 6 mm	m	1063	1530	1889	2391	4250	6120	6438	0	0	0	0	0	0	0
10	Control Valve 90 mm	No.	2	2	2	0	0	0	0	0	0	0	0	2	2	2
11	Control Valve 75 mm	No.	4	4	4	4	4	4	4	4	4	4	4	2	2	2
12	Control Valve 63 mm	No.	6	6	6	6	6	6	6	6	6	6	6	6	6	6
13	Control Valve 50 mm	No.	4	4	4	4	4	4	4	4	4	4	4	4	4	4
14	Flush Valve 75 mm	No.	2	2	2	2	2	2	2	2	2	2	2	1	1	1
15	Flush Valve 63 mm	No.	4	4	4	4	4	4	4	4	4	4	4	4	4	4
16	Flush Valve 50 mm	No.	2	2	2	2	2	2	2	2	2	2	2	2	2	2
17	Air Release Valve 1.5"	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	Non Return Valve 1.5"	No.	1	1	1	1	1	1	1	1	0	0	0	0	0	0
19	Non Return Valve 2.5"	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
20	Throttle Valve 1.5"	No.	1	1	1	1	1	0	0	0	0	0	0	0	0	0
21	Throttle Valve 2"	No.	0	0	0	0	0	1	1	1	0	0	0	0	0	0
22	Throttle Valve 2.5"	No.	0	0	0	0	0	0	0	0	1	1	1	1	1	1
23	Screen Filter 30m ³ /hr	No.	0	0	0	0	0	0	0	0	0	0	0	1	1	1
24	Screen Filter 20/25 m ³ /hr	No.	0	0	0	0	0	1	1	1	1	1	1	0	0	0
25	Screen Filter 10 m ³ /hr	No.	1	1	1	1	1	0	0	0	0	0	0	0	0	0
26	By-pass Assembly-2.5"	No.	1	1	1	0	0	0	0	0	0	0	0	1	1	1
27	By-pass Assembly-2"	No.	1	1	1	1	0	0	0	0	0	0	0	0	0	0
28	By-pass Assembly-1.5"	No.	0	0	0	0	1	1	1	1	0	0	0	0	0	0
29	Venturi & Manifold 2 "	No.	0	0	0	0	1	1	1	1	1	1	1	1	1	1
30	Fittings & Accessories	5%	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Indicative Bill of Quantities (BoQ) for Portable Sprinkler Irrigation System

Using 63 mm coupler					
SN	COMPONENTS	Unit	0.4 Ha	1 ha	2 ha
1	HDPE Pipes with Quick coupled (Pipe of Class 2; 3.2 kg/cm ² IS:14151 Part II 63 mm diameter & 6m long)	No	18	30	41
2	Quick coupled HDPE 63mm Foot batten Assembly ;	No	3	5	9
3	GI Riser Pipe 3/4" diameter x 75 cm long	No	3	5	9
4	Sprinkler Assembly	No	3	5	9
5	Quick coupled HDPE Bend with Coupler 90 ^o (63/50 mm) ;	No	1	1	1
6	Quick coupled HDPE Pump Connecting Nipple 63 mm;	No	1	1	1
7	Quick coupled HDPE End Plug (63 mm) ;	No	1	2	2
8	Quick coupled HDPE Tee with Coupler (63mm) ;	No	1	1	1
Using 75 mm coupler					
SN	COMPONENTS	Unit	0.4 Ha	1 ha	2 ha
1	HDPE Pipes with Quick coupled (2.5 kg/cm ² IS:14151 Part II, 75 mm diameter & 6m long)	No	NA	30	41
2	Quick coupled HDPE 75mm Foot batten Assembly;	No	NA	5	9
3	GI Riser Pipe 3/4" diameter x 75 cm long	No	NA	5	9
4	Sprinkler Nozzles (1.7 to 2.8 kg/cm ²) ;IS 12232 Part I Brass	No	NA	5	9
5	Quick coupled HDPE Bend with Coupler 90 ^o (75 mm) ;	No	NA	1	1
6	Quick coupled HDPE Pump Connecting Nipple , 75 mm;	No	NA	1	1
7	Quick coupled HDPE End Plug (75 mm) ;	No	NA	2	2
8	Quick coupled HDPE Tee with Coupler (75 mm);	No	NA	1	1

Indicative Bill of Quantities (BoQ) for Micro Sprinkler Irrigation System

spacing		5mx5m			3mx3m			
SN	Components/ Area (Ha)	Unit	0.4	1.0	2.0	0.4	1.0	2.0
1	PVC Pipe 75 mm, class-II; 4 kg/cm ²	m	30	54	80	30	54	100
2	PVC Pipe 63 mm, class-II; 4 kg/cm ²	m	66	102	150	66	102	150
3	20 mm LLDPE plain laterals, 2.5 kg/cm ² - Class II	m	0	2000	4000	0	3350	6660
4	Lateral 16 mm, Class II; 2.5 kg/cm ²	m	800	0	0	1336	0	0
5	Micro sprinkler Set	No.	160	400	800	444	1111	2222
6	Control Valve PP 75 mm	No.	1	1	1	1	1	1
7	Control Valve PP 63 mm	No.	1	1	4	1	1	4
8	Flush Valve 63 mm	No.	1	1	1	1	1	1
9	Flush Valve 50 mm	No.	2	0	0	0	0	0
10	Air release Valve - 1"	No.	1	1	1	1	1	1
11	Non Return Valve - 2"	No.	1	1	0	1	1	1
12	Non Return Valve - 2.5"	No.	0	0	1	0	0	0
13	Throttle Valve gun metal 2"	No.	1	1	0	1	1	1
14	Throttle Valve gun metal 2.5"	No.	0	0	1	0	0	0
15	Screen filter 30 m ³ / hr	No.	0	1	1	0	1	1
16	Screen filter 20/25 m ³ /hr	No.	1	0	0	1	0	0
17	By-pass Assembly - 2 .5"x2"	No.	0	0	1	0	0	0
18	By-pass Assembly - 2"x1,5"	No.	1	1		1	1	1
19	Venturi & manifold - 2"	No.	1	1	1	1	1	1
20	Fittings & Accessories @ 5%		5%	5%	5%	5%	5%	5%

Indicative Bill of Quantities (BoQ) for Mini Sprinkler Irrigation System

SN	Components/ Area (Ha)	Unit	10x10			8x8		
			0.4	1.0	2.0	0.4	1.0	2.0
1	PVC Pipe 90 mm, class-II; 4 kg/cm ²	m	0	0	80	0	0	80
2	PVC Pipe 75 mm, class-II; 4 kg/cm ²	m	30	60	150	30	60	150
3	PVC Pipe 63 mm, class-II; 4 kg/cm ²	m	66	110	0	66	110	0
4	32 mm LLDPE plain laterals, 2.5 kg/cm ² - Class II	m	400	1000	2000	500	1250	2500
5	Mini Sprinkler Head/ Nozzle	No.	40	100	220	63	156	312
6	M S Riser Rod 20 mm & assembly	No.	40	100	220	63	156	313
7	Control Valve PP 75 mm	No.	0	1	1	0	1	2
8	Control Valve PP 63 mm	No.	1	1	2	1	1	2
9	Control Valve PP 50 mm	No.	0	20	34	0	24	36
10	Flush Valve 75 mm	No.	0	0	1	0	1	2
11	Flush Valve 63 mm	No.	1	1	0	1	0	0
12	Air release Valve - 1"	No.	1	1	1	1	1	1
13	Non Return Valve - 2.5"	No.	0	1	1	0	1	1
14	Non Return Valve - 2"	No.	1	0	0	1	0	0
15	Throttle Valve gun metal 2 .5"	No.	0	1	1	0	1	1
16	Throttle Valve gun metal 2"	No.	1	0	0	1	0	0
17	Screen filter 30 m ³ / hr	No.	0	0	1	0	0	1
18	Screen filter 20/25 m ³ /hr	No.	1	1	0	1	1	0
19	By-pass Assembly - 1.5"x1.5"	No.	1	1	1	1	1	1
20	Venturi& manifold - 2"	No.	1	1	1	1	1	1
21	Fittings, Accessories @ 10%	10%	10%	10%	10%	10%	10%	10%

Indicative Bill of Quantities (BoQ) for Semi Permanent Sprinkler Irrigation System

S N	Particulars	0.4 ha	1h a	2 ha
1	PVC Pipe 75 mm, class-II; 4 kg/cm ²	0	0	110
2	PVC Pipe 63 mm, class-II; 4 kg/cm ²	96	15 4	273
3	PVC Pipe 25 mm – 10 kg /cm ² or PE Lateral 25 mm Class II 2.5 Kg/cm ²	35 0	95 0	190 4
4	Control Valve PP 63 mm	1	1	2
5	By-pass Assembly - 2 .5"x2"	1	1	1
6	Control Valve PP 25 mm	12	20	42
7	Sprinkler Assembly	12	12	12
8	Screen filter 20/25 m ³ /hr	1	1	1
9	Fitting & Accessories @5%	5%	5%	5%

Indicative Bill of Quantities (BoQ) for Raingun Sprinkler Irrigation System

Using 63 mm coupler			
SN	Components	upto1 ha	upto2 ha
1	HDPE Pipes with Quick coupled (Pipe of Class 2; 3.2 kg/cm ² IS:14151 Part II 63 mm diameter & 6m long)	30	NA
2	Raingun Sprinkler 1.25" female threaded connection	1	N.A
3	Tripod Stand with adapter to feeder line 1.25"x1.5 m	1	N.A
4	Quick coupled HDPE Bend with Coupler 900 (63/50 mm) ;	1	N.A
5	Quick coupled HDPE Pump Connecting Nipple 63 mm;	1	N.A
6	Quick coupled HDPE End Plug (63 mm) ;	1	N.A
7	Quick coupled HDPE Tee with Coupler (63mm) ;	1	N.A
8	Screen filter 20/25 m ³ /hr	1	N.A
9	By-pass Assembly - 2"x1,5"	1	N.A
Using 75 mm coupler			
SN	Components	1 ha	2 ha
1	HDPE Pipes with Quick coupled (2.5 kg/cm ² IS:14151 Part II, 75 mm diameter & 6m long)	30	42
2	Raingun Sprinkler 1.25" female threaded connection	1	1
3	Tripod Stand with adapter to feeder line 1.25"x1.5 m	1	1
4	Quick coupled HDPE Bend with Coupler 900 (75 mm) ;	1	1
5	Quick coupled HDPE Pump Connecting Nipple , 75 mm;	1	1
6	Quick coupled HDPE End Plug (75 mm) ;	1	1
7	Quick coupled HDPE Tee with Coupler (75 mm);	1	1
8	Screen filter 20/25 m ³ /hr	1	1
9	By-pass Assembly - 2"x1,5"	1	1

Water Quality Criteria in Relation to Clogging

The criteria for water quality for conventional irrigation is different from the one meant for irrigating through drip. The clogging hazard with different water qualities are presented below:

Extent of Clogging on the Basis of Quality of Irrigation Water

Quality of Water	Clogging Hazard		
	Slight	Moderate	Severe
Suspended Solids (ppm)	<50	50-100	>100
pH	<7.0	7.0-8.0	>8.0
TDS (ppm)	<500	500-2000	>2000
Manganese (ppm)	<0.1	0.1-1.5	>1.5
Iron (ppm)	<0.1	0.1-1.5	>1.5
Calcium and Magnesium (ppm)	<20	20-40	>40
Hydrogen sulphide (ppm)	<0.5	0.5-2.0	>2.0
Bacterial population (No./ml)	<10000	10000-50000	>50000

Source:Dasberg and Dani, 1999

Guidelines for Selection of Filter

Water Quality	Type of Filter	Remarks
Good without any physical and biological impurities	Screen	Screen filters shall be suggested only if the physical impurity do not call for cleaning of filter element more than once a day
Water sources with heavy physical and biological impurities	Only screen filter will not be sufficient	Additional filter is required depending upon the type of water impurity
Water sources with sand and other heavier particles,	Hydro cyclone Separator or Hydro cyclone of matching flow capacity.	Disc/Screen Filter shall be provided after hydro cyclone
Water sources with heavy of Biological impurities such as Algae, trash and other debris.	Media / sand filter	Disc/screen filter should be provided after Media filter
Water sources with heavy sand and other biological impurities such as Algae and trash,	Combination of Hydro Cyclone followed by a Sand Filter	Screen/disc filter should be after sand filter

Indicative Price of Optional Components

SN	Optional Component	App Price (Rs)
1	Sand Filter with back wash assembly IS 14606	
a	10 m ³ /hr x 1.5	9775
b	20 m ³ /hr x 2	13225
c	25 m ³ /hr x 2	16100
d	30 m ³ /hr x 2.5	18400
2	Hydro cyclone Filter IS 14743	
a	20 m ³ /hr x 2	4025
b	25 m ³ /hr x 2	4600
c	30 m ³ /hr x 2.5	6325
3	Fertilizer Tank with Assembly IS 14483 - Part III	
a	30 litres	3220
b	60 litres	5750



भारत का राजपत्र
The Gazette of India

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कृषि एवं किसान कल्याण मंत्रालय
(कृषि, सहकारिता एवं किसान कल्याण विभाग)
अधिसूचना
नई दिल्ली, 17 मार्च, 2017

का.आ. 893(अ).— सेवाओं या फायदों या सहायिकियों के परिदान के लिए एक पहचान दस्तावेज के रूप में आधार का उपयोग सरकारी परिदान प्रक्रियाओं का सरलीकरण करता है, पारदर्शिता और दक्षता लाता है और फायदाग्राहियों को सुविधापूर्वक और निर्बाध रीति में उनकी हकदारियों को मीधे प्राप्त करने में समर्थ बनाता है और आधार किसी व्यक्ति की पहचान को साबित करने के लिए बहुल दस्तावेज प्रस्तुत करने की आवश्यकता को समाप्त करता है;

और जबकि भारत सरकार में कृषि एवं किसान कल्याण मंत्रालय (जिसे इसमें इसके पश्चात मंत्रालय कहा गया है) अनुमोदित वित्त पोषण पद्धति के अनुसार राज्य सरकार अथवा संघ राज्य क्षेत्र प्रशासन के अधीन नोडल विभागों (जिसे इसमें इसके पश्चात विभाग कहा गया है) को अनुदान सहायता प्रदान करके केन्द्रीय प्रायोजित स्कीम के रूप में प्रधानमंत्री कृषि सिंचाई स्कीम (पीएमकेएसवाई) (जिसे इसमें इसके पश्चात स्कीम कहा गया है) के "प्रति बूंद अधिक फसल घटक" का कार्यान्वयन कर रहा है।

और जबकि स्कीम के अधीन दी जा रही अनुदान सहायता राज्य नोडल अभिकरणों अथवा रजिस्ट्रीकृत अथवा पैनलीकृत कम्पनियों (जिसे इसमें इसके पश्चात कार्यान्वयन अभिकरण कहा गया है) के माध्यम से किसानों (जिसे इसमें इसके पश्चात लाभार्थी कहा गया है) को सहायता प्राप्त सूक्ष्म सिंचाई प्रणालियां तथा अन्य फायदे अथवा अन्य सेवाएं प्रदान करने के लिए है।

और जबकि स्कीम के अधीन प्रदान किए गए फायदों में भारत की संचित निधि से उपगत पूर्ण अथवा आंशिक आवर्ती व्यय अंतर्भूत है।

अतः अब, केन्द्रीय सरकार आधार (वित्तीय और अन्य सहायिकियों, प्रसुविधाओं और सेवाओं का लक्षित परिदान) अधिनियम, 2016 (2016 का 18) (जिसे इसमें इसके पश्चात अधिनियम कहा गया है) की धारा 7 के उपबंधों के अनुसरण में निम्नलिखित अधिसूचित करती हैं, अर्थात्:-

1. (1) स्कीम के अधीन फायदा प्राप्त करने के पात्र व्यक्ति से अपेक्षा की जाती है कि वह आधार संख्या रखने का सबूत प्रस्तुत करे अथवा आधार अधिप्रमाणन करवाए।

(2) इस स्कीम के अधीन फायदे प्राप्त करने के हकदार व्यक्ति, जिसके पाम आधार संख्या नहीं है अथवा जिसने आधार के लिए नामांकन नहीं करवाया है, परंतु वह इस स्कीम के अधीन फायदा प्राप्त करने का इच्छुक है, के लिए 31.12.2017 तक आधार नामांकन के लिए आवेदन करना आवश्यक है परन्तु वह उक्त अधिनियम की धारा 3 के अनुसार आधार अभिप्राप्त करने का हकदार हो और ऐसा व्यक्ति आधार के लिए नामांकन करवाने के लिए किसी भी आधार नामांकन केंद्र (भारतीय विशिष्ट पहचान प्राधिकरण की वेबसाइट www.uidai.gov.in पर उपलब्ध सूची) पर जा सकते हैं।

(3) आधार (नामांकन और अद्यतन) विनियम, 2016 के विनियम 12 के अनुसार कार्यान्वयन अभिकरणों राज्यों अथवा संघ राज्य क्षेत्रों में स्कीम के कार्यान्वयन का भारसाधक संबंधित विभाग, जो किसी व्यक्ति से आधार प्रस्तुत करने की अपेक्षा करता है, से अपेक्षा की जाती है कि वह उन फायदाग्राहियों को आधार नामांकन सुविधा प्रदान करे जिन्होंने आधार के लिए अभी तक नामांकित नहीं किया है और यदि संबद्ध ब्लॉक अथवा तालुका अथवा तहसील में कोई भी आधार नामांकन केंद्र स्थित नहीं है तो राज्यों अथवा संघ राज्य क्षेत्रों में स्कीम के कार्यान्वयन से संबंधित भारसाधक विभाग कार्यान्वयन अभिकरण के माध्यम से अपेक्षित है कि वह भारतीय विशिष्ट पहचान प्राधिकरण के वर्तमान रजिस्ट्रार के सहयोग से अथवा स्वयं भारतीय विशिष्ट पहचान प्राधिकरण रजिस्ट्रार बनकर सुविधाजनक स्थान पर आधार नामांकन सुविधाएं प्रदान करे।

परन्तु यह कि उस व्यक्ति को आधार समनुदेशित किए जाने के समय तक उक्त स्कीम के अधीन फायदा निम्नलिखित पहचान दस्तावेज प्रस्तुत करने के अधीन रहते हुए ऐसे व्यक्तियों को प्रदान किया जाएगा, अर्थात:-

(क) (i) आधार नामांकन पर्ची, यदि हिताधिकारी ने आधार के लिए नामांकन दिया है;

अथवा

(ii) हिताधिकारी द्वारा पैरा-2 के उप पैरा (ख) में यथा विनिर्दिष्ट आधार नामांकन के लिए किए गए अतुरोध की प्रति; और

(ख) (i) मतदाता पहचान पत्र; अथवा (ii) स्थाई खाता संख्यांक (पैन) कार्ड; अथवा (iii) पासपोर्ट; अथवा (iv) राशन कार्ड; अथवा (v) सरकारी कर्मचारी का आईडी कार्ड; अथवा (vi) बैंक/पोस्ट ऑफिस पासबुक फोटो के साथ; (vii) मनरेगा कार्ड; अथवा (viii) किसान फोटो पासबुक; अथवा (ix) मोटर अधिनियम, 1988 (1988 का 59) के अंतर्गत अनुज्ञापन प्राधिकारी द्वारा जारी चालन अनुज्ञप्ति; अथवा (x) सरकारी लैटर हैड पर किसी राजपत्रित अधिकारी अथवा तहसीलदार द्वारा जारी ऐसे सदस्य की फोटो वाला पहचान प्रमाण पत्र; अथवा (xi) राज्य सरकार अथवा संघ राज्यक्षेत्र प्रशासन द्वारा यथाविनिर्दिष्ट अन्य कोई दस्तावेज;

परन्तु यह और कि इस उद्देश्य के लिए राज्य सरकार अथवा संघ राज्य क्षेत्र प्रशासन द्वारा विनिर्दिष्ट रूप से पदाभिहित अधिकारी द्वारा उपयुक्त दस्तावेज की जांच की जाएगी।

2. इस स्कीम के अधीन हिताधिकारियों को सुविधाजनक व बाधामुक्त फायदे प्रदान करने के लिए अभिकरणों राज्य सरकार अथवा संघ राज्य क्षेत्र प्रशासन में स्कीम के कार्यान्वयन का भारसाधक संबंधित विभाग सभी आवश्यक व्यवस्थाएं, जिनमें निम्नलिखित भी हैं, करेंगे अर्थात:

(क) इस स्कीम के अधीन आधार की आवश्यकता के बारे में हिताधिकारियों को जागरूक बनाने के लिए कार्यान्वयन अभिकरणों के माध्यम से मीडिया व्यष्टिक सूचना के माध्यम से व्यापक प्रचार किया जाए और यदि आवेदक ने नामांकन नहीं

करवाया है तो उन्हें 31.12.2017 तक अपने क्षेत्रों में उपलब्ध निकटतम नामांकन केंद्रों पर नामांकन करवाने की सलाह दी जाए और उन्हें स्थानीय रूप से उपलब्ध नामांकन केंद्रों (www.uidai.gov.in पर सूची उपलब्ध) की सूची उपलब्ध कराई जाएगी।

(ख) यदि निकट आसपड़ोस जैसे ब्लॉक अथवा तहसील अथवा तालुका में नामांकन केंद्रों की अनुपलब्धता के कारण इस स्कीम के अधीन हिताधिकारी आधार के लिए नामांकन करवा पाने में समर्थ नहीं है, कार्यान्वयन अभिकरणों के माध्यम से राज्य सरकार या संघ राज्य क्षेत्र प्रशासन में स्कीम के कार्यान्वयन के भारसाधक संबंधित विभाग से सुविधाजनक अवस्थानों पर आधार नामांकन सुविधाएं सृजित करना अपेक्षित है और इस उद्देश्य के लिए कार्यान्वयन अभिकरणों अथवा वेब-पोर्टल के माध्यम से संबंधित अधिकारियों को अपना नाम, पता व मोबाइल नंबर और पैरा 1 के उप पैरा (3) के परंतुक में यथाविनिर्दिष्ट अन्य ब्यौरा देकर आधार नामांकन के लिए रजिस्ट्रीकरण करवाने का हिताधिकारियों से अनुरोध किया जाये।

3. यह अधिसूचना असम, मेघालय और जम्मू-कश्मीर को छोड़कर सभी राज्यों और संघ राज्य क्षेत्रों में राजपत्र में इसके प्रकाशन की तारीख से प्रभावी होगी।

[फा. सं. 19-59/2016-आरएफएम-III]

आर. बी. मिन्हा, संयुक्त सचिव

MINISTRY OF AGRICULTURE AND FARMERS WELFARE
(Department of Agriculture Cooperation and Farmers Welfare)

NOTIFICATION

New Delhi, the 17th March, 2017

S.O. 893(E).—Whereas, the use of Aadhaar as identity document for delivery of services or benefits or subsidies simplifies the Government delivery processes, brings in transparency and efficiency, and enables beneficiaries to get their entitlements directly in a convenient and seamless manner and Aadhaar obviates the need for producing multiple documents to prove one's identity;

And whereas, the Ministry of Agriculture and Farmers Welfare (hereinafter referred to as Ministry) in the Government of India is implementing the "Per Drop More Crop" component of the Prime Minister Krishi Sinchayee Yojana (PMKSY) (hereinafter referred to as the Scheme) as a Centrally Sponsored Scheme by providing Grant-in-Aid to the concerned nodal Departments (hereinafter referred to as Department) under the State Government or Union territory Administration, as per the approved funding pattern;

And whereas, the Grant-in-Aid given under the Scheme is meant for providing subsidized Micro-Irrigation System and other benefits or services (hereinafter referred to as the benefits) to the farmers (hereinafter referred to as beneficiaries) through the State Nodal Agencies or Registered or Empanelled Companies (hereinafter referred to as Implementing Agencies);

And whereas, the benefits offered under the Scheme involve full or partial recurring expenditures incurred from the Consolidated Fund of India;

Now, therefore, in pursuance of the provisions of section 7 of the Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016 (18 of 2016) (hereinafter referred to as the said Act), the Central Government hereby notifies the following, namely:-

1. (1) An Individual eligible to receive the benefits under the Scheme is hereby required to furnish proof of possession of Aadhaar number or undergo Aadhaar authentication.
- (2) Any Individual entitled to receive the benefits under the Scheme, who does not possess the Aadhaar number or, has not yet enrolled for Aadhaar, but desirous of availing the benefits under the Scheme, is hereby required to make application for Aadhaar enrollment by 31.12.2017, provided she or he is entitled to obtain Aadhaar as per section 3 of the said Act and such individuals shall visit any Aadhaar enrolment centre (list available at Unique Identification Authority of India (UIDAI) website www.uidai.gov.in) to get enrolled for Aadhaar.
- (3) As per regulation 12 of Aadhaar (Enrolment and Update) Regulations, 2016, the concerned Department in charge of implementation of the Scheme in the States or Union territories through its Implementing Agencies, which requires an individual to furnish Aadhaar, is required to offer Aadhaar enrolment facilities for the beneficiaries who are not yet enrolled for Aadhaar, and in case there is no Aadhaar enrolment centre located in

the respective Block or Taluka or Tehsil, the concerned Department in charge of implementation of the Scheme in the States or Union territories through its Implementing Agencies is required to provide Aadhaar enrolment facilities at convenient locations in coordination with the existing Registrars of UIDAI or by becoming UIDAI Registrar themselves:

Provided that till the time Aadhaar is assigned to the individual, benefits under the Scheme shall be given to such individuals subject to the production of the following identification documents, namely:-

- (a) (i) if she or he has enrolled, her or his Aadhaar Enrolment ID slip; or
 - (ii) a copy of her or his request made for Aadhaar enrolment, as specified in sub-paragraph (b) of paragraph 2 below; and
- (b) (i) Voter Identity Card; or (ii) Permanent Account Number (PAN) Card; or (iii) Passport; or (iv) Ration Card; or (v) Employee Government ID Card; or (vi) Bank / Post office Passbook with Photo (vii) MGNREGS card; or (viii) Kisan Photo passbook; or (ix) Driving license issued by the Licensing Authority under the Motor Vehicles Act, 1988 (59 of 1988); or (x) Certificate of identity having photo of such member issued by a Gazetted Officer or a Tehsildar on an official letter head; or (xi) Any other document as specified by the State Government or Union territory Administration;

Provided further that the above documents shall be checked by an officer specifically designated by State Government or Union territory Administration for that purpose.

2. In order to provide convenient and hassle free benefits under the Scheme to the beneficiaries, the concerned Department in charge of implementation of the Scheme in the State Government or Union territory Administration, shall make all the required arrangements including the following, namely:-

(a) Wide publicity through media and individual notices through shall be given through its Implementing Agencies to the beneficiaries to make them aware of the requirement of Aadhaar under the Scheme and they may be advised to get themselves enrolled at the nearest Aadhaar enrolment centres available in their areas by 31.12.2017, in case they are not already enrolled and the list of locally available enrolment centres (list available at www.uidai.gov.in) shall be made available to them.

(b) In case, the beneficiaries under the Scheme are not able to enroll for Aadhaar due to non-availability of enrolment centres in the near vicinity such as in the Block or Taluka or Tehsil, the concerned Department in charge of implementation of the Scheme in State Government or Union territory Administration through its Implementing Agencies is required to create Aadhaar enrolment facilities at convenient locations, and the beneficiaries may be requested to register their requests for Aadhaar enrolment by giving their names, addresses, mobile numbers and other details as specified in the proviso to sub-paragraph (3) of paragraph 1, with the concerned official of the Implementing Agencies or through the web portal provided for the purpose.

3. This notification shall come into effect from the date of its publication in the Official Gazette in all States and Union territories except the States of Assam, Meghalaya and Jammu and Kashmir.

[F. No. 19-59/2016-RFS-III]

R. B. SINHA, Jt. Secy.

List of BIS Standards

SN	Component Description	BIS
1	Polyethylene pipes for Irrigation- Laterals with amendment number 6	IS 12786: 1989 (reaffirmed 2009)
2	Irrigation Equipment-Emitters- Specification	IS 13487: 1992 (reaffirmed 2009)
3	Irrigation Equipment-Emitting pipes system- Specification (first revision)	IS 13488: 2008 (reaffirmed 2014)
4	Irrigation Equipment-Strainer type filters Specification (first revision)	IS 12785: 1994 (reaffirmed 2011)
5	Irrigation equipment rotating sprinkler Part I, Design and Operational requirements (1st revision)	IS 12232 (Part I) -1996 (reaffirmed 2011)
6	Irrigation equipment rotating sprinkler Part 2, Test method for uniformity of distribution (1st revision)	S 12232 (Part 2) -1995 (reaffirmed 2011)
7	Fertilizer and Chemicals Injection system Part I Venturi Injector	IS 14483 (Part 1) 1997 (reaffirmed 2009)
8	Irrigation Equipment-Media Filters- Specification	IS 14606: 1998 (reaffirmed 2009)
9	Irrigation Equipment-Hydro cyclone filter-Specification	IS 14743: 1999 (reaffirmed 2009)
10	Unplasticized PVC pipes for portable water supplies- Specification (third revision)	IS 4985 – 2000
11	Irrigation equipment -Sprinkler pipes -Specifications Part-I Polyethylene pipes (first revision)	IS 14151 (part I) 1999 (reaffirmed 2009)
12	Irrigation equipment- Sprinkler pipes -Specifications Part II Quick coupled Polyethylene pipes & fittings (second revision)	IS 14151 (part II) 2008 (reaffirmed 2014)
13	High Density Polyethylene Pipes for water supply- Specification (fourth revision)	IS 4984 : 1995 (reaffirmed 2002)
14	Fertilizer & Chemical Injector System- Part 3 Fertilizer Tank	IS:14483 Part 3 - 2016

Source: Online catalogue of Bureau of Indian Standards

LAYOUT DESIGN OF DRIP & SPRINKLER IRRIGATION SYSTEMS

