

Annexure-II

**Brief Technical Specification of Probable Agricultural Machineries & Equipments for the year 2016-17 as approved in the Technical Committee meeting held on 12.07.2016**

SN	Name of agricultural machineries	Name of schemes	Brief technical specification	Remarks
(1)	(2)	(3)	(5)	(6)
1	<b>Tractor</b> (18 to 25 PTO HP) with matching implements Trailer, Cage Wheel and standard tools & accessories	SMAM	<b>A) Tractor</b> i) Type: Agricultural Tractors (18 to 25 PTO HP) with cage wheel, standard tools and accessories ii) CMVR certified iii) Tested at CFMTTI, Budni (MP) <b>B) Trailer</b> i) Type: Two wheeled non tipping type matching trailer made of mild steel with provision of spring leaf and hitching arrangement. ii) Capacity (Ton): 1.5 to 2 iii) MS sheet thickness : (a) sides(mm): 2.5 or more (b) bottom(mm): 4 or more iv) Hydraulic brake system as per AIS:043-2005 <b>C) Cultivator:</b> i) Type: Matching Rigid Tyne Cultivator, having 3- point hydraulic linkage ii) No. of Tynes: 6 to 9 iii) Tested at any FMTTI or GoI approved Institution. <b>D) Disc Harrow</b> i) Type: Matching Offset Type Disc Harrow, having 3- point hydraulic linkage ii) No. of Discs: 6 to 12 iii) Tested at any FMTTI or GoI approved Institution. <b>E) Rotavator</b> i) Type: Matching Gear type Rotavator ii) No. of Blades: 18 to 30 iii) Tested at any FMTTI or GoI approved Institution.	
2	<b>Tractor</b> (above 25 to 45 PTO HP) with matching implements Trailer, Cage Wheel and standard tools & accessories	RIDF XXI, SMAM	<b>A) Tractor</b> i) Type: Agricultural Tractors (above 25 to 45 PTO HP) with cage wheel, standard tools and accessories ii) CMVR certified, iii) Tested at CFMTTI, Budni (MP) <b>B) Trailer</b> i) Type: Two wheeled non tipping type matching trailer made of mild steel with provision of spring leaf and hitching arrangement. ii) Capacity (Ton): 2 to 3 iii) MS sheet thickness : (a) sides(mm): 2.5 or more (b) bottom(mm): 4 or more iv) Hydraulic brake system as per AIS:043-2005 <b>C) Cultivator:</b> i) Type: Matching Spring Tyne Cultivator, having 3- point hydraulic linkage	

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			ii) No. of Tynes: 9 to 13 iii) Tested at any FMTTI or GoI approved Institution. <b>D) Disc Harrow</b> i) Type: Matching Offset Type Disc Harrow, having 3- point hydraulic linkage ii) No. of Discs: 12 to 16 iii) Tested at any FMTTI or GoI approved Institution. <b>E) Rotavator</b> i) Type: Matching Gear type Rotavator ii) No. of Blades: 30 to 54 iii) Tested at any FMTTI or GoI approved Institution. <b>F) Disc Plough</b> i) Type: Matching Disc Plough, having 3- point hydraulic linkage ii) No. of Bottoms: 2 or 3 iii) Tested at any FMTTI or GoI approved Institution	
3	<b>Power tiller</b> (8 BHP and above)	RIDF XXI, SMAM, BGREI	i) Type: Power Tillers (8 BHP and above) with cage wheel, standard tools and accessories ii) Tested at any FMTTI	
4	<b>Leveller</b>	SMAM	i) Type: Land Leveller/ Leveller Blade, having 3- point hydraulic linkage ii) Power source: Tractor (25 - 45 PTO HP) iii) Tested at any FMTTI or GoI approved Institution.	
5	<b>Laser Land Leveller</b>	RIDF XXI, SMAM	i) Type: Laser Guided Land Leveller ii) Operating range (m): 600 – 800 iii) Power source: Tractor (above 40-45 PTO HP) iv) Tested at any FMTTI.	
6	<b>Ridger</b>	SMAM	i) Type: Ridger for sugarcane and potato cultivation ii) Power source: Tractor (25 - 45 PTO HP) iii) Tested at any FMTTI or GoI approved Institution.	
7	<b>Ditch maker</b>	RIDF XXI, SMAM	i) Type: Tractor drawn ditch maker ii) Power source: Tractor (above 25 - 45 PTO HP) iii) Tested at FMTTI or GoI approved/ designated testing Centre	
8	<b>Bund Former</b>	RIDF XXI, SMAM	i) Type: Tractor drawn Bund Former ii) Power source: Tractor (25 - 45 PTO HP) iii) Tested at any FMTTI or GoI approved Institution.	
9	<b>Zero till seed cum fertilizer drill</b>	SMAM	i) Type: Tractor drawn Zero till seed cum fertilizer drill ii) Power source: Tractor (35 - 45 PTO HP) iii) No. of rows: 9/11/13 iv) Tested at any FMTTI or GoI approved Institution.	
10	<b>Seed Cum Fertilizer Drill</b>	RIDF XXI, SMAM	i) Type: Tractor drawn multi crop seed cum fertilizer drill ii) Power source: Tractor (above 25 - 45 PTO HP) iii) No. of rows: 9/11/13 iv) Tested at any FMTTI or GoI approved Institution.	

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11	<b>Automatic Potato Planter</b>	RIDF XXI, SMAM	i) Type: Tractor drawn Automatic Potato Planter ii) Power source: Tractor (35 - 45 PTO HP) iii) Tested at any FMTTI or Gol approved Institution	
12	<b>Tractor operated Potato Digger</b>	RIDF XXI, SMAM	i) Type: Tractor PTO operated Potato Digger Elevator ii) Power source: Tractor (35 - 45 PTO HP) iii) Tested at any FMTTI or Gol approved Institution.	
13	<b>Tractor mounted Vertical Conveyor Reaper</b>	SMAM	i) Type: Tractor front mounted or Rear (Offset type) mounted Vertical Conveyor Reaper for harvesting and windrowing of Paddy. ii) Power source: Tractor (35 - 45 PTO HP) iii) Tested at any FMTTI or Gol approved Institution.	
14	<b>Walk-behind type Rice Transplanter</b>	RIDF XXI, SMAM	i) Type: Self Propelled Walk behind type Rice Transplanter ii) Fuel: Petrol/ Diesel iii) No. of planting rows: 4 iv) Tested at any FMTTI	
15	<b>Riding type Rice Transplanter</b>	SMAM	i) Type: Self Propelled Riding type Rice Transplanter ii) Fuel: Petrol/ Diesel iii) No. of planting rows: 8 iv) Tested at any FMTTI	
16	<b>Automatic Mat-Type Rice Nursery Sowing Machine</b>	SMAM	i) Type: Automatic Mat-Type Rice Nursery Sowing Machine for in-line production of mat type Rice nursery for paddy transplanter, along with nursery trays and standard accessories and including installation & commissioning on <b>turnkey basis</b> . ii) Power: Single phase electric motor (50 Hz 220 V) iii) Efficiency (trays/hour): 600 - 800 iv) Sowing quantity (gm/tray): 65 - 150 v) Thickness of sub-soil (mm): 18 - 25 vi) Thickness of surface soil (mm): 3 - 9 vii) BIS certification of Electric motors viii) Tested at any FMTTI or GOI approved center.	
17	<b>Self Propelled Reaper</b>	RIDF XXI, SMAM	i) Type: Self propelled walk behind type Vertical Conveyor Reaper for harvesting and windrowing of Paddy. ii) Power (Kw): 2.2 - 3.7 iii) Fuel: Petrol/ Diesel iv) Cutting width (mm): 900- 1200 v) Tested at any FMTTI	
18	<b>Power Weeder (below 2 BHP)</b>	RIDF XXI, SMAM	i) Type: Self Propelled Engine operated Power Weeder ii) Power (BHP): below 2 iii) Fuel: Petrol/Diesel iv) Tested at any FMTTI	
19	<b>Power Weeder (2 BHP &amp; above)</b>	RIDF XXI, SMAM	i) Type: Self Propelled Engine operated Power Weeder ii) Power (BHP): 2 BHP & above iii) Fuel: Petrol/Diesel iv) Tested at any FMTTI	
20	<b>Tractor PTO operated Paddy Thresher</b>	RIDF XXI, SMAM	i) Type: Tractor PTO driven Spike tooth Axial flow Paddy Thresher mounted on a chassis with pneumatic wheels. ii) Grain Loss: 0 - 5% iii) Power source: Tractor (above 25 - 45 PTO HP) iv) Tested at any FMTTI or Gol approved Institution.	

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21	<b>Power Paddy Thresher with prime-mover</b>	SMAM	<p>i) Type: Spike tooth Axial flow type Paddy Thresher mounted on a chassis with pneumatic wheels.</p> <p>ii) Power source (Diesel Engine) (Kw): 3 – 4</p> <p>iii) Grain Loss: 0 – 5%</p> <p>iv) Completely fitted as one unit with Diesel engine (3 - 4 Kw) as prime-mover</p> <p>v) Tested at any FMTTI.</p> <p>vi) BIS certificate of Diesel Engine</p>
22	<b>Portable power operated paddy thresher</b>	SMAM	<p>i) Type: Portable power operated paddy thresher with wire loop type threshing drum.</p> <p>ii) Power source (HP) : 1.0 – 2.0 (single phase electric motor)</p> <p>iii) Output capacity (q/hr): 3 to 5</p> <p>iv) Tested at any Govt approved/ designated testing centre.</p>
23	<b>Tractor PTO operated Multi crop Thresher</b>	SMAM	<p>i) Type: Tractor PTO operated Multi-crop Thresher for pulses, wheat, mustard etc. mounted on a chassis with pneumatic wheels.</p> <p>ii) Grain Loss: 0 – 5%</p> <p>iii) Power source: Tractor (above 25 - 45 PTO HP)</p> <p>iv) Tested at any FMTTI or GoI approved Institution.</p>
24	<b>Mini Combine Harvester</b>	RIDF XXI	<p>i) Type: Self Propelled Mini Combine Harvester for harvesting and threshing of paddy.</p> <p>ii) Rated Engine Power (Kw): 50 or less</p> <p>iii) Tested at any FMTTI</p>
25	<b>Knapsack Sprayer</b>	SMAM, NOOP, BGREI	<p>i) Type: Manual Hand compression Knapsack Sprayer</p> <p>ii) Tank capacity (lit): 13 – 16</p> <p>iii) Pressure chamber made of Brass.</p> <p>iv) Spray Lance made of Brass or Stainless Steel.</p> <p>v) Tested at any FMTTI or CIAE/FMTTI Junagadh or BIS certification.</p>
26	<b>Power Knapsack sprayer</b>	SMAM	<p>i) Type: Petrol engine operated Power Knapsack Sprayer</p> <p>ii) Tested at any FMTTI or CIAE/FMTTI Junagadh or BIS certification.</p>
27	<b>Battery operated Knapsack sprayer</b>	SMAM	<p>i) Type: Battery operated Power Knapsack Sprayer</p> <p>ii) Tested at any FMTTI or CIAE/FMTTI Junagadh or BIS certification</p>
28	<b>Maize Sheller</b>	RIDF XXI, SMAM	<p>i) Type: Power operated Maize Sheller fitted with single phase electric motor</p> <p>ii) Power source (Single phase electric motor): 1.0 – 2.2 Kw</p> <p>iii) Shelling efficiency (%): 95 or more</p> <p>iv) Tested at any FMTTI or GoI approved Institution.</p>
29	<b>Modern Mini Rice Milling Plant</b>	RKVY	<p>i) Type: Supplying, Installation and Commissioning of Modern Mini Rice Milling Plant (MMRMP) on turnkey basis for pre-cleaning &amp; de-husking of paddy, separation of husk, separation of un-milled paddy, polishing of rice, removal of bran from rice and separation of broken rice from whole rice etc. in a single-line operation.</p> <p>ii) MMRMP shall at least consists of – (a)Paddy Pre-cleaner (b)Rubber Roller Sheller (c)Paddy Separator (d)Polisher (e)Bucket Elevators</p> <p>iii) Capacity (MT/hr): 0.5 – 0.75</p> <p>iv) Power Source (Electric motors) (Kw): 12 - 20</p>

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			<p>v) Percentage of whole rice recovery: 60% of paddy or more</p> <p>vi) Fitted with Electric motors including Starter, Panel Board, foundation bolts etc.</p> <p>vii) BIS certification of electric motors.</p> <p>viii) Tested at any FMTTI or CIPHET Ludhiana</p>	
30	<b>Modern Compact Rice Mill</b>	BGREI	<p>i) Type: Supplying, Installation and Commissioning Modern Compact Rice Mill on turnkey basis equipped with rubber roller sheller, for de-husking of paddy, separation of husk, polishing of rice, removal of bran from rice and separation of broken rice from whole rice in single operation.</p> <p>ii) Capacity (kg/hr): 200 – 250</p> <p>iii) Power Source (Electric motors) (Kw): 3.7 – 7.5</p> <p>iv) Percentage of whole rice recovery: 60% of paddy or more</p> <p>v) Fitted with Electric motors including Starter, Panel Board, foundation bolts etc.</p> <p>vi) BIS certification of electric motors.</p> <p>vii) Tested at any FMTTI or CIPHET Ludhiana</p>	
31	<b>Paddy separator</b>	RKVY	<p>i) Type: Supplying, Installation and Commissioning of 4 Trays Paddy Separator on turnkey basis for Modern Mini Rice Mill of 500 kg/hr capacity along with necessary double elevator, counter shaft assembly, pulleys, electric motors, starters and other fittings &amp; accessories.</p> <p>ii) Electric motor for elevator: 1 - 1.5 hp (1440 RPM)</p> <p>iii) Electric motor for separator: 1 - 1.5 hp (1440 RPM)</p> <p>iv) BIS certification of electric motors</p>	
32	<b>Mini Oil Expeller</b>	RIDF XXI	<p>i) Type: Mini Oil Expeller for mustard with filter press and oil pump including installation and commissioning on turnkey basis.</p> <p>ii) Capacity (kg/hr) : 30-50</p> <p>iii) Size of filter press : 12"x12"x12-plates</p> <p>iv) Power requirement (kw): 5 - 7.5</p> <p>v) Fitted with Electric motor including Starter, Panel Board, foundation bolts etc.</p> <p>vi) BIS certification of electric motors</p> <p>vii) Tested at any Govt approved/ designated testing centre.</p>	
33	<b>Mini Dal Mill</b>	RIDF XXI	<p>i) Type: Mini Dal Mill for splitting and de-husking of pulses with automatic arrangement of collecting husk &amp; dust, dehusked pulses, un-dehusked pulses and brokens in separate containers and bags, complete with electric motor, standard fittings &amp; accessories.</p> <p>ii) Capacity in single operation (Kg/hr): 80 or more</p> <p>iii) Power (Kw): 1.5 – 2.2</p> <p>iv) Tested at any Govt. approved/ designated testing centre.</p>	
34	<b>Batch type Flat-Bed Dryer for Paddy</b>	RKVY, RIDF XXI	<p>i) Type: Batch type flat-bed dryer for drying raw paddy with standard fittings.</p> <p>ii) Drying Temperature (°C): 50° - 60°</p> <p>iii) Capacity (Ton/batch): 1</p> <p>iv) Drying capacity (Ton/day): 3 Ton/day (for 12% moisture extraction)</p> <p>v) Fuel: Diesel/ Biomass</p> <p>vi) Accessories: Moisture meter, Safety device &amp; Standard accessories</p> <p>vii) Tested at any Govt. approved/ designated testing centre</p>	

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35	<b>Re-circulating Batch Dryer for Paddy</b>	RKVY, RIDF XXI	<p>i) Type: Re-circulating Batch dryer for drying raw paddy with standard fittings including installation and commissioning on turnkey basis.</p> <p>ii) Drying Temperature (<math>^{\circ}\text{C}</math>): <math>60^{\circ} - 80^{\circ}</math></p> <p>iii) Capacity (Ton/batch): 3</p> <p>iv) Drying capacity (Ton/day): 9 Ton/day (for 12% moisture extraction)</p> <p>v) Fuel: Diesel/ Biomass</p> <p>vi) Accessories: Moisture meter, Safety device &amp; Standard accessories</p> <p>vii) Fitted with Electric motor including Starter, Panel Board, foundation bolts etc.</p> <p>viii) Tested at any Govt. approved/ designated testing centre</p>	
36	<b>Ginger Processing Unit for making Ginger Paste</b>	RIDF XXI	<p>i) Type: Batch Type Ginger Processing Unit for making ginger paste in complete including installation and commissioning on turnkey basis.</p> <p>ii) Each unit shall consists of – (a)Washer (b)Peeler (c)Paste making machine (d)Weighing machine (e)Pouch Sealer</p> <p>iii) Capacity (kg/hr): 50-100</p> <p>iv) All contact parts made of stainless steel</p> <p>v) BIS certification of electric motors</p>	
37	<b>Ginger Processing Unit for making Ginger Powder</b>	RIDF XXI	<p>i) Type: Batch Type Ginger Processing Unit for making ginger powder in complete including installation and commissioning on turnkey basis.</p> <p>ii) Each unit shall consists of – (a)Washer (b)Peeler (c)Dryer (d)Pulveriser (e)Weighing machine (f)Pouch Sealer</p> <p>iii) Capacity (kg/hr): 50-100</p> <p>iv) All contact parts made of stainless steel</p> <p>v) BIS certification of electric motors</p>	
38	<b>Dry Maize Milling Plant</b>	RIDF XXI	<p>i) Type: Dry Maize milling plant in complete including installation and commissioning on turnkey basis.</p> <p>ii) Each unit shall consists of – (a)Maize Sheller (b)Hammer Mill or Pulveriser (c)Weighing machine (d)Pouch Sealer</p> <p>iii) Capacity (kg/hr): 50-100</p> <p>iv) BIS certification of electric motors</p>	
39	<b>Potato / Banana Chips making Unit</b>	RIDF XXI	<p>i) Type: Batch type Potato / Banana Chips making Unit in complete with all fittings and accessories including installation and commissioning on turnkey basis.</p> <p>ii) Capacity: 100 - 200 kg per day</p> <p>iii) Each unit shall consists of following machines– a) Peeler b) Potato and Banana Slicer c) Hydro for potato chips d) Fryer e) Flavour mixing machine f) Weighing machine g) Pouch Sealer</p> <p>iv) All contact parts made of stainless steel</p> <p>v) BIS certification of electric motors</p>	
40	<b>Spice Processing Unit</b>	RIDF XXI	<p>i) Type: Spice Processing Unit in complete with all fittings for medium to fine grinding of wide variety of spices including installation and commissioning on turnkey basis.</p>	

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			<p>ii) Each unit shall consists of –                  (a) Hammer Mill or Pulveriser (b) Weighing machine (c) Pouch Sealer                  iii) Capacity (kg/hr): 50-100                  iv) BIS certification of electric motors</p>
41	<b>Diesel Pump-set for STW</b>	BGREI, NOOP, PMKSY	<p>i) Type: Centrifugal Pump-set fitted with Diesel Engine for Shallow Tube Well (STW)                  ii) Prime-mover (Diesel Engine) (Kw): 3.0 – 3.7 (4.0 – 5.0 hp)                  iii) BIS certification.</p>
42	<b>Diesel Pump-set for LLP</b>	PMKSY, BGREI	<p>i) Type: Centrifugal Pump-set fitted with Diesel Engine as Low Lift Pump (LLP) along with accessories.                  ii) Prime-mover (Diesel Engine) (Kw): 3.0 – 3.7 (4.0 – 5.0 hp)                  iii) Accessories:                  a) 1 (one) piece matching PVC Suction-pipe of 7.5 meter length.                  b) 1 (one) roll matching flexible PVC Delivery-pipe of 7.5 meter length.                  c) 1 (one) no. matching Foot-valve with necessary fixing clamp etc.                  iv) BIS certification.</p>
43	<b>Electrical Pump-set for STW</b>	PMKSY, BGREI	<p>i) Type: Centrifugal Pump-set fitted with Electric motor for Shallow Tube Well (STW)                  ii) Prime-mover (Electric motor) (Kw): 2.0 – 2.2                  iii) BIS certification.</p>
44	<b>Electrical Pump-set for LLP</b>	PMKSY	<p>i) Type: Centrifugal Pump-set fitted with Electric motor as Low Lift Pump (LLP) along with accessories.                  ii) Prime-mover (Electric motor) (Kw): 2.0 – 2.2                  iii) Accessories:                  a) 1 (one) piece matching PVC Suction-pipe of 7.5 meter length.                  b) 1 (one) roll matching flexible PVC Delivery-pipe of 7.5 meter length.                  c) 1 (one) no. matching Foot-valve with necessary fixing clamp etc.                  iv) BIS certification.</p>
45	<b>Sprinkler Irrigation Set</b>	PMKSY	<p>(a) Type: Sprinkler Set for Portable sprinkler irrigation system with coverage area of 1 ha and each set comprises following quantity of items as specified:                  i) 30 Nos. of HDPE Pipes with QRC (Pipe of Class II; 3.2 kg/cm<sup>2</sup> IS:14151 Part-I) 63mm dia &amp; 6m long                  ii) 5 Nos. QRC HDPE 63mm Service Saddle (IS:14151 Part-II)                  iii) 5 Nos. GI Riser Pipe 3/4" dia &amp; 75 cm long                  iv) 5 Nos. Metal Sprinkler Nozzles (1.7 to 2.8 kg /cm<sup>2</sup> IS:12232 Part-I)                  v) 1 No. QRC HDPE Bend with Coupler 900 (63/50mm) (IS:14151 Part-II)                  vi) 1 No. QRC HDPE Pump Connecting Nipple 63 mm (IS:14151 Part-II)                  vii) 2 Nos. QRC HDPE End Plug (63mm) (IS:14151 Part-II)                  viii) 1 No. QRC HDPE Tee with Coupler (63mm) (IS:14151 Part-II)                  (b) BIS certification/ Conform to BIS</p>
46	<b>Mobile Raingun Sprinkler</b>	PMKSY	<p>(a) Type: Mobile Raingun sprinkler system with coverage area of 1 ha and each set comprises following quantity of items as specified:                  i) HDPE Pipes with Quick Release Coupler (Pipe of Class III; 4</p>

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			kg/cm <sup>2</sup> ) IS:14151 Part I, 75mm diameter & 6m long: 30 Nos. ii) Metal Raingun with 30 m radius of throw (IS:12232 Part-II) : 1 No. iii) Tripod Stand: 1 No. iv) QRC HDPE Bend with Coupler 90 Degree (75mm) IS:14151 Part II: 1 No. v) QRC HDPE Pump Connecting Nipple 75mm IS:14151 Part II: 1 No. vi) QRC HDPE End Plug (75mm) IS:14151 Part II: 1 No. vii) QRC HDPE Tee with Coupler (75mm) IS:14151 Part II: 1 No. viii) Screen filter 20 / 25 m <sup>3</sup> /hr: 1 No. ix) By Pass Assembly 2": 1 No. (b) BIS certification/ Conform to BIS
47	<b>Drip Irrigation Set for wide spaced crop at 9m x 9m (Lateral x Dripper) spacing</b>	NOOP, PMKSY	(a) Type: Drip Irrigation System with all Fittings & Accessories for Wide Spaced Crops for coverage area of 1 hectare at 9m x 9m (Lateral x Dripper) spacing and each set comprises following quantity of items as specified: i) 156 m PVC Pipe 50 mm; Class II; 4kg / cm <sup>2</sup> ; IS : 4985 (2000) ii) 1111 m Lateral 12 mm Class II ; 2.5 kg / cm <sup>2</sup> iii) 494 No. Emitter 4 / 8 lph iv) 370 Microtube 6 mm v) 1 No. Control Valve 50 mm, vi) 1 No. Flush Valve 50 mm vii) 1 No. Air Release Valve 1" viii) 1 No. Non Return Valve 1.5" ix) 1 No. Throttle Valve 1.5" x) 1 No. Screen Filter 10 m <sup>3</sup> / hr xi) 1 No. By-pass Assembly -1.5" xii) 1 No. Venturi & Manifold 1.5" (b) BIS certification/ Conform to BIS
48	<b>Drip Irrigation Set for wide spaced crop at 3m x 3m (Lateral x Dripper) spacing</b>	PMKSY	(a) Type: Drip Irrigation System with all Fittings & Accessories for Wide Spaced Crops for coverage area of 1 hectare at 3m x 3m (Lateral x Dripper) spacing and each set comprises following quantity of items as specified: i) 54 m PVC Pipe 75 mm; Class II ; 4kg / cm <sup>2</sup> ; IS : 4985 (2000) ii) 102 m PVC Pipe 63 mm; Class II ; 4kg / cm <sup>2</sup> ; IS : 4985 (2000) iii) 3333 m Lateral 12 mm Class II ; 2.5 kg / cm <sup>2</sup> iv) 2267 No Emitter 4 / 8 lph v) 1 No. Control Valve 75 mm vi) 1 No. Flush Valve 63 mm vii) 1 No. Air Release Valve 1" viii) 1 No. Non Return Valve 1.5" ix) 1 No. Throttle Valve 1.5" x) 1 No. Screen Filter 10 m <sup>3</sup> / hr xi) 1 No. By-pass Assembly -1.5" xii) 1 No. Venturi & Manifold 1.5" (b) BIS certification/ Conform to BIS

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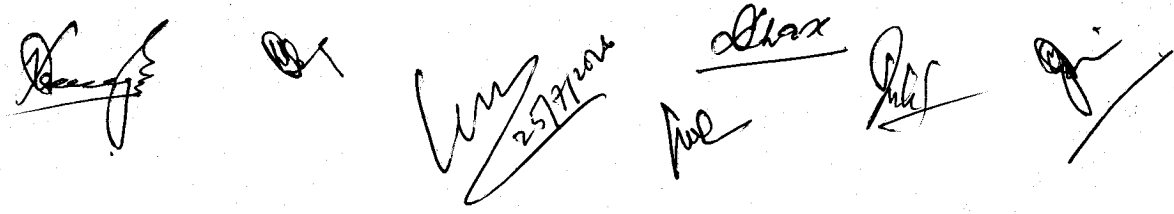
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49	<b>Drip Irrigation Set for close spaced crop at 2.5m x 0.6m (Lateral x Dripper) spacing</b>	PMKSY	<p>(a) Type: Drip irrigation system with all Fittings &amp; Accessories for close Spaced Crops for coverage area of 1 hectare at 2.5m x 0.6m (Lateral x Dripper) spacing and each set comprises following quantity of items as specified:</p> <ul style="list-style-type: none"> <li>i) 54 m PVC Pipe 75 mm; Class II; 4 kg / cm<sup>2</sup>; IS : 4985 (2000)</li> <li>ii) 102m PVC Pipe 63 mm; Class II; 4 kg / cm<sup>2</sup>; IS : 4985 (2000)</li> <li>iii) 60 m Lateral 16 mm Class II ; 2.5 kg / cm<sup>2</sup></li> <li>iv) 4040 m Emitting Pipe 16 mm Class II (0.6 m x 1 to 4 lph)</li> <li>v) 1 No. Control Valve 63 mm</li> <li>vi) 1 No. Control Valve 50 mm</li> <li>vii) 1 No. Flush Valve 50 mm</li> <li>viii) 1 No. Air Release Valve 1"</li> <li>ix) 1 No. Non Return Valve 1.5"</li> <li>x) 1 No. Throttle Valve 1.5"</li> <li>xi) 1 No. Screen Filter 10 m<sup>3</sup> / hr</li> <li>xii) 1 No. By-pass Assembly – 1.5"</li> <li>xiii) 1 No. Venturi &amp; Manifold 1.5"</li> </ul> <p>(b) BIS certification/ Conform to BIS</p>
50	<b>Drip Irrigation Set for close spaced crop at 1.2m x 0.6m (Lateral x Dripper) spacing</b>	PMKSY	<p>(a) Type: Drip irrigation system with all Fittings &amp; Accessories for close Spaced Crops for coverage area of 1 hectare at 1.2m x 0.6m (Lateral x Dripper) spacing and each set comprises following quantity of items as specified:</p> <ul style="list-style-type: none"> <li>i) 54 m PVC Pipe 75 mm; Class II; 4 kg / cm<sup>2</sup>; IS : 4985 (2000)</li> <li>ii) 102m PVC Pipe 63 mm; Class II; 4 kg / cm<sup>2</sup>; IS : 4985 (2000)</li> <li>iii) 125 m Lateral 16 mm Class II ; 2.5 kg / cm<sup>2</sup></li> <li>iv) 8417 m Emitting Pipe 16 mm Class II (0.6 m x 1 to 4 lph)</li> <li>v) 1 No. Control Valve 63 mm</li> <li>vi) 2 No. Control Valve 50 mm</li> <li>vii) 1 No. Flush Valve 50 mm</li> <li>viii) 1 No. Air Release Valve 1"</li> <li>ix) 1 No. Non Return Valve 1.5"</li> <li>x) 1 No. Throttle Valve 1.5"</li> <li>xi) 1 No. Screen Filter 10 m<sup>3</sup> / hr</li> <li>xii) 1 No. By-pass Assembly – 1.5"</li> <li>xiii) 1 No. Venturi &amp; Manifold 1.5"</li> </ul> <p>(b) BIS certification/ Conform to BIS</p>
51	<b>HDPE Pipe for Water conveyance (75 mm dia)</b>	PMKSY, BGREI	<ul style="list-style-type: none"> <li>i) Type: HDPE Pipe with QRC (Class IV; IS:14151 Part-1) for conveyance of irrigation water</li> <li>ii) Outside diameter: 75 mm</li> <li>iii) Length: 6 m</li> <li>iv) Working pressure: 6 kg / cm<sup>2</sup></li> <li>v) BIS certification/ Conform to BIS</li> </ul>
52	<b>PVC Pipe for Water conveyance (75 mm dia)</b>	PMKSY, BGREI	<ul style="list-style-type: none"> <li>i) Type: PVC Pipe (Class III; IS 4985: 2000) for conveyance of irrigation water</li> <li>ii) Outside diameter: 75 mm</li> <li>iii) Length: 6 m</li> <li>iv) Working pressure: 6 kg / cm<sup>2</sup></li> <li>v) BIS certification/ Conform to BIS</li> </ul>
53	<b>Canvas pipe for water conveyance (70 mm)</b>		<ul style="list-style-type: none"> <li>i) Type: Rubber lined or rubberized fabric lined, woven-jacketed Canvas pipe (IS: 636, Type-A) for conveyance of irrigation water</li> <li>ii) Diameter: 70 mm</li> <li>iii) Length of pipe in each coil (m): 30</li> <li>iv) Weight of each coil (Kg): 14 - 15</li> <li>v) BIS certification/ Conform to BIS</li> </ul>

54	Polyethylene Dripper pipe	NOOP, PMKSY	i) Type: <b>Polyethylene</b> Dripper pipe of Class II; (IS 12786 : 1989) to be used for irrigation Lateral for dripper/ emitter. ii) Outside diameter: 25 mm iii) Working pressure: 4 kg / cm <sup>2</sup> iv) BIS certification/ Conform to BIS
55	Polyethylene films for mulching	PMKSY	i) Type: UV stabilized Polyethylene films for mulching as per Code of Practice; IS 15177 : 2002 ii) Thickness: 100 micron iii) Colour: Black or White iv) Breadth: 120 cm v) BIS certification/ Conform to BIS
56	Polyethylene (HDPE) woven fabric (geo-membrane) for water proof lining	PMKSY	i) Type: High density polyethylene (HDPE) woven fabric (geo-membrane) laminated with low density polyethylene (LDPE) or suitable combination of LDPE and LLDPE for use as lining for pond and reservoir to control seepage; IS:15351-2008. ii) Thickness: 500 micron (0.5 mm) iii) Weight (g/m <sup>2</sup> ): 420 iv) BIS certification/ Conform to BIS
57	Polyethylene Water storage tank	NOOP	i) Type: Polyethylene Water storage tank for overhead storage of water for drip irrigation; IS 12701 : 1996 ii) Capacity: 1000 ltr. iii) BIS Certification
57	Supply, installation, commissioning and testing of Solar PV Pumping system	RIDF XXI	Type: Supply, installation, commissioning and testing of Solar PV Pumping system on turnkey basis for irrigation purpose from bore-well of 80 mm / 100 mm diameter (bore-well along with pipes & fittings are to be constructed/ provided by the purchaser/beneficiary) at various sites, as per the technical specifications mentioned below. The whole Solar PV Pump set system shall be under warranty from the supplier for a period of 1 (one) year and comprehensive maintenance for 2 (two) years thereafter. <b>1. Solar PV Array:</b> Sufficient number of modules in series and parallel could be used so that the pump-set could operate at a minimum of 85% of solar radiation to obtain the required PV array power output. The power output of individual PV modules used in the PV array, under Standard Operating Conditions (SOC) should be a minimum of 74 Watts peak, with adequate provision for measurement tolerances. Use of PV modules with higher power output is preferred. Indigenously produced PV module (s) containing mono/ multi crystalline silicon solar cells with following features should be used in the PV array for the SPV Water Pumping Systems: a) PV modules supplied with the SPV water pumping systems should have certificate as per IEC 61215/ IS 14286 specifications. b) PV modules must qualify to IEC 61730 Part 1- requirements for construction & Part 2 – requirements for testing, for safety qualification. c) The efficiency of the PV modules should be minimum 14% and fill factor should be more than 70%. d) PV module must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. e) The terminal box on the module should have a provision for "Opening" for replacing the cable, if required. f) Each PV module must use a RF identification tag (RFID),


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which must contain the following information:

- i) Name of the manufacturer
  - ii) Model or Type Number
  - iii) Serial Number
  - iv) Month and year of the manufacture
  - v) I-V curve for the module
  - vi) Peak current of the module at 33 volts
  - vii) Im, Vm and FF for the module
  - viii) Unique Serial No and Model No of the module
- f) RFID shall be mandatorily placed inside the module laminate. A distinctive serial number starting with NSM will be engraved on the frame of the module or screen printed on the tedlar sheet of the module.

**2. Motor Pump Set:**

The motor pump sets to be supplied and installed in the SPV water pumping systems, shall have the following technical parameters:

- a) Mono block AC centrifugal/ Submersible motor pump-set driving unit and impeller mounted on a common shaft, thereby giving it a perfect alignment.
- b) The pump should be provided with specially developed mechanical seals which ensure zero leakage.
- c) The motor should be of 0.75 K.W. (1HP)/1.5 kw (2HP) and compatible to both solar PV and grid electricity.
- d) The suction/ delivery pipe (GI/HDPE), electric cables, floating assembly, necessary civil work and other fittings required to install the system.
- e) Following details should be marked indelibly on the motor pump-set :
  - i) Name of the Manufacturer with Logo.
  - ii) Model Number.
  - iii) Serial Number.

**3. Mounting Structures and Tracking System:**

- a) To enhance the performance of SPV water pumping systems, the fixed structure shall be so designed to avail maximum radiation.
- b) The PV modules will be mounted on metallic structures of sufficient strength, which can withstand load of modules and high wind velocities up to 150 km per hour. The support structure used in the pumping system shall be of hot dip galvanized iron (G.I).
- c) The "Mounting Structure" should have the following features:
  - i) The modules support structure shall be mild steel, hot dipped galvanized (with minimum of 80 micron thickness) iron for holding the PV modules. The size of ground support angle iron and the main frame should not be less than 50x50x5 mm.
  - ii) Each panel frame structure shall be so fabricated as to be securely grouted on ground on cement concrete block or on roof-top on its legs. It must withstand severe cyclone/ storm with the speed of 150 Km/Hr.
  - iii) Each panel frame shall be complete with a weather proof junction box as per the relevant BIS specifications, where the module terminals shall be interconnected and output taken.
  - iv) All nuts and bolts should be of BIS specification and should be corrosion-resistant.
  - v) The structure should be designed to allow easy replacement of any Module.

25/7/2016

