Annexure

1. SUPER STRAW MANAGEMENT SYSTEM (SMS) TO BE ATTACHED WITH COMBINE HARVESTER

Sl. No.	Parameters	specifications	
		Self-Propelled	**Track Type**
	Rotor		
1.	Rotor diameter, mm	165-170	73 (Min.)
2.	No. of lugs on rotor in a row	6	4 (Min.)
3.	No. of rows in periphery	4	2 (Min.)
4.	Length of pivotal flail, mm	170-180	120 (Min.)
5.	Width of flail, mm	50±1	40 (Min.)
6.	Thickness of flail, mm	5.0 (Min.)	4±0.1
7.	No. of flails in one set	2	2
8.	Spacing between flails of one set, mm	35 (Max.)	35 (Max.) .
9.	Distance between adjacent flail units, mm	200±10	200±10
10.	No. of rows/bars of serrated blades	1	1
11.	No. of serrated blades in a row	24	24 (Min.)
12.	Spacing between serrated blades, mm	50 (Max.)	50 (Max.)
13.	Overlapping of pivotal blade on serrated blade, mm	60 (Min.)(adjustable)	60 (Min.) (adjustable)
	Spreader		
14.	Total no. of flaps	6 + 2 (side)	6+2 (side)
15.	Length of flap, cm	47±2	--
16.	Distance between flaps (left to right)	adjustable	adjustable

17.	Spreader angle with horizontal, degree	Adjustable preferably downwards	Adjustable preferably downwards
18.	Spreader angle with line of travel, degree	15 (Min.) (Adjustable)	15 (Min.) (adjustable)
19.	Spreader sheet thickness, mm	2.5-3.0	2.5-3.0
20.	SMS Sheet thickness, mm	5.0 (Min.)	5.0 (Min.)
21.	Rotor balancing	should be dynamically balanced	Should be Dynamically balanced
22.	Rotor rpm	Min 1600	1600 min.
23.	Fitting of SMS on combine harvester	Rigidly fixed to the combine chassis	Rigidly fixed to the combine chassis
24.	Fitting of power transmission system on combine harvester	Rigidly fixed to the combine chassis	Rigidly fixed to the combine chassis
25.	*Marking/labeling of machine*	Labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, Size, required size of prime mover (kW,), Weight of the machine(Kgs)	Labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, Size, required size of prime mover (kW,), Weight of the machine(Kgs
26.	*Literature*	Operator manual, Service manual and Parts catalogue should be provided	Operator manual, Service manual and Parts catalogue should be provided

For performance and Safety standards refer to IS 15806-2018

2. HAPPY SEEDER

Sl.No.	Parameters	*Specifications*
1.	No. of tynes	*9/10/11/12/13*
2.	Row to row distance (mm)	*225 ±2 (Adjustable)*
3.	Type of furrow openers	*Inverted T-type*
4.	Minimum Rotor drum diameter(with flail blades)	*675±25*
5.	Rotor shaft diameter, *mm*	*135-145*
6.	Rotor RPM	*1400-1600 rpm at 540/1000 rpm of tractor PTO*
7.	Types of blades	*Flail, reversible straight, gamma type*
8.	Blade material	*Boron 28MnCrB_5/High carbon Steel EN42j*
9.	Diameter of ground wheel, *mm*	*550 (minimum)*
10.	Blade overlapping above furrow openers, *mm*	*50-60*
11.	Seed and fertilizer hoppers	*Separate Hoppers (trapezoidal shape) for Fertilizer and Seeds with mechanism for feed rate control. The hoppers should be sufficiently covered to prevent the entry of water. The thickness of sheet should be ≥ 1.0 mm for mild steel and ≥ 0.63 for GI sheet*
12.	Seed and fertilizer tubes	*Without any sharp bend and should be transparent plastic , thickness (minimum 2.5 mm)*
13.	Seed and Fertilizer metering mechanism	*Components of fluted roller or plate type mechanism*
14.	Rotavator shield to prevent flying of mud & stone	*must be provided*
15.	*Safty*	*Safety cover must be provided on all moving parts*
16.	*Marking/labeling of machine*	*The labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, Size, (Number of rows x Row spacing (cm), Name of crops sown Recommend, required size of prime mover (kW), weight of the Machine,(kg)*
17.	Guard over propeller shaft	*must be provided*
18.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

3. PADDY STRAW CHOPPER

Sl.No.	Parameters	specifications
1.	Machine type	Tractor operated
2.	Working width, mm	1800 (min.)
3.	Speed of cutter bar, (No. of strokes/min)	800±50
4.	No. of row of flails	4
5.	No. of flails on each rows	4 (min)
6.	Shape of the flail	Flat Bar type
7.	Cylinder dia. of chopping mechanism, cm	Large cylinder – 80/57 ; Small cylinder- 40/25
8.	No. of rows of serrated blades on chopping cylinder	Large cylinder – 14/10; Small cylinder- 6/6
9.	No. of rows of serrated blades on inside the concave	Large cylinder- 2-3; Small cylinder - 1
10.	No. of blades on each rows	17-22
11.	*Material of Blade*	Boron (28MnCrB5) / High Carbon Steel EN 42 j (Min)
12.	*Hardness* ,HRC	38 (Min.)
13.	*Marking/labeling of machine*	The labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, Size, required size of prime mover (kW)
12	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

4. **SHRUB MASTER**

Sl.No.	**Parameters**	**Specifications**
1.	Size (mm) (Square)	1200 to 1800
2.	Cutting Height (mm)	50 (Max.)
3.	Weight (Kg)	200 (Min.)
4.	Blade material	Boron (28MnCrB5) / High Carbon Steel EN 42j (Min)
5.	Hardness, HRC	36 (Min.)
6.	*Marking/labeling of machine*	The labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, Size, required size of prime mover (kW), Weight of the machinery.
7	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided.*

5. Hydraulically Reversible MB Plough

Sl.No.	Parameters	Specifications
1.	Number of Bottoms	One /Two/Three/Four
2.	Working width (mm)	250 (Min) per bottom
3.	Under frame Clearance, mm (adjustable)	700 (Min.)
4.	Inter body Clearance, mm	700 (Min.)
5.	Reversing mechanism	Hydraulically
6.	Angle of Inclination of MB along the direction of travel (degree)	20 to 23
7	a. Thickness of Mould Board (mm)	8.0 (Min.)
	b. Hardness (HRC)	Min 38
8.	a. Plough Share Bar thickness (mm)	12 (min.)
	b. Material	Boron (28MnCr B5) / High Carbon Steel EN 42j (Min)
	c. Hardness (HRC)	38
9.	Vertical Suction, mm	6 to 19
10.	Horizontal suction, mm	3 to 20
11	*Thickness of Share cutting edge (mm)*	2.0 to 5.0 and should be uniform
12	*Joint Mechanism for share , Mould board and share bar*	By Appropriate Bolts & nuts only.
13.	*Marking/labeling of machine*	The labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, Size, required size of prime mover (kW), Weight (kg)
14	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

6. Mulcher

Sl.No.	Parameters	Final specifications
1.	Machine type	Tractor PTO driven, Mounted type
2.	Working width, mm	1500 (min.)
3.	Speed of flail rotary, rpm	2000 (Min.) at standard PTO speed.
4.	No. of row of flails	2-4
5.	No. of flails on each rows	14-20
6.	Shape of the flail	Inverted Gamma type
7.	Cylinder dia. of chopping mechanism, cm	48 (min.)
8.	No. of rows of serrated blades on inside the concave	2-3
9.	No. of blades on each rows	17-21
10.	*Marking/labeling of machine*	The labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, Size, required size of prime mover (kW), weight(Kg)
13	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided.*

7. ZERO TILL SEED CUM FERTILIZER DRILL

Sl.No.	Parameters	*specifications*
1.	No. of tynes	9/11/13/15/17/19/21
2.	Row to row distance, mm	150 to 225 (adjustable)
3.	Type of furrow openers	Inverted T-type
4.	Minimum diameter of ground wheel ,mm	300
5.	Seed and fertilizer hoppers	Separate Hoppers (trapezoidal shape) for Fertilizer and Seeds with mechanism for feed rate control. The hoppers should be sufficiently covered to prevent the entry of water. The thickness of sheet should be ≥ 1.0 mm for mild steel and ≥ 0.63 for GI sheet
6.	Working width, mm	1500 (min)
7.	Seed and fertilizer tubes	Without any sharp bend and should be transparent plastic , thickness (minimum 2.5 mm)
8.	Seed and Fertilizer metering mechanism	Components of fluted roller or plate type mechanism
9.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, Size, (Number of rows x Row spacing (cm), Name of crops sown Recommend, required size of prime mover (kW), Weight(kg)
10.	Literature	Operator manual, Service manual and Parts catalogue should be provided

8. ROTAVATOR

Sl.No.	Parameters	Specifications
1.	Working width (mm)	1200 (Min.)
2.	Type of blade	C/L/J shape as per demand
3.	Overlap, mm	15 (min.)
4.	Thickness of blade (mm)	7-8 (min.)
5.	No. of Blades	30 (Min.)
6.	Total number of flanges	5 (Min.)
7.	Number of blades per flange	6 (max.)
8.	Outer Diameter of rotor shaft with blade ,mm	75 - 90
9.	Rotor diameter, including flange and blade mounted on flange, mm	425 (Min.)
10.	Side Drive	Gear drive
11.	Depth control mechanism	Arc shaped skid on both side of rotavator
12.	Material of blades	Boron (28MnCrB5) / High Carbon Steel EN 42j
13.	Hardness of Blade Material, *HRC*	38 (Min)
14.	Safety clutch / device(Shear bolt) in PTO drive shaft	must be provided
15.	Rotavator stand	must be provided
16.	Guard over propeller shaft	must be provided
17.	*Sheet metal*	AS36 / IS 2062
18.	*Marking/labeling of machine*	The labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, Size, required size of prime mover (kW)
19.	*Literature*	Operator manual, Service manual and Parts catalogue should be provided

9. Cultivator

Sl.No.	Parameters	Specifications
1.	Type	*Rigid or Spring loaded*
2.	Hitch Type	*Three Point linkage, CAT-I/CAT-II*
3.	Number of tine	*5,7,9,11 or 13 (11 and above preferably folding)*
4.	Working width (meter)	*0.8 (Min)* *1.05 (Min)* *1.35 (Min)* *1.65 (Min)* *1.95 (Min)*
5.	Row to row spacing between tine, mm	*Adjustable, preferably in steps 0f 25 cm*
6.	Frame	*Shall be Rigid and strong*
7.	Type of working tool	*Reversible shovel, Sweep and Triangular shovel*
8.	Material of tyne	*High Carbon steel for spring loaded &* *MS for rigid tyne*
	Thickness of tyne, (mm)	*22 (Min.) & 25(Min)*
9.	Material of shovel	*High carbon steel EN42j*
10.	Hardness of shovel and sweep, HRC	*Min 36-45*
11..	Center to center distance tool bar, mm	*450(Min)*
12..	Spring Index	*4 to 5*
13..	Marking/labeling of machine	*The labelling plate should be riveted on the body of machine having Name and Address of manufacture, Country of origin, Make, Model, Year of manufacture, Serial number, Type, Size, required size of prime mover (kW)*
14.	Literature	*Operator manual, Service manual and Parts catalogue should be provided*

10. Disc Harrow

Sl.No.	Parameters	Specifications
1.	Number of disc in each gang	Four (Min.)
2.	Power Source	Tractor operated
3.	Type of Disc	Plain or notched
4.	Diameter of Disc, mm	455 to 660
5.	Gang angle,(°)	Up to 24
6.	Bevel angle, (°)	30 or 40
7.	Length of spool, (mm)	175 or 225±2
8.	Hardness of Disc, HRC	38 to 45
9.	Thickness of beveled edge, (mm)	0.5 to1.5
10.	Width of beveled edge, (mm)	22 (max)
11.	Thickness of Disc, (mm)	5.0 (mini)
12.	Type of center hole	Square/Circular with key
13.	Concavity	82.5±5
14.	Scraper	Must be provided
15.	Material of Disc	Carbon Steel EN 45 equivalent to SAE 1070 grade and Boron Steel EN 10083 (30 MnCr B5)
16.	Hardness HRC	38 (Min) 48 (boron Steel)
17.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having Name and Address of manufacture, Country of origin, Make, Model, Year of manufacture, Serial number, Type, Size, required size of prime mover (kW), Weight (Kg)
18.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

11. MOULD BOARD PLOUGHS

Sl No	Parameters	Specifications
1.	Number of bottoms	Two/Three/four/five (Subject to availability of Test Reports for 4 & 5 bottoms)
2.	Power Source	Tractor operated
3.	Hitch Type	Three Point linkage, CAT-I/CAT-II
4.	Working Width (mm)	250(Min) per bottom
5.	Vertical suction (mm)	6 to 19
6.	Horizontal suction (mm)	3 to 20
7.	Thickness of Cutting edge, (mm)	2-5 and should be uniform
8.	Thickness of Mould board, (mm)	8 (Min.)
	Hardness ,HRC	36
9.	Thickness of share tool bar , (mm)	12 (Min.)
	Share tool bar material	Boron(30MnCrB5)/ High Carbon Steel En44
	Hardness, HRC	48 (Min.)
10.	Marking/labeling of machine	The labelling plate should be riveted on the body of machine having Name and Address of manufacture, Country of origin, Make, Model, Year of manufacture, Serial number, Type, Size, required size of prime mover (kW), weight (Kg)
11.	*Literature*	Operator manual, Service manual and Parts catalogue should be provided

12. TRACTOR OPERATED DISC PLOUGHS

Sl.No.	Parameters	Specifications
1.	Number of bottoms	Two/Three/Four
2.	Hitch Type	Three Point linkage, CAT-I/CAT-II
3.	Working Width (mm)	Two bottom - 600 (Min.) Three bottom- 850 (Min.)
4.	Type of Disc	Plain
5.	Diameter of Disc, mm	610 to 810
6.	Disc angle,(°)	42±3
7.	Tilt angle,(°)	15 to 25
8.	Hardness of Disc, HRC	40 (Min.)
9.	Thickness of beveled edge, (mm)	0.5 to1.5
10.	Thickness of Disc, (mm)	5.0 (Min.)
11.	Material of disc	Carbon Steel EN 45 equivalent to SAE 1070 grade and Boron Steel EN 10083 (30 MnCr B5)
12.	Hardness of material, HRC	38 (min) for carbon Steel 48 (min) for Boron steel
13.	Type of center hole	Square
14.	Concavity, mm	100±6.5
15.	Marking/labeling of machine	The labelling plate should be riveted on the body of machine having Name and Address of manufacture, Country of origin, Make, Model, Year of manufacture, Serial number, Type, Size, required size of prime mover (kW), Weight, (kg)
16.	Literature	Operator manual, Service manual and Parts catalogue should be provided

13. Straw Reaper

Sl.No.	Parameters	Specifications
1.	Towing hook type	Clevis/Circular
2.	Power input shaft connection to tractor PTO	Propeller shaft with universal joint
3.	Cutting width, mm	1500 to 2500
4.	Speed of chopping cylinder, rpm	800 to 1000
5.	Chopping cylinder dia. mm	700 to 900
6.	PTO drive shaft - Safety against overload - Guard on shaft	Compliant with BIS code Must be provided Must be provided
7.	Safety cover on all drive	Must be provided.
8.	Chopping cylinder blade	Serrated
9.	Material of blade and ledger plate	High carbon steel EN 42J & EN 44
10.	Hardness of Blade and ledger plate, HRC	36 and 45 (Min.)
11.	Provision for concave clearance adjustment	Must be provided
12.	Provision for grain recovery	Must be provided
13.	Reel type	Pick up tyne
14.	Diameter of tyne bar, mm	20 (Min.)
15.	Arrangement for forward & backward movement of reel	Must be provided.
16.	Labeling of lubricating points	Must be provided.
17.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover (kW/Hp)
18.	Literature	Operator manual, service manual & parts catalogue should be provided.

14. SEED CUM FERTILIZER DRILL

Sl.No.	Parameters	Specifications
1.	Size/Working width (mm)	No. of furrow openers X spacing between adjacent furrow openers
2.	Type of furrow opener	Shovel (Single point / reversible / spear point) / shoe type/ disc type (flat / concave disc)
3.	Number of furrow openers	*9-21*
4.	Row spacing (mm)	Adjustable/Step or step less
5.	Type of seed metering mechanism	Fluted roller/Plate type
6.	Type of fertilizer metering mechanism	Fluted roller/Plate/Agitator type
7.	Diameter of ground wheel (mm)	300 (Min.)
8.	Seed/fertilizer hopper sheet thickness (mm)	MS 1.0 (Min.) GI 0.63 (Min.)
9.	Thickness of seed/fertilizer tubes(mm)	Transparent plastic tubes with 2.5 mm (Min.)
10.	Material of furrow opener,	High Carbon Steel EN42j / -*Boron(28MnCrB5)*
11.	Hardness of furrow openers, HRC	36 (Min.)
12.	Provision for adjusting the row spacing	Must be Provided
13.	Provision for adjusting depth of seed and fertilizer	Must be Provided
14.	Provision for adjusting the seed/fertilizer rate	Must be Provided
15.	Provision of transparent seed/fertilizer tubes	Must be Provided
16.	Provision of foot board	Must be Provided
17.	Provision of covering device / press wheel	Must be Provided
18.	Provision of row marker	Must *be* provided

19.	Provision of metallic calibration plate	Must be provided
20.	Seed and fertilizer rate adjustment, Kg/ha	Max. 125 and 500 for seed and fertilizer respectively
17.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover (kW/Hp)
21.	Provision of printed literature	Operator manual, Parts catalogue and Service/Workshop manual

15. STRIP TILL DRILL (Tractor Operated)

Sl.No.	Parameters	Specifications
1.	Type	Rotary
2.	Size (mm)	Working width 15. STRIP TILL DRILL (Tractor Operated)
3.	Type of drive	Gear/Chain drive
Seeding attachment		
4.	Type of furrow opener	Shovel (Single point/ reversible shovel/ spear point)/ shoe type/ disc type (flat/concave disc)
5.	Number of furrow openers	7/9/11/13
6.	Row spacing (mm)	150 to 300 Step/step less
7.	Type of seed metering mechanism	Fluted roller/Plate type
8.	Type of fertilizer metering mechanism	Fluted roller/Plate type/Agitator
9.	Diameter of ground wheel, mm	300 (Min.)
10.	Seed/fertilizer hopper sheet thickness, mm	MS 1.0 (Min.) GI 0.63 (Min.)
11.	Thickness of seed/fertilizer tubes mm	Transparent plastic tubes with 2.5 mm (Min.)
12.	Material of furrow opener	*Boron* steel *(28MnCrB5)* High Carbon Steel, C75/EN42j
13.	Hardness of furrow openers, HRC	36 to 45
14.	Provision of safety clutch/ device (shear bolt) in PTO drive shaft	Must be Provided
15.	Provision of rotavator shield to prevent flying of mud & stone	Must be Provided
16.	Guard over propeller shaft	Must be Provided
17.	Provision for adjusting the row spacing	Must be Provided

18.	Provision for adjusting depth of seed and fertilizer	Must be Provided
19.	Provision for adjusting the seed/fertilizer rate	Must be Provided
20.	Provision of transparent seed/fertilizer tubes	Must be Provided
21.	Provision of foot board	Must be Provided
22.	Provision of covering device / press wheel	Must be Provided
23.	Provision of row marker	Must be Provided
24.	Provision of metallic calibration plate	Must be Provided
25.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover (kW/Hp)
26.	Provision of printed literature	Operator manual, Parts catalogue and Service/Workshop manual

16. Laser Leveler

S.No.	Parameters	Specifications
1.	Power Source	Tractor
Laser Transmitter		
2.	Laser Source Wattage, mW	< 5.0
3.	Laser Source Range , nm	630 to 680
4.	Laser Class	3A/3R
5.	Operating Temperature, ^{o} C	-20 to +70 ±10%
6.	Compensation Method	Electronic Self Leveling through Steeper Motor
7.	Rotation Speed, rpm	600 (min)
8.	Level Accuracy, mm/30m	1.5 (min)
9.	Operating Diameter, m	600-800
10.	Level Indicator	LED Flash
11.	Power Supply	Internal & External DC Battery with Charger
12.	Enclosure	Rugged with minimum one-meter drop height on concrete
Laser Receiver		
13.	Laser Beam Reception	360 ^{o}
14.	Vertical Reception Window, mm	Four Windows of 170 to 230 each
15.	Dead Band, mm	10 to 15
16.	LED Display	Red = Hi/Low, On Grade = Green
17.	Operating Temperature ^{o}C	-20 to + 70 ± 10%
18.	Operating Range, m	400- Radius
19.	Laser RPM	600/1200
20.	Enclosure	Rugged, Aluminum or any other alloy, Rust Proof.
Control Box		
21.	On Grade LED's	Green
22.	High/Low LED's	Red
23.	Operating Voltage	10 to 30 VDC, Polarity Protected
24.	Operating Temperature , ^{o}C	-20 to + 70 ± 10%
25.	Electrical Connections	All Standard Military Type

26.	Valve Compatibility	Proportional Type (on/off) only
27.	Current Usage, Amp(A)	5 to 10
28.	Switch Options	Raise / Lower, Auto Manual
29.	Enclosure Type	Casted Aluminum or any Alloy, Rust Proof
30.	Cables	Set of Cables with Military Connectors
31.	Accessories	Survey scale, Survey Receiver
Bucket Scrapper		
32.	Working Width, mm	1500 to 2500
33.	Bucket Depth, mm	600. (Min)
34.	Material,	MS Sheet, B2062 /EN10130
	Sheet Thickness, mm	10
35.	Blade Height, mm	125±5
36.	Blade Thickness, mm	12 ±0.5
37.	Blade Material	High Carbon Steel, EN8 and above
38.	No of Tyres	2/4 (6X16)
39.	Mast	Rigid Mast/ Gear Mast/ Electric Mast
40.	Hydraulic Cylinder	Automatic Double Acting Hydraulic Cylinder
41.	Hydraulic Valve	Automatic Double Acting Hydraulic Valve assemble with pressure relive valve
42.	Accessories	Set of High-Pressure Hoses, Firm Tripod Stand, Top Link
43.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, wt in Kg, tractor kW/hp.
44.	Literature	Operator manual, service manual & parts catalogue should be provided

- All the laser leveler should be fitted with GPS Tracker

17. Portable Engine Operated Sprayer

Sl.No.	Parameters	Specification
1.	Tank capacity	--
2.	Discharge (ml/min)	8000 (min) at rated speed and rated pressure
3.	Pressure regulator	Must be provided
4.	Horizontal thrown up jet spray m.	6 (Min)
5.	Mass of spray gun, Kg	1.6(Max)
6.	Spray gun marking	Manufacturer name or recognized trade mark, & batch or code number As per BIS code
7.	Marking of nozzle	Manufacture Name/Trade name, Batch or Code number, Nozzle designation must be provided. As per BIS code
8.	Pressure gauge	Must be provided
9.	Safety accessories	Mask, hand gloves and safety goggles, Apron, Gum boots must be provided
10.	Necessary tools & spares	Spanners, set of gasket, measuring jar should be provided
11.	Marking/labeling of sprayer	Must be riveted on the body of sprayer having name & address of manufacturer, month & Year of manufacture, Rated speed, Rated pressure, discharge rate, power rating of engine, SFC of engine.
12.	Literature	Operator manual, service manual & parts catalogue should be provided, One day training

18. POTATO PLANTER

Sl.No.	Parameters	Specifications
1.	Type	Semi-automatic / Automatic
2.	Type of furrow opener	Ridger type with adjustable wings
3.	Number of furrow openers	2/3/4/5
4.	Type of seed metering mechanism	Horizontal revolving ring (Semi-automatic); Belt with cups/ Picker wheel type (Automatic)
5.	Row spacing (mm)	560 to 900 for semi-Automatic
6.	No. of rows of cups per belt	1 (min) for automatic
7.	Diameter of ground wheel, mm	300 to 650
8.	Seed hopper sheet thickness, mm	Mild Steel. 1.0 (Min.) Galvanized steel 0.63 (Min.) (IS: 6813)
9.	Material of furrow opener	High Carbon Steel EN42j / C75 or Higher
10.	Type of power transmission	Sprocket and chain / belt and pulley / gear type with proper guards.
11.	Provision for fertilizer placement	Must be Provided
12.	Provision for changing ridge spacing	Must be Provided
13.	Provision for adjusting the row spacing	Must be Provided
14.	Provision for changing plant spacing	Must be Provided
15.	Provision for adjusting depth of seed	Must be Provided
16.	Provision for adjusting the seed rate	Must be Provided
17.	Provision of foot rest	Must be Provided
18.	Provision of covering device	Must be Provided
19.	Provision of row marker	Must be Provided
20.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover kW/hp, weight(Kg)
21.	*Literature*	Operator manual, Service manual and Parts catalogue should be provided

19. Tractor operated Aero Blast sprayer

Sl.No.	Parameters	Specifications
1.	Tank capacity	100 (Min).
2.	Pressure regulator	Must be provided
3.	Pressure gauge with pressure dampener	Liquid Filled Pressure gauge must be provided
4.	Discharge rate, ml/min	Min. 8000 at rated speed and rated pressure
5.	Strainer at filling hole	Must be provided
6.	Nozzle designation and marking	Designation, manufacturers name or recognised trade mark & batch or code number should be marked
7.	Safety wear	Mask ,Apron, hand gloves, goggles and Gum boots must be provided ,
8.	Provision of drain plug in the tank	must be provided
9.	**P.T.O. drive shaft** - Safety against overload - Guard on shaft	 Must be provided must be provided
10.	Guard on belt pulley drive	Must be provided
11.	Labeling plate of sprayer	Metallic labeling plate should be riveted with following information: Manufactures name, make,model serial number, month & year of manufacture, rated speed, rated pressure and recommended tractor horse power
12.	Literature	Operator manual, service manual & parts catalogue should be provided English, Hindi & regional languages.

20. Manually Operated Knapsack Sprayer

Sl.No.	Parameters	Specifications
1.	Tank capacity, l	10, 13 or 16 with tolerance of ±0.5 liter.
2.	Straps, mm	Strap length 800 (min) & width 38 (min.)
3.	Pump discharge, ml/min	> 500 at 300 kPa pressure
4.	Tank filling hole dia, mm	90 (min)
5.	Tank material	Brass, plastic or stainless steel
6.	Lid or cap material	Brass, plastic , stainless steel
7.	Strainer at filling hole & at cut off device	Must be provided
8.	Empty mass of sprayer, Kg	8.0 (Max.)
9.	Delivery hose length, cm	110 (Preferably)
10.	Cushion on strap, mm	Thickness 20 (min) and width 40 (min.)
11.	Back rest cushion	Must be provided
12.	Spray lance marking	Manufacturer name or recognized trade mark, nominal length & batch or code number
13.	Safety accessories	Mask, Apron ,hand gloves, gum boots and safety goggles must be provided
14.	Marking of nozzle	Manufacture Name/Trade name, Batch or Code number, Nozzle designation must be provided. As per BIS
15.	Spray lance construction	Should be seamless
16.	Making/labeling of sprayer	The labeling plate should be provided on the body of sprayer having name & address of manufacturer, month & year of manufacture, rated pressure, discharge rate, country of origin.
17.	Literature	Operator manual, service manual & parts catalogue should be provided

21. Tractor Operated Boom Sprayer

Sl.No.	Parameters	Specification
1.	Tank capacity	Should not be less than 100 Lit.
2.	Provisin for folding of boom	Must be provided
3.	Pressure regulator	Must be provided
4.	Pressure gauge with pressure dampener	Liquid Filled Pressure gauge must be provided
5.	Discharge rate ,ml/min	Min 8000. at rated speed and rated pressure
6.	Strainer at filling hole	Must be provided
7.	Spray gun designation and marking	Designation,manufacturers name or recognised trade mark & batch or code number should be marked
8.	Length of spray boom, *m*	*6 (Min.)*
9.	Nozzle designation and marking	Designation,manufacturers name or recognised trade mark & batch or code number should be marked
10.	P.T.O. drive shaft - Safety against overload - Guard on shaft	 mustbe provided must be provided
11.	Guard on belt pulley drive	mustbe provided
12.	Safety wear	Mask, hand gloves, gum boots and goggles, Aprons must be provided
13.	Labeling plate of sprayer	Metallic labeling plate should be riveted with following information Manufactures name, make,model serial number, month & year of manufacture, rated speed, rated pressure and recommended tractor horse power
14.	Literature	Operator manual, service manual & parts catalogue should be provided

22. Dal Mill

Sl.No.	Parameters	Specifications
1.	Capacity, kg/hr	100 (Min.)
2.	Input	Preconditioned whole raw pulses
3.	Output	Dehusked pulses, split pulses, broken & husk
4.	Grades	To separate whole dehusked pulses, split & broken.
5.	Husk separation	Husk separation through aspirator assembly
6.	Oil can	Oil can provided for oil treatment during dal processing.
7.	Cautionary notice	Must be provided
8.	Marking/labeling of machine	The labelling plate should be riveted on the body of machine having Name and Address of manufacture, Country of origin, Make, Model, Year of manufacture, Serial number, Type, required size of prime mover (kW)
9.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

23. Rice Mill

Sr.no.	Parameter	Specification
1.	Capacity of mini rice mill, kg of paddy per hour.	750 minimum
2.	Sheet thickness used for construction of various part, mm	0.7 (Min.)
3.	Roller Hardness of polisher, HRC	40 (Min.)
4.	Hopper sheet thickness of polisher , mm	0.5 (Min.)
5.	Cautionary notice	Must be provided
6.	Marking/labeling of machine	The labelling plate should be riveted on the body of machine having Name and Address of manufacture, Country of origin, Make, Model, Year of manufacture, Serial number, Type, required size of prime mover (kW)
7.	Literature	Operator manual, Service manual and Parts catalogue should be provided

24. Potato Digger

Sl.No.	Parameters	Specifications
1.	Type of digging blade	V type edge/Trapezoidal plate type
2.	Working width blade/plate, mm	50 (Min.)
3.	Thickness of blade/plate (mm)	8 (Min.)
4.	Number of gauge wheels	2
5.	Total Length of elevator/conveyor chain (mm)	1500 to 2550 (Single conveyor) 1405 + 1130 (Double conveyor)
6.	diameter of rod for conveyor chain, mm	10 (Min.)
	Material	MS C45
7.	Spacing between conveyor rods (mm)	25 (Min.)
8.	Angle of inclination of elevator with horizontal (deg.)	18 to 20^{o} (Adjustable)
9.	Provision of safety clutch/ device (shear bolt) in PTO drive shaft	Must be Provided
10.	Guard over propeller shaft	Must be Provided
11.	Provision of guards over transmission for safety	Must be Provided
12.	Provision for transportation	Must be Provided
13.	Provision for varying depth of cut	Must be Provided
14.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover kW/hp
15.	Literature	Operator manual, Service manual and Parts catalogue should be provided

25. Hay Rake

Sl. No.	Parameters	Specifications
1.	Type	Tractor operated Wheel rake/ rotary rake / *Side delivery rake*
2.	Working width, m	1.0 (min.)
3.	Hitching system	Three point linkage/draw bar hook
4.	Swathing mechanism	Rake wheels/ Tyne arm
5.	Dia. of tines (mm)	6 Min.
6.	Marking/labeling	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover *kW/hp*
7.	Literature	Operator manual, service manual & parts catalogue should be provided

26. Multi-crop Thresher

Sl.No.	Parameters	Specifications
1.	Type	Tractor/Power tiller/Engine/Electric motor operated
2.	Type of crop feeding	Chute-fed,/ conveyor –fed / feed roller-fed / hopper-fed
3.	Type of threshing drum/cylinder	Hammer mill / Rasp bar/ Spike tooth/ Syndicator
4.	Suitability of crop	Cereals / Paddy / Soybean / Ground nut, etc. / Multi-crop (Min 2 crops)
5.	Total length of feeding chute and covered portion (mm)	900 (min) and 450 (min)
6.	Material and thickness of feeding chute/hopper (mm)	MS sheet 1.6 (min)
7.	Number of hammers/ beaters/ rasp bars/ spikes/ chopping knives	Depending on the size of drum
8.	Number of sieves	2(min)
9.	Dimension of sieves / size of apertures or holes, mm	Thickness of sieve 1.0 (min)
10.	Number of blower/aspirator	1(min)
11.	Concave clearance (mm) :	15 (min) adjustable
12.	Recommended threshing cylinder speed (rpm)	To be declared by the manufacturer
13.	Recommended blower speed (rpm)	To be declared by the manufacturer
14.	Provision of adjusting concave clearance	Must be Provided
15.	Provision of changing cylinder/drum speed	Must be Provided
16.	Provision of changing blower speed	Must be Provided
17.	Provision of changing air-flow rate	Must be Provided
18.	Provision of changing shaker unit speed	Must be Provided

19.	Provision of changing sieve inclination	Must be Provided
20.	Provision of easy replacement of sieves	Must be Provided
21.	Guards against all moving parts/drives	Must be Provided
22.	Guard over propeller shaft (if applicable)	Must be Provided
23.	Protection against entry of dust in bearings	Must be Provided
24.	Provision of stand for storage/parking	Must be Provided
25.	Provision for transportation of thresher	Must be Provided
26.	Provision of label/plate containing cautionary notices in vernacular languages and their pictorial representation as per Indian Standard	Must be Provided
27.	Recommended speed of threshing cylinder (rpm)	Must be provided
28.	Direction of rotation of threshing cylinder	Clockwise/anti-clockwise
29.	Marking/labeling	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover *kW/hp*
30.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

27. **BRUSH CUTTER**

Sl.No	Parameters	Specification
1.	Type	Self-propelled, portable
2.	Type of cutting attachment	Circular disc/Straight blade/nylon rope
Circular blade		
3.	Material of circular/straight blade	Alloy steel
4.	No. of teeth on circular disc blade	50-100
5.	Root diameter/ Overall diameter (mm)	200-270
6.	Thickness of disc (mm)	1.5 Min.
7.	Teeth thickness (mm)	2.0 Min.
8.	Material of Blade	M42
9.	Hardness of Blade, HRC	68-70
Straight blade		
10.	Diameter of straight blade (mm)	250-350
11.	Width at ends/at center (mm)	50/70, Min.
12.	Thickness of straight blade (mm)	1.5 Min.
Nylon rope		
13.	Length of nylon rope (mm)	2000-4000
14.	Diameter of nylon rope (mm)	2.5 to 4.0
15.	Type of engine	Compression ignition/Spark ignition
16.	Starting method	Manual/recoil/self-starting
17.	Type of clutch	Cone/centrifugal
18.	Type of gear drive	Bevel pinion
19.	Capacity of fuel tank (l)	1.0(Min.)
20.	On off provision in fuel supply system	Must be provided
21.	Provision for easy start of engine	Must be provided
22.	Provision for emergency stop of engine	Must be provided
23.	Provision for shield/cover to prevent flying of mud & stone from rotor	Must be provided
24.	Provision for Grass deflector at the rear of the cutting mechanism	Must be provided

25.	Provision for Pad with shoulder belt to dampen the vibration	Must be provided
26.	Provision for cover on exhaust.	Must be provided
27.	Direction of exhaust emission away from operator	Must be provided
28.	Provision for safety kit (helmet, ear plug, mask, hand gloves, safety glass, Protective cloth, safety shoes)	Must be provided
29.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer & Applicant, Country of origin, Make, Model, Year of manufacturer, Serial number, Engine number, Engine HP, rated rpm & SFC.
30.	Literature	Operator manual, Service manual and Parts catalogue should be provided.

28. SELF PROPELLED WEEDER

Sl.No.	Parameters	Specifications
1.	Type	Self-propelled, walk behind
2.	Working width (mm)	300 – 1500
3.	Type of engine	Compression ignition/Spark ignition
4.	Starting method	Manual/recoil/self-starting
5.	Type of clutch	Dry/Wet
6.	Type of primary gear box	Sliding/constant mesh or combination of both
7.	Type of secondary gear box	Gear type
8.	Material for rotor shaft	SAE 1045 (CRS) / EN8 / EN9
9.	No. of flanges	4 - 10
10.	Type of flanges	Square/circular/rectangular
11.	Distance between consecutive flanges(mm)	80 to 150
12.	No. of blades in each flange	3- 6
13.	No. of rotor blade	12 (Min.)
14.	Thickness of rotor blade (mm)	5 (Min.)
15.	Material of blade	Boron (28MnCrB5) / High Carbon Steel EN 42j
16.	Hardness of Blade, HRC	*38 (Min.)*
17.	Shape of rotor blade	C /J shape
18.	Provision for handle height adjustment	Must be provided
19.	Provision for handle rotation	Must be provided
20.	Provision for emergency stop of engine	Must be provided
21.	Provision for easy start of engine	Must be provided
22.	Provision for shield/cover to prevent flying of mud & stone from rotor	Must be provided
23.	Depth control mechanism	Must be provided
24.	Provision for transport wheels	Must be provided
25.	Provision for cover on exhaust.	Must be provided
26.	Direction of exhaust emission away from operator	Must be provided

27.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer & Applicant, Country of origin, Make, Model, Year of manufacturer, Serial number, Engine number, Engine HP, rated rpm & SFC.
28.	Literature	Operator manual, Service manual and Parts catalogue should be provided.

29. PNEUMATIC PLANTER

Sl.No	Parameters	Specifications
1.	Size	No. of furrow openers × spacing between adjacent furrow openers
2.	Type of furrow opener	Runner /Disc type
3.	Number of furrow openers (for seed and fertilizer each)	2-6
4.	Row spacing (mm)	300 (Min.)
5.	Type of seed metering mechanism	Vacuum seed metering mechanism
6.	Seed/fertilizer hopper sheet thickness, mm	MS 1.0 (Min.) GI 0.63 (Min.) (IS: 6813) FRP 2.5 (Min.)
7.	Thickness of seed/fertilizer tubes	Transparent plastic tubes with 2.5 mm (Min.)
8.	Material of furrow opener	Boron steel 28 MnCrB 5. High Carbon Steel EN42 j and above
9.	Hardness of furrow openers, HRC	38 (min)
10.	Guard over propeller shaft	Must be Provided
11.	Provision for adjusting the row spacing	Must be Provided
12.	Provision for adjusting depth of seed/fertilizer	Must be Provided
13.	Provision for adjusting the seed/fertilizer rate	Must be Provided
14.	Provision of covering device / press wheel	Must be Provided
15.	Provision of row marker	Must be Provided
16.	Provision of metallic calibration plate/ Calibration Chart	Must be Provided
17.	Marking/labeling	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover *kW/hp*
18.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

30. RICE TRANSPLANTER

Sl.No.	Parameters	Final Specifications
1.	Type of machine	Manually operated walk behind/ self-propelled walk behind/ self-propelled ride-on type
2.	Working width (mm)	880 (Min)
3.	Type of planting mechanism	Finger type for mat type nursery/ cup type for seedling cups
4.	Number of rows	4,6,8
5.	Row spacing (mm)	220 to 300 (Adjustable)
6.	Average hill spacing (mm)	120 to 250 (Adjustable)
7.	Type and number of floats	Wooden plank/metallic sheet/PVC sheet/hollow plastic.
8.	Angle of mat sliding board, (degrees)	45 to 70 (Adjustable)
9.	Material of planting fork/fingers/tweezers	Stain steel type 4 and above
10.	Provision for adjusting the row spacing	Must be provided
11.	Provision for adjusting depth of planting	Must be provided
12.	Provision for adjusting hill spacing	Must be provided
13.	Provision for adjusting no of plants per hill	Must be provided
14.	Provision for area recorder	Must be provided
15.	Marking/labeling	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover *kW/hp*
16.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

31. FORAGE HARVESTER (Single row)

Sl.No.	Parameters	Specifications
1.	Type	Tractor mounted, PTO Powered / Pull type
2.	Power source	Tractor of 45 HP and above
3.	No. of rows	1 to 5
4.	Working width (mm)	600
5.	Material of main frame	Mild steel
6.	Type of gear box	Gear/chain & sprocket
7.	Type of secondary gear box	Gear/chain & sprocket
8.	Provision of oil level checking, breather cap & drain plug in primary & secondary gear box	Must be provided
9.	Feeding system	Conveyor/feed roller
10.	Number & type of roller	Min. 02, Plain/Serrated
11.	Provision of safety & reversing in feeding system	Must be provided
12.	Chopping mechanism	Fly wheel with blade/ palate bars
13.	Speed of flywheel/blade@ 540 tractor PTO (rpm)	1000 (Min.)
14.	Chopping knife/Disc	M42
15.	Hardness of material, HRC	68
16.	Thickness of blade (mm)	5 (Min.)
17.	Blade sharpening Grinding wheel	Must be provided
18.	Safety provision in propeller shaft	Must be provided
19.	Guard/cover on all moving parts	Must be provided
20.	Provision for adjustments of air flow rate & discharge outlet positions	Must be provided
21.	Provision for lubrication	Must be provided
22.	All related cautionary notices written in vernacular language and their pictorial representation.	Must be provided

23.	Marking/labeling	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover *kW/hp* **.**
24.	Literature	Operator manual, Service manual and Parts catalogue should be provided.

32. **FORAGE HARVESTER (Multi row)**

Sl.No.	Parameters	Specification
1.	Type	Tractor mounted, PTO Powered / trailed type
2.	No. of rows	1 to 5
3.	Working width (mm)	600 to 2200
4.	Material of main frame	Mild steel
5.	Type of gear box	Gear/chain & sprocket
6.	Type of secondary gear box	Gear/chain & sprocket
7.	Provision of oil level checking, breather cap & drain plug in primary & secondary gear box	Must be provided
8.	Feeding system	Conveyor/feed roller
9.	Number & type of roller	2 (Min.) and Plain/Serrated
10.	Provision of safety & reversing in feeding system	Must be provided
11.	Chopping mechanism	Fly wheel with blade/ palate bars
12.	Chopping knife/Disc	Carbon Steel EN 45 equivalent to SAE 1070 grade and Boron Steel EN 10083 (30 MN B5)
13.	Thickness of blade (mm)	5 (Min.)
14.	Blade sharpening Grinding wheel	Must be provided
15.	Safety provision in propeller shaft	Must be provided
16.	Guard/cover on all moving parts	Must be provided
17.	Provision for adjustments of air flow rate & discharge outlet positions	Must be provided
18.	Provision for lubrication	Must be provided
19.	All related cautionary notices written in vernacular language and their pictorial representation.	Must be provided
20.	Marking/labeling	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover *kW/hp*
21.	Literature	Operator manual, Service manual and Parts catalogue should be provided.

33. Chaff Cutter

Sl.No.	Parameters	Specifications
1.	Type	Power operated
2.	Basis of cutting mechanism Type	Flywheel or Cylinder
3.	Basis of cut chaff dropping position Type	Let fall, throw away or blow
4.	Material of blade	Mn 42
5.	Hardness of Blade, HRC	48-52
6.	Length of conveyor, mm	1200 (Min.)
7.	Length of chute, mm	900 (Min.)
8.	Thickness of chute sheet, mm	*≥1.6*
9.	Covering of chute or conveyor, mm	450 minimum
10.	Height of feeding unit, mm	750 to 1100
11.	Cautionary notice	Must be provided
12.	Marking/labeling of machine	The labelling plate should be riveted on the body of machine having Name and Address of manufacture, Country of origin, Make, Model, Year of manufacture, Serial number, Type, required size of prime mover (kW)
13.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

34.Sub Soiler

Sl.No.	Parameters	Specifications
1.	Type	Tractor mounted
2.	Power source	Tractor of 35 HP and above
3.	Hitch type	Three point, CAT-I/CAT-II
4.	Material of main frame	Mild steel
5.	Beveled length at cutting edge of share (mm)	10.0 (Max.)
6.	Thickness of cutting edge (mm)	0.5 to 2.0
7.	Reversibility of share	Must be provided
8.	Material of share	Boron Steel 30 MnCr B5
9.	Provision to change the angle of share	Must be provided
10.	Provision for parking stand	Must be provided
11.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, **Country of origin**, Make, Model, Year of manufacturer, Serial number, Recommended tractor hp
12.	Literature	Operator manual, Service manual and Parts catalogue should be provided.

35. TRACTOR OPERATED POWER WEEDER

Sl.No.	Parameters	Specifications
1.	Type	Tractor mounted, PTO Powered
2.	Working width (mm)	*1500 (min.)*
3.	Type of blades	Hatchet/Straight/Curved/L type
4.	Material of Blade	Boron steel 28 MnCrB5/ High Carbon steel EN42j
5.	Hardness of material, HRC	38 (min)
6.	Type of primary transmission	Gear
7.	Type of secondary transmission	Gear/chain & sprocket
8.	Material for rotor shaft	SAE 1045 (CRS) / EN8/EN9
9.	No. of flanges per row	2 (Min.)
10.	Type of flanges	Square/circular/rectangular
11.	No. of blades in each flange	4 (Min.)
12.	No. of rotor blade	8 (Min.)
13.	Thickness of rotor blade (mm)	5 (Min.)
14.	Material of blade	*Boron Steel* 28 MnCrB5 EN42j
15.	Hardness of blade, HRC	*38 (min)*
16.	Provision for shield/cover to prevent flying of mud & stone from rotor	Must be Provided
17.	Depth control mechanism	Must be Provided
18.	Marking/labeling of machine	The labelling plate should be riveted on the body of machine having Name and Address of manufacture, Country of origin, Make, Model, Year of manufacture, Serial number, Type, required size of prime mover (kW)
19.	Literature	Operator manual, Service manual and Parts catalogue should be provided.

36. TRACTOR OPERATED REAPER-CUM-BINDER

Sl.No.	Parameters	Specifications
Reaping Unit:		
1.	Effective width of cutter bar (mm)	1200
2.	Type of crop dividers	Shoe
	Number of crop dividers	Two
3.	Type of knife section	Serrated
4.	Number of knife sections on cutter bar	As per design
5.	Length of ledger plate (mm)	As per design
6.	Type of crop conveyor	Chain type/belt type
7.	Material of knife section	High carbon steel EN42 J and above
8.	Material of ledger plate	High carbon steel EN44 and above
9.	Hardness of knife section ,HRC	38 (min)
10.	Hardness of ledger plate, HRC	45 (Min)
Crop collecting Unit		
11.	Type	Forks with fingers
12.	No. of forks	6
Crop binding mechanism		
13.	Type	Knotting
14.	Type of ropes	Nylon/Jute/ PP Rope
15.	Provision of leveling the cutter bar	Must be provided
16.	Provision of changing the crop bundle size	Must be provided
17.	Guards against all moving parts/drives and hot parts	Must be provided
18.	Slip clutch/safety pins at cutter bar drive	Must be provided
19.	Slip clutch/safety pins at conveyor drive	Must be provided
20.	Guard over propeller shaft	Must be provided

21.	Provision of safety clutch/ device (shear bolt) in PTO drive shaft	Must be provided
22.	Provision of stand for storage/parking	Must be provided
23.	Marking/labeling of machine	The labelling plate should be riveted on the body of machine having Name and Address of manufacture, Country of origin, Make, Model, Year of manufacture, Serial number, Type, required size of prime mover (kW)
24.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

37. **POWER HARROW**

Sl.No.	Parameters	Specification
1.	Type	Tractor mounted, PTO Powered
2.	Working width (mm)	750 (Min.)
3.	Main frame	Rectangular MS box
4.	Thickness of sheet of box (mm)	5 (Min.)
5.	Thickness of side support sheet (mm)	8.0 (Min.)
6.	Provision for adjustment of height in trailing board	Must be provided
7.	type of blade	Long aggressive and drag type
	Number of blades	10 (Min.)
8.	Number of flanges	3 (Min.)
9.	Number of blade per flange	2 (Min.)
10.	Thickness of blade ,mm	12±0.5 (Min.)
	Length of blade ,mm	280±5
11.	RPM of rotor shaft @ 540 PTO rpm	325±5 (Max.)
12.	Primary reduction	Multispeed Gear box for 540 & 1000 RPM
13.	Secondary reduction	Gear
14.	Provision of oil level checking, breather cap & drain plug in primary & secondary gear box	Must be provided
15.	Provision for stand	Must be provided
16.	Safety provision in propeller shaft	Must be provided
17.	Provision for depth control mechanism	Must be provided
18.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
19.	Literature	Operator manual, Service manual and Parts catalogue should be provided.

38. SELF PROPELLED REAPER

Sl.No.	Parameters	Specifications
1.	Type of machine	Walk-behind type
2.	Effective width of cutter bar (mm)	1100 (Min.)
3.	Number of crop dividers	5(Min.)
4.	Type of knife section	Serrated
5.	Number of knife sections on cutter bar	24 (Min.)
6.	Type of crop conveyor	Chain/Belt
7.	Numbers and type of wheel equipment	Two/Pneumatic or Iron
8.	Type of prime mover	Diesel/Petro/Kerosene/Petrol start kerosene run IC engines.
9.	*Minimum* power of prime mover (kW)	2.0 to 4.5
10.	Material of knife section	High Carbon steel EN42 J or above
11.	Material of knife back	High Carbon steel EN42 J or above
12.	Material of ledger plate	High Carbon steel EN44 above
13.	Hardness of knife section HRC	38(Min)
14.	Hardness of ledger plate	45 (Min.)
15.	Provision for adjusting the height of cutter bar	Must be provided
16.	Guards against all moving parts/drives and hot parts	Must be provided
17.	Spark arrester in engine exhaust	Must be provided
18.	Location and direction of exhaust emission to be away from the operator and machine for satisfactory operation	Must be provided
19.	Slip clutch/safety pins at cutter bar drive	Must be provided
20.	Slip clutch/safety pins at conveyor drive	Must be provided
21.	Provision of row marker/ crop guide	Must be provided

22.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, Size of prime mover (kW)
23.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

39. Tractor Operated HTP Sprayer

Sr. No.	Parameter	Specification
1.	Tank capacity, l	100 (Min.)
2.	Pressure regulator	Must be provided
3.	Pressure gauge with pressure dampener	Full scale reading of pressure gauge should not be more than 2.5 times and not less than 1.5 times the rated pressure.
4.	Discharge rate, *ml/min*	*Min. 8000 at rated speed and rated pressure.*
5.	Strainer at filling hole	Must be provided
6.	Hose length (m)	100 (Min.)
7.	Provision of hose reel	Must be Provided
8.	Spray gun designation and marking	Designation,manufacturers name or recognised trade mark & batch or code number should be marked
9.	Length of spray gun	Shouldnot be less than 500 mm
10.	Nozzle designation and marking	Designation,manufacturers name or recognised trade mark & batch or code number should be marked
	Nozzle Material	Brass /nylon /hardened /Stainless Steel/ tungsten Carbide, ceramic
11.	Mass of spray gun	Must be less than 1.6 Kg
12.	Provision of drain plug in the tank	Must be Provided
13.	Safety against overload P.T.O. drive shaft and Guard on shaft	Must be provided
14.	Guard on belt pulley drive	Must be Provided
15.	Safety wear	Mask, Apron , hand gloves, Gum boots and goggles must be provided,
16.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
17.	Literature	Operator manual, service manual & parts catalogue must be provided in English, Hindi, Local languages.

40. Power Maize Dehuskar Cum Sheller

Sl.No.	Parameters	Specifications
1.	Type	Tractor / Power tiller / Engine / Electric motor operated
2.	Type of crop feeding	Chute-fed / conveyor–fed / feed roller-fed/ hopper-fed
3.	*Angle of mounting of feeding chute, degree(^{0})*	*10-15*
4.	Total length of feeding chute ,mm	900 (min)
	covered portion of feeding chute (mm)	450 (min)
5.	Material of feeding chute/hopper	MS sheet
	Thickness of feeding chute/hopper (mm)	1.6 (Min.)
6.	concave clearance, mm	20-35
7.	Feed Rate, kg/hr	400-800
8.	Number of screens	2 (Min.)
9.	*Aspirator:*	*1 (Min.)*
10.	Recommended threshing/shelling cylinder speed m/sec	6.2 to 7.6
11.	Provision of adjusting concave clearance	Must be Provided
12.	Provision of changing cylinder/drum speed	Must be Provided
13.	Provision of changing blower speed	Must be Provided
14.	Provision of changing air-flow rate	Must be Provided
15.	Provision of changing shaker unit speed	Must be Provided
16.	Provision of changing screen pitch/inclination	Must be Provided
17.	Provision of easy replacement of screens	Must be Provided

18.	Guards against all moving parts/drives	Must be Provided
19.	Guard over propeller shaft (if applicable)	Must be Provided
20.	Protection against entry of dust in bearings	Must be Provided
21.	Provision of stand for storage/parking	Must be Provided
22.	Provision for transportation of thresher	Must be Provided
23.	Provision of label/plate containing cautionary notices in vernacular languages and their pictorial representation as per Indian Standard	Must be Provided
24.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW).
25.	Literature	Operator manual, Service manual and Parts catalogue should be provided

41. **Tractor Operated Reaper**

Sl.No.	Parameters	Specification
1.	Type	Tractor Mounted, PTO powered
2.	Type of mounting	Front/Rear or side mounted
3.	Working width, mm	1100 (Min.)
4.	Type of knife section	As recommended by manufacturer
5.	Type of crop conveyor	Chain/Belt
6.	Material of knife section	High carbon steel EN42J and above
7.	Material of knife ledger	High carbon steel EN44
8.	Hardness of knife section ,HRC	38
9.	Hardness of ledger plate, HRC	45
10.	Provision to adjust cutter bar height ,mm	50 (Min.)
11.	Provision for quick fit attachment with tractor	Must be provided
12.	Provision for windrowing the harvested crop	Must be provided
13.	Guards against all moving parts/drives and hot parts	Must be provided
14.	Slip clutch/Safety pins at cutter bar drive	Must be provided
15.	Provision for row marker/crop guide	Must be provided
16.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
17.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

42. **SUGARCANE CRUSHER**

Sl.No.	Parameters	specifications
1.	Type	Power operated
2.	Crushing capacity, kg/h	1800 to 2270
3.	Material of feeding chute and thickness, mm	Mild steel sheet, 1.6 (Min.)
4.	Size of opening for feeding the canes, mm	60 (Max.) (Adjustable)
5.	Length of feed plate/chute cover at the front, mm	600 (Min.) (Adjustable)
6.	Number of Rollers	3
7.	Length of Roller, mm	216 to 356
8.	Diameter of Roller(mm)	150 to 264
9.	Lubrication for gear box	Oil bath
10.	Provision to change direction of rotation of feed roller	Must be provided
11.	Provision for feed plate(for vertical type crushers) and feed chute (for horizontal type crushers)	Must be provided
12.	Provision of guards on all moving parts	Must be provided
13.	Provision of safety of operator and the animals for animal drawn crushers	Must be provided
14.	Cautionary notice	Must be provided
15.	Marking/labeling of machine	The labelling plate should be riveted on the body of machine having Name and Address of manufacture, Country of origin, Make, Model, Year of manufacture, Serial number, Type, required size of prime mover (kW),
16.	Literature	Operator manual, Service manual and Parts catalogue should be provided in Hindi, English and regional language

43. **Tractor operated Fertilizer Broadcaster**

Sl.No.	Parameters	Specifications
1.	Hopper capacity, Kg	Min. 200 (180 L Min)
2.	Fertilizer hopper sheet thickness, mm	2 (Min.) Galvanized/powder coated
3.	Feed control mechanism	Proper graduations should be provided
4.	Fertilizer agitator	Must be provided
5.	Fertilizer spreading range (m)	6 (Min.)
6.	Drive safety	Must be provided
7.	Material of construction of Hopper	MS Steel, Galvanized Sheet, Aluminum fiber Glass Reinforced plastic
8.	Anti-corrosive painting of fertilizer hopper	Must be provided
9.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
10.	Literature	*Operator manual, Service manual and Parts catalogue should be provided*

44. Groundnut Digger cum-Shaker

Sl.No.	Parameters	Specifications
1.	Type	Tractor Mounted, PTO powered
2.	Working width, mm	900 (Min.)
3.	Working tool bar/Digging blade	V shape /Trapezoidal plate type/ Buckhar type blade
4.	Material of blade	Boron Steel 28MnCrB5 High carbon steel EN42 J
5.	Hardness of Blade material, HRC	38 (Min.)
6.	Thickness of blade material, mm	6.0 (Min.)
7.	Provision for blade angle adjustment	Must be provided
8.	Provision for varying depth of cut	Must be provided
9.	Provision to adjust angle of inclination of elevator with the horizontal, degree(^{o})	10 to 20
10.	Number of gauge wheel	2 (Min.)
11.	Provision for Oil level checking, Breather cap & drain plug in gear box	Must be provided
12.	Provision for tension adjustment in power transmission(Belt pulley & chain sprocket drive)	Must be provided
13.	Material of rattler bars	Mild steel FE 415
	Thickness of rattler bars, mm	8.0 (Min.)
14.	Spacing between two rattler bars (mm)	50 (Min.)
15.	No. of spikes on each rattler bar	5 (Min.)
16.	Adjustment for rattler bar agitation	Must be provided
17.	No. of windrowing rods	5 (Min.)
	& size of windrowing rods, mm	Ø10 (Min.)
18.	Guards on power transmission system/ moving parts.	Must be provided
19.	Slip clutch/Safety provision in propeller shaft	Must be provided

20.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
21.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided.*

45. **Raised Bed Planter**

Sl.No.	Parameters	Specifications
1.	Row spacing	Adjustable
2.	Type of seed metering mechanism	Fluted roller / Inclined plate feed roller / Cup feed / Cell feed
3.	Type of fertilizer metering mechanism	Fluted roller / Inclined plate feed roller / Cup feed / Cell feed
4.	Bed height ,mm	150 (Min.) (adjustable)
5.	Seed/fertilizer hopper sheet thickness mm	M.S. 1.0 (Min.) G.I 0.63 (Min.)
6.	Thickness of seed/fertilizer tubes	Transparent plastic tubes with 2.5 mm (Min.)
7.	Material of furrow openers	High Carbon Steel – En42 j or above
8.	Hardness of furrow opener HRC	38 to 45
9.	Provision of adjusting depth of seed & fertilizer	Must be provided
10.	Provision of adjusting seed/fertilizer rate	Must be provided
11.	Provision of transparent seed/fertilizer tube	Must be provided
12.	Provision of seed covering device	Must be provided
13.	Provision of metallic calibration plate	Must be provided
14.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
15.	Literature	Operator manual, Service manual and Parts catalogue should be provided

46. MULTICROP CROP PLANTER

S.No.	Parameters	Specifications
1.	Power Source	Tractor
2.	Number of furrow openers	5 (Min.)
3.	Type of seed metering mechanism	Inclined plate feed roller / Cell feed
4.	Diameter of ground wheel, mm	300 (min)
5.	Seed hopper sheet thickness, mm	1.6 (min)
6.	Material of furrow opener	Hardened tungsten carbon steel
7.	Type of power transmission	Sprocket and chain/belt and pulley/gear type with proper guards.
8.	Provision for fertilizer placement	Must be provided
9.	Provision for adjusting the row to row spacing, mm	As per recommended for crop preferably in steps U-clamp for fixing furrow openers
10.	Thickness of seed/fertilizer tubes	Transparent plastic tubes with 2.5 mm (Min.)
11.	Hardness of furrow opener tool HRC	38 to 45
12.	Provision for changing plant spacing	Must be provided
13.	Provision for adjusting depth of seed	Must be provided
14.	Provision for adjusting the seed rate	Must be provided
15.	Provision of covering device	Must be provided
16.	Provision of row marker	Must be provided
17.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
18.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

47. POST HOLE DIGGER

Sl.No.	Parameters	Specifications
1.	Power source	Tractor mounted
2.	Material of main frame	Mild steel
3.	Thickness of beveled edge (mm)	5 (Min.)
4.	Augur Diameter, mm	150 – 900
5.	Material of blade	High carbon steel EN42j or any higher grade.
6.	Provision for parking stand	Must be provided
7.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
8.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

48. ROUND BALER (Mini)

Sl.No	Parameters	Specifications
1.	Power source	Tractor
2.	Working width (mm)	750 (Min.)
Pick-up Unit		
3.	No. of tyne bars	4 to 5
4.	No. of tynes on each bar	12/14/16/20/22 or 28/30/32
5.	Tyne spacing (mm)	52 to 68
Bale Unit		
6.	Belling mechanism	Roll Bar-Chain/Roller/Roll Belt
7.	No. of bale rollers/No. of tyne bar	19 (Max)
8.	Dia. Of bale rollers (mm)	35 (Min.)
9.	Size of bale rolls	15-35 kg
10.	Speed of bale rollers corresponding to 540 PTO rpm (rpm)	117 to 328
11.	Size of bale, L×D (mm)	Dia 500 (Min) for small bales Length 700 (min)
12.	Bale weight (kg)	14-30
13.	Provision for bale density adjustment	Must be provided
14.	Provision of safety clutch/ device (shear bolt) in PTO drive shaft and pick-up unit	Must be provided
15.	Guard over propeller shaft	Must be provided
16.	Provision of guards over transmission for safety	Must be provided
17.	Provision for safety at feeder unit against overloading	Must be provided
18.	Provision for transportation	Must be provided
19.	-Any other	Shaft and Pin should be of min EN 9 or higher specification
20.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and

		address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
21.	Literature	Operator manual, Service manual and Parts catalogue should be provided

49. ROUND BALER (Big)

Sl.No	Parameters	Specifications
1.	Working width (mm)	1200 (Min.)
2.	Recommended power source	Tractor
Pick-up Unit		
3.	No. of tyne bars	4 to 5
4.	No. of tynes on each bar	12/14/16/20/22 or 28/30/32
5.	Tyne spacing (mm)	52 to 68
Bale Unit		
6.	Belling mechanism	Roll Bar-chain/Roller/roller
7.	Size of bale, mm	122x125 to 140x160 (for large bales)
8.	Balers weight ,kg	40 (min)
9.	No. of bale rollers	9 (min.)
10.	Provision for bale density adjustment	Must be provided
11.	Provision of safety clutch/ device (shear bolt) in PTO drive shaft and pick-up unit	Must be provided
12.	Guard over propeller shaft	Must be provided
13.	Provision of guards over transmission for safety	Must be provided
14.	Provision for safety at feeder unit against overloading	Must be provided
15.	Provision for transportation	Must be provided
16.	-Any other	*S*haft and Pin should be of min EN 9 or higher specification
17.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
18.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

50. SQUARE BALER

Sl.No	Parameters	Specifications
1.	Recommended power source	Tractor
2.	Working width (mm)	1300-1800
	Pick-up Unit	
3.	No. of tine bars	4 to 5
4.	No. of tines on each bar	20/22/24
5.	Tine spacing (mm)	55 to 135
	Bale Unit	
6.	Size of bale, (mm)	460X360X 300-1400(adjustable)
7.	Provision for bale density adjustment	Must be provided
8.	Provision of safety clutch/ device (shear bolt) in PTO drive shaft and pick-up unit	Must be provided
9.	Guard over propeller shaft	Must be provided
10.	Provision of guards over transmission for safety	Must be provided
11.	Provision for safety at feeder unit against overloading	Must be provided
12.	Provision for transportation	Must be provided
13.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
14.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*

51. Nursery Raising Machine for paddy

Sl.No.	Parameters	Specifications
1.	Type	Tray type, Electric motor operated
2.	Power source	AC motor, 1 Φ
3.	Type of machine installation	Permanent/portable
4.	Provision of Energy meter, Voltage & ampere meter in control panel	Must be provided
5.	Protection to protect from high voltage current	Must be provided
6.	Provision of protection from electric shock	Must be provided
7.	Provision for motor speed adjustment	Must be provided
8.	Provision to regulate the Bed & Top soil	Must be provided
9.	Provision to regulate the water for nursery tray	Must be provided
10.	Provision to regulate the sprouted seeds that are delivered into nursery raising tray	Must be provided
11.	Provision for counting of output (no. of tray)	Must be provided
12.	Type of conveyor	Must be provided
13.	Guards on power transmission system & all other moving parts.	Must be provided
14.	Provision for emergency stop of transmission system	Must be provided
15.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)
16.	*Literature*	*Operator manual, Service manual and Parts catalogue should be provided*