

**Subject: Minutes of the meeting held on 20<sup>th</sup> August, 2019 under the chairmanship of Shri Ashwani Kumar, JS (M&T) from 3.00 PM to 6.00 PM in Conference Room No.142, Krishi Bhawan, New Delhi.**

A meeting was convened under the chairmanship of Shri Ashwani Kumar, JS(M&T) on 20.08.2019 from 3.00 PM to 6.00 PM in Conference Room No.142, Krishi Bhawan, New Delhi to Review & discuss the various issues of the Agricultural Machinery Manufacturers. The Agenda of the meeting were as below:

- (1) Review of the critical specifications determined earlier in respect of selected Agril. machineries like Rotavator, Rice Transplanter, cultivators, plough etc; and finalizing the time line for implementation of these specifications
- (2) to discuss and finalise critical technical specifications of the 14 additional machineries as forwarded by the Technical Committee of AMMA
- (3) to review the minimum sample size for selection of test samples
- (4) to discuss the inclusion of Tractor Trolley (single excel) up to 5 ton capacity and water tanker in the subsidy list of SMAM guidelines
- (5) Any other issue with the permission of the Chairman

2. The meeting was attended by Executive Members of All India Manufacturers Associations of Tractors (TMA), Combine Harvesters(AICMA), Power Tillers(PTMA) and Agricultural Machinery(AMMA), Testing authorities concerned of FMTTIs & approved test centers of DAC&FW at ICAR institutes, and Nodal officer Concerned of States etc. The list of the participant is at Annexure-I.

3. At the outset of the meeting, JS(M&T) welcomed the participants and brief the House about the purpose of the meeting and advised the participants to review the critical technical specifications at par with the global standards to ensure that good quality of Agricultural machines & equipment equipped with advance/latest customized technologies are distributed to the farmers under the SMAM & other Schemes of DAC&FW, Ministry of Agriculture and Farmers Welfare, implemented through the respective State Agriculture Departments. There should not be any compromise with the quality of Machines and to promote the make in India products under the Government schemes..

4. After the opening remarks of the JS(M&T) a power point presentation was made by the DC (M&T) on the amendments/received from the different Executive Members of the various Agricultural machinery manufacturer's Associations and & individual manufacturers in respect of the critical Specification for following Agricultural machinery & equipment:

- (1) Super Straw Management attachment for Combine Harvesters
- (2) Hydraulic Reversible M.B. Plough
- (3) MB Plough

- (4) Cultivators
- (5) Potato Planter
- (6) Rotavators
- (7) Self-propelled Weeder
- (8) Mulcher
- (9) Rice Transplanter /Paddy Transplanter
- (10) Tractor Operated Reaper

The amendments in the Critical specifications were agreed in principle by the Division, for further approval of the competent authority, keeping in view of the following reasons:

- To address the problems issues of manufacturability with the earlier Specifications.
- To improve Field performance & safety aspects
- Region Specific demand of Farmers & users of the machinery
- Availability of equivalent Grade of Indian in case of imported material

The Amended Specifications as agreed by the representatives are given at Annexure 2-11

4. The critical technical specifications in respect of the following new Agril Machines & implements, in addition to the 51 Agricultural machinery already finalized, were also submitted by the Executive Members of AMMA( detail specifications are at Annexure 12.)

- (1) Bund Former/Levee Plastering Machine
- (2) Tractor operated Land Leveller
- (3) Tractor mounted Disc Mower
- (4) Self Propelled Fodder Harvester – 3 Wheel
- (5) Self Propelled Fodder Harvester – 4 Wheel
- (6) Self Propelled Reaper Binder – 3 Wheel
- (7) Self Propelled Reaper Binder – 4 Wheel
- (8) Tractor Drawn Agricultural Trailer
- (9) Tractor operated 3-row Sugarcane Planter
- (10) Round Baler
- (11) Roto-Puddler/Rice Harrow
- (12) Three Row Sugarcane Planter
- (13) Super Straw Management System(SMS) to be attached with Track Type Combine Harvester

It has been decided to circulate the critical technical specifications of the above Agricultural machines among all the stake holders viz. authorities concerned of the Testing Institutes, Nodal Officers of the SMAM/CRM of the respective State Agriculture Departments. Executive Members of various Associations and Manufacturers concerned. These specifications may also be uploaded on the

website of the M&T Division for open comments from the other stake holders. The comments received till 27<sup>th</sup> of September, 2019 may be compiled and discussed in the subsequent meeting in October, 2019.

5. The other issues & problems related to implementation of the Critical Technical specifications and minimum sample size for Test sample selection at manufacturers end were also discussed and the comments of the division on the same are summarized as below:

S.No	Manufacturer's Problems	Comments/ Recommendations of M&T Division																												
01	financial constraints of the small indigenous manufacturers in following the existing minimum sample sizes in view of their.	After the discussion with the participants the sample sized has been reviewed and recommended as below:																												
		<table border="1"> <thead> <tr> <th>S. No</th> <th>Cost of Machinery (in Rs.)</th> <th>Existing Minimum Sample Size (No. of Units)</th> <th>Recommended/ Agreed Minimum Sample Size (No. of Units)</th> </tr> </thead> <tbody> <tr> <td>01.</td> <td>Up to Rs.1,00,000</td> <td>20</td> <td><b>10</b></td> </tr> <tr> <td>02.</td> <td>Above Rs.1,00,000</td> <td>5</td> <td>5</td> </tr> <tr> <td>03.</td> <td>For Combine Harvester</td> <td>3</td> <td><b>2</b></td> </tr> <tr> <td>04.</td> <td>For Tractors and Power Tillers</td> <td>5</td> <td>5</td> </tr> <tr> <td>05.</td> <td>For any imported machinery</td> <td>5</td> <td><b>10 for less than Rs 1,00,000 and 5 for costing above Rs.1,00,000</b></td> </tr> <tr> <td>06</td> <td>Sugarcane Harvesters</td> <td>-</td> <td><b>01</b></td> </tr> </tbody> </table>	S. No	Cost of Machinery (in Rs.)	Existing Minimum Sample Size (No. of Units)	Recommended/ Agreed Minimum Sample Size (No. of Units)	01.	Up to Rs.1,00,000	20	<b>10</b>	02.	Above Rs.1,00,000	5	5	03.	For Combine Harvester	3	<b>2</b>	04.	For Tractors and Power Tillers	5	5	05.	For any imported machinery	5	<b>10 for less than Rs 1,00,000 and 5 for costing above Rs.1,00,000</b>	06	Sugarcane Harvesters	-	<b>01</b>
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02.	Manufacturers Pointed out higher cost involved in complete retesting of their machine tested earlier due to change in specifications of the components/ machine to comply with the critical technical	A supplementary test reports may be issued with specific parameters related to Specifications and performance, affected as a consequence of the changes made in components/ machine already tested by the same Test Centre. Test fee for supplementary tests are recommended as one time relaxation as below:																												

	specifications.	<table border="1"> <thead> <tr> <th>No of Parameters to be tested</th> <th>Existing Charges as per Ministry's Order No 7-4/2011 dated 21<sup>st</sup> March, 2011</th> <th>Recommended for supplementary test</th> </tr> </thead> <tbody> <tr> <td>One parameter</td> <td>40% of the total test fee</td> <td>10% of the total test fee</td> </tr> <tr> <td>More than 1 up to 50% of the total parameters</td> <td>75% of the total test fee</td> <td>20% of the total test fee</td> </tr> <tr> <td>Full laboratory Test</td> <td>90% of the total test fee</td> <td>40% of the total test fee</td> </tr> <tr> <td>Full field Test</td> <td>40% of the total test fee</td> <td>40% of the total test fee</td> </tr> </tbody> </table> <p>This will be the one time relaxation for making the changes in their earlier base model tested at any of the FMTTI or Approved Test Centre of DAC&amp;FW.</p>	No of Parameters to be tested	Existing Charges as per Ministry's Order No 7-4/2011 dated 21 <sup>st</sup> March, 2011	Recommended for supplementary test	One parameter	40% of the total test fee	10% of the total test fee	More than 1 up to 50% of the total parameters	75% of the total test fee	20% of the total test fee	Full laboratory Test	90% of the total test fee	40% of the total test fee	Full field Test	40% of the total test fee	40% of the total test fee
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03.	Timeline required for implementation of these critical parameters under the different schemes of DAC&FW in view of time required for R&D and for retesting/ supplementary testing of the machines due to change in specifications to comply with the critical technical specifications.	It has been decided to implement these critical specifications <b>w.e.f. 1<sup>st</sup> April, 2020.</b>															
04.	The representative of M/s. Lemkin has requested for the separate critical technical specifications and test procedure for testing of their Roto-cultivator.	The representative have been advised to make a draft of the test procedure and critical technical specification with the consent of the testing authority at NRFMTTI, Hisar and forward the same to discuss in the subsequent meeting in October, 2019															
04.	The representative of M/s. Yenmar Coromondal also sought a different critical technical specifications for their SMS Unit to be attached with the track type combine harvesters	The representative have been advised to make a draft of the test procedure and critical technical specification with the consent of the testing authority at NRFMTTI and forward the same to discuss in the subsequent meeting in October, 2019.															
05.	There was a proposal from	The tractor trolley up to 3 ton capacity is already															

	<p>the Executive Member of AMMA to add a tractor trolley of 5 ton and water tanker upto 6,000 ltr. under the SMAM Guidelines</p>	<p>included in the SMAM Guidelines. However, this capacity of the tractor trolley in the guidelines may be amended as up to 5 ton capacity (single axle). As regards the water tanker cannot be included in the SMAM Guidelines keeping in view that it has been very limited use in horticulture purposes and it is mostly use in commercial purposes. Accordingly, the representative of the AMMA has been advised to forward the critical technical specifications of the tractor trolley up to 5 ton capacity for the use of agricultural farms.</p>
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**Final Remarks of JS (M&T)**

All the critical Specification for additional machinery should be determined at par with the global standards to ensure the good quality and to promote the export of the agricultural machinery to the other countries.

In case of imported Agricultural Machinery, Indian manufacturers should look into customize & indigenize the same to lower the cost of machinery and to promote make in India campaign.

Representatives of ASPEE has been advised to go through the specification of Plant Protection equipments and furnished their comments, if any, within 3 weeks to discuss the same in the subsequent meeting in October, 2019

Meeting was ended thanks to the Chair.

## Annexure-1

### Attendance Sheet for the Meeting scheduled on 20.08.2019 at 3.00 PM in CR No.142 to Review of Critical Technical Specifications & Minimum Sample Size & Other Issues of Manufacturers

S.No	Name	Designation	Email Address	Mobile No.
1.	Ashwani Kumar	JS(M&T)	<a href="mailto:ashwani.hub@nic.in">ashwani.hub@nic.in</a>	
2.	V.N. Kale	ADC(M&T)	<a href="mailto:Vn.kale@nic.in">Vn.kale@nic.in</a>	
3.	C.R. Lohi	DC(M&T)	<a href="mailto:cr.lohi@nic.in">cr.lohi@nic.in</a>	
4.	J.J.R. Narware	Director,CFMT TI, Budni	<a href="mailto:fmti-mp@nic.in">fmti-mp@nic.in</a>	708695125
5.	P.K. Pandey	Director, NRFMTTI, Hisar	<a href="mailto:fmti-nr@nic.in">fmti-nr@nic.in</a>	7082257646
6.	K.K. Nagale	Director,NERF MTTI,B.Charia li	<a href="mailto:fmti-ner@nic.in">fmti-ner@nic.in</a>	9127023466
7.	P.K. Chopra	AC(M&T)	<a href="mailto:Pradeep.chopra@gov.in">Pradeep.chopra@gov.in</a>	
8.	C.V. Chimote	Test Engineer CFMTTI	<a href="mailto:fmti-mp@nic.in">fmti-mp@nic.in</a>	9926319411
9.	R. Murugesan	CE(AE),TN	<a href="mailto:aedcewrm@gmail.com">aedcewrm@gmail.com</a>	09443935447
10.	Manmohan Kalia	JDA Engg (PB)	<a href="mailto:Jdea.pb@gmail.com">Jdea.pb@gmail.com</a>	
11.	P.K. Sharma	JD(AE), U.P.	<a href="mailto:jdaengg2013@gmail.com">jdaengg2013@gmail.com</a>	8840707606
12.	Amar Singh	Gen. Secretary, AICMA	<a href="mailto:aicmaindia@gmail.com">aicmaindia@gmail.com</a>	9417053726
13.	S.Balasubramani am	TAFE	<a href="mailto:balasri@tafe.com">balasri@tafe.com</a>	9677204551
14.	Balachandra Babu D.S.	AMMA	<a href="mailto:balachandrababu@gmail.com">balachandrababu@gmail.com</a>	9840012049
15.	Surendra singh	AMMA	<a href="mailto:ammaindia10@gmail.com">ammaindia10@gmail.com</a>	
16.	S.O. Tyagi	Head – Comm.Liasion ing	<a href="mailto:tyagi.so@mahindra.com">tyagi.so@mahindra.com</a>	8980655111
17.	Rajesh Vashishth	Service Head	<a href="mailto:rajesh.vashishth@sonalikaindustries.com">rajesh.vashishth@sonalikaindustries.com</a>	8196894500
18.	Rajinder Singh	Partner	<a href="mailto:simrancombines@gmail.com">simrancombines@gmail.com</a>	8437507600
19.	Ashok Patel	Product Development	<a href="mailto:aa@shaktimanagro.com">aa@shaktimanagro.com</a>	9227793702
20.	G.Kasinathan	Manager	<a href="mailto:kasinathan@yanmar-coromandel.com">kasinathan@yanmar-coromandel.com</a>	7338899672
21.	Shri T Fukuyama	Yanmar	<a href="mailto:Tetsuya_fukuyama@yenma">Tetsuya_fukuyama@yenma</a>	

			<a href="#">r.com</a>	
22.	J. Antony Raj	AM	<a href="mailto:antonyraj@yanmar-coromandal.com">antonyraj@yanmar-coromandal.com</a>	09840882905 09677895580
23.	Ashok Kumar Singh	Sr. Manager	<a href="mailto:ashok.kumar@kubota.com">ashok.kumar@kubota.com</a>	09600187863
24.	Prateek mittal	GM-PMD & Testing Escorts Ltd	<a href="mailto:prateek.mittal@escorts.co.in">prateek.mittal@escorts.co.in</a>	9958555958
25.	Chandra shekhar Deshmukh	John Deere	<a href="mailto:deshmukhchandrashekharc@johndeere.com">deshmukhchandrashekharc@johndeere.com</a>	
26.	Prateek Mittal	GM & Head Escorts Ltd.	<a href="mailto:prateek.mittal@escorts.co.in">prateek.mittal@escorts.co.in</a>	9958555958
27.	Chandrasekhar Deshmukh	Johndeere (AMMA India)	<a href="mailto:deshmukhchandrashekharc@johndeere.com">deshmukhchandrashekharc@johndeere.com</a>	9325058663
28.	Manoj Sharma	Director SPLTECH	<a href="mailto:ms@spltech.in">ms@spltech.in</a>	9810400406
29.				
30.	Rajkumar Arumugam	Vice Chairman AMMA India	<a href="mailto:rajkumar@renppl.com">rajkumar@renppl.com</a>	9944241360
31.	Sarabjeet Singh Panesar	ashmesh e	<a href="mailto:info@landforce.in">info@landforce.in</a>	9815174313
32.	Malatesh Niranjana	Shri Sai Agro Equipments Pvt.Ltd.	<a href="mailto:mnn@saiagro.com">mnn@saiagro.com</a>	9945059444
33.	G.M. Varpe	ASPEE Group Mumbai	<a href="mailto:varpe@aspee.net">varpe@aspee.net</a> <a href="mailto:aspee@aspee.net">aspee@aspee.net</a> <a href="mailto:jatin@aspee.net">jatin@aspee.net</a>	9377026706
34.	Ramana	O/o CHDA, AP	<a href="mailto:nrmramna@gmail.com">nrmramna@gmail.com</a>	8886614862
35.	Santosh Sudhakar	Manager	<a href="mailto:sudhakarsantosh@johndeere.com">sudhakarsantosh@johndeere.com</a>	879337909
36.				
37.	Gagandeep Singh	M & M Ltd. Mohali	<a href="mailto:23112905@mahindra.com">23112905@mahindra.com</a>	8288011305
38.	Ramesh Kumar Verma	Mah. & Mah.	<a href="mailto:verma-cont@mahindra.com">verma-cont@mahindra.com</a>	9878817230

**Annexure-2**

**SUPER STRAW MANAGEMENT SYSTEM (SMS) TO BE ATTACHED WITH  
Self Propelled wheel type COMBINE HARVESTER**

<b>Sl.No.</b>	<b>Parameters</b>	<b>Specifications finalized</b>
<i>Rotor</i>		
1.	<i>Rotor diameter, mm</i>	165-170
2.	<i>No. of lugs on rotor in a row</i>	6
3.	<i>No. of rows in periphery</i>	4
4.	<i>Length of pivotal flail, mm</i>	170-180
5.	<i>Width of flail, mm</i>	50±1
6.	<i>Thickness of flail, mm</i>	5.0 (Min.)
7.	<i>No. of flails in one set</i>	2
8.	<i>Spacing between flails of one set, mm</i>	35 (Max.)
9.	<i>Distance between adjacent flail units, mm</i>	200±10
10.	<i>No. of rows/bars of serrated blades</i>	1
11.	<i>No. of serrated blades in a row</i>	<b>(20 Min.)</b>
12.	<i>Spacing between serrated blades, mm</i>	50 (Max.)
13.	<i>Overlapping of pivotal blade on serrated blade, mm</i>	60 (Min.)( adjustable)
<b>Spreader</b>		
14.	<i>Total no. of flaps</i>	6 + 2 (side)
15.	<i>Length of flap, cm</i>	<b>(38 Min.)</b>
16.	<i>Distance between flaps (left to right)</i>	adjustable
17.	<i>Spreader angle with horizontal, degree</i>	Adjustable preferably downwards
18.	<i>Spreader angle with line of travel, degree</i>	15 (Min.) (Adjustable )
19.	<i>Spreader sheet thickness, mm</i>	2.5-3.0
20.	<i>SMS Sheet thickness, mm</i>	5.0 (Min.) for outer
21.	<i>Rotor balancing</i>	should be dynamically balanced



22.	<i>Rotor rpm</i>	<i>Min 1600</i>
23.	<i>Fitting of SMS on combine harvester</i>	<i>Rigidly fixed to the combine chassis</i>
24.	<i>Fitting of power transmission system on combine harvester</i>	<i>Rigidly fixed to the combine chassis</i>
25.	<i>Marking/labeling of machine</i>	<i>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)</i>
26.	<i>Literature</i>	<i>Operator manual, Service manual and Parts catalogue should be provided</i>

*For performance and Safety standards refer to IS 15806-2018*

*Critical Technical Specifications have to be determined separately by AICMA & M/s Yanmar coromandal Ltd*

## Hydraulically Reversible MB Plough

<b>Sl.No.</b>	<b>Parameters</b>	<b>Specifications</b>
1.	Number of Bottoms	One /Two/Three/Four
2.	Working width (mm)	250 (Min) per bottom
3.	Under frame Clearance, mm (adjustable )	<b>550(Min) up to 55 HP tractor</b> <b>700 (Min) Above 55 HP tractor</b>
4.	Inter body Clearance, mm	600 (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 <b>or equivalent Indian MS steel of EN42, EN45 or EN47 Grade with chromium</b>
	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

		<i>manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, Size, required size of prime mover (kW), Weight (kg)</i>
14	<i>Literature</i>	<i>Operator manual, Service manual and Parts catalogue should be provided</i>

**Mulcher**

<b>Sl.No.</b>	<b>Parameters</b>	<b>Final specifications</b>
1.	<i>Machine type</i>	<i>Tractor PTO driven, Mounted type</i>
2.	<i>Working width, mm</i>	<i>1500 (min.)</i>
3.	<i>Speed of flail rotary, rpm</i>	<i>2000 (Min.) at standard PTO speed.</i>
4.	<i>No. of row of flails</i>	<i>2-4</i>
5.	<i>No. of flails on each rows</i>	<b>14-22</b>
6.	<i>Shape of the flail</i>	<i>Inverted Gamma type</i>
7.	<i>Cylinder dia. of chopping mechanism, cm</i>	<i>48 (min.)</i>
8.	<i>No. of rows of serrated blades on inside the concave</i>	<i>2-3</i>
9.	<i>No. of blades on each rows</i>	<b>13-21</b>
10.	<i>Marking/labeling of machine</i>	<i>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)</i>
13	<i>Literature</i>	<i>Operator manual, Service manual and Parts catalogue should be provided.</i>

## ROTAVATOR

Sl.No.	Parameters	Specifications
1.	Working width (mm)	1200 (Min.)
2.	Type of blade	C/L/J shape as per demand, <b>Hatchet Blade</b>
3.	Thickness of blade (mm)	7-8 (min.)
4.	No. of Blades	30 (Min.)
5.	Total number of flanges	5 (Min.)
6.	Number of blades per flange	6 (max.)
7.	Outer Diameter of rotor shaft mm	75 - 90
8.	Rotor diameter, including flange and blade mounted on flange, mm	425 (Min.)
9.	Side Drive	Gear drive / <b>Chain drive(Optional)</b>
10.	Depth control mechanism	Arc shaped skid on both side of rotavator
11.	Material of blades	<b>Boron 27/28/30Mn( 28MnCrB5 ) / High Carbon steel of grade EN42/ EN45/EN47</b>
12.	Hardness of Blade Material, HRC	38 (Min)
13.	Safety clutch / device( Shear bolt) in PTO drive shaft	must be provided

14.	Rotavator stand	must be provided
15.	Guard over propeller shaft	must be provided
16.	<i>Sheet metal</i>	AS36 / IS 2062
17.	<i>Marking/labeling of machine</i>	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)
18.	<i>Literature</i>	Operator manual, Service manual and Parts catalogue should be provided

## Cultivator

Sl.No.	Parameters	Specifications
1.	Type	<i>Rigid or Spring loaded</i>
2.	Hitch Type	<i>Three Point linkage, CAT-I/CAT-II</i>
3.	Number of tine	<i>5,7,9,11 or 13 (11 and above preferably folding)</i>
4.	Working width (meter)	<i>0.8 (Min) 1.05 (Min) 1.35 (Min) 1.65 (Min) 1.95 (Min)</i>
5.	Row to row spacing between tine, mm	<i><b>Fix</b>/Adjustable, preferably in steps of 25 cm</i>
6.	Frame	<i>Shall be Rigid and strong</i>
7.	Type of working tool	<i>Reversible shovel, Sweep and Triangular shovel</i>
8.	Material of tyne	<i>High Carbon steel for spring loaded &amp; MS for rigid tyne</i>
	Thickness of tyne, (mm)	<i>22 (Min.) &amp; 25(Min)</i>
9.	Material of shovel	<i>High carbon steel EN42j</i>
10.	Hardness of shovel and sweep, HRC	<i>Min 36-45</i>
11..	Center to center distance tool bar, mm	<i>450(Min)</i>
12..	Spring Index	<i>4 to 5</i>
13..	Marking/labeling of machine	<i>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)</i>
14.	Literature	<i>Operator manual, Service manual and Parts catalogue should be provided</i>

**POTATO PLANTER**

<b>Sl.No.</b>	<b>Parameters</b>	<b>Specifications</b>
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	<b>(300 to 700)</b>
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	<b>May be provided(Optional)</b>
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.	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)
20.	<i>Literature</i>	Operator manual, Service manual and Parts catalogue should be provided



## SELF PROPELLED WEEDER

Sl.No.	Parameters	Specifications
1.	Type	Self-propelled, walk behind
2.	Working width (mm)	<b>(180-1500)</b>
3.	Type of engine	Compression ignition/Spark ignition
4.	Starting method	Manual/recoil/self-starting
5.	Type of clutch	Dry/Wet
6.	Type of drive	<b>Belt/Chain/Gear/Shaft</b>
7.	Material for rotor shaft	SAE 1045 (CRS) / <b>EN9/EN19</b>
8.	No. of flanges	<b>2- 10</b>
9.	Type of flanges	Square/circular/rectangular
10.	Distance between consecutive flanges(mm)	<b>(24-150)</b>
11.	No. of blades in each flange	<b>1-6</b>
12.	No. of rotor blade	<b>8 (Min.)</b>
13.	Thickness of rotor blade (mm)	5 (Min.)
14.	Material of blade	Boron ( 28MnCrB5 ) / High Carbon Steel <b>of Grade EN 42j/ EN45/EN47</b>
15.	Hardness of Blade, HRC	<b>38 (Min.)</b>
16.	Shape of rotor blade	C /J/L shape
17.	Provision for handle height adjustment	Must be provided
18.	Provision for handle rotation	<b>optional</b>
19.	Provision for emergency stop of engine	Must be provided
20.	Provision for easy start of engine	Must be provided

21.	Provision for shield/cover to prevent flying of mud & stone from rotor	Must be provided
22.	Depth control mechanism	Must be provided
23.	Provision for transport wheels	<b>optional</b>
24.	Provision for cover on exhaust.	Must be provided
25.	Direction of exhaust emission away from operator	Must be provided
26.	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.
27.	Literature	Operator manual, Service manual and Parts catalogue should be provided.

## 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)	<b>220 to 300</b>
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)	<b>45 to 70</b>
9.	Material of planting fork/fingers/tweezers	Stain steel type 4 and above
10.	Provision for adjusting depth of planting	Must be provided
11.	Provision for adjusting hill spacing	Must be provided
12.	Provision for adjusting no of plants per hill	Must be provided
13.	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
14.	<i>Literature</i>	<i>Operator manual, Service manual and Parts catalogue should be provided</i>

## 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	$\geq 1.6$
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.	<i>Literature</i>	<i>Operator manual, Service manual and Parts catalogue should be provided</i>

**Tractor Operated Reaper**

<b>Sl.No.</b>	<b>Parameters</b>	<b>Specification</b>
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.	<i>Literature</i>	<i>Operator manual, Service manual and Parts catalogue should be provided</i>

## List of Additional Farm Equipment Discussed on 20 August 2019

### 1. BUND FORMER/LEVEE PLASTERING MACHINE

S. NO.	Items	Specification
1	Working width	Min 1680 mm
2	Type of blade	HATCHET Type Blades
3	Thickness of blade(mm)	12 mm Min
4	No of blades	11
5	Total no holders	11
6	No of blades per holder	One
7	Diameter of rotor shaft(mm)	OD 50 mm(Schedule 80)
8	Rotor diameter (Including flange and blade mounted on flange, mm)	450 mm
9	Side drive	Chain drive
10	Depth control mechanism	Disc
11	Material of blades (as per manufacturer declaration)	27MnCrB5
12	Safty clutch/device (Shear bolt)in PTO drive shaft	Provided
13	Rice harrow Stand	Provided
14	Guard over propeller shaft	Provided
15	Total weight of the machine(Kg)	325 Kg (approx.)
16	Marking/labeling of machine	The labeling plate riveted on the body of machine having name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial no, Type, Size, required size of prime mover (KW)
17	Literature	Operator manual, Service manual and Parts catalogue provided
18	Sheet metal	Reference IS2062 for content of primary elements in different category of sheet metal to be defined by CFMTTI, NRFMTTI, AMMA

19	Gear used in transmission	16 T,27 T Bevel gears used Material EN353
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## 2. Tractor operated land Leveler

<b>Sr. No.</b>	<b>Particular</b>	<b>Specification</b>
1	Length in mm	1845 ( 60 Inches) Min
2	Width in mm	790 (min 550)
3	Height in mm	1060 min
4	Power (Hp) required	35 to 60 h.p.
5	Size of Blades/Scraper in mm	1830 mm x 100 mm x 10.5 mm ( 1830 mm x 75mm x 8 mm minimum)



### 3. Tractor Mounted Disc Mower

<b>Sr. No.</b>	<b>Particular</b>	<b>Specification</b>
1	FUNCTION	Harvesting and Collecting of fodder crops.
2	CROPS	Sorghum, maize, Berseem and other fodder crops.
3	Type	Rear Tractor Mounted
4	Attached with Tractor	Three Point Linkage
5	Tractor PTO (rpm)	540
6	Working Width	205 cm (6.7 Feet)
7	LIFTING OF CUTTER BAR	Hydraulic
8	METHOD OF CROP COLLECTING	Crop guard are providing on both left and right side.

#### 4. SELF PROPELLED FODDER HARVESTER – 3 WHEEL

S. No.	Parameters	Specifications
<b>Machine Detail</b>		
1.	Type	Self propelled , Ride on, Fodder Harvester
2.	Function	Harvesting and Windrowing of fodder crops
<b>Engine</b>		
3.	Engine Type	4 Stroke, Air Cooled, Single Cylinder, Variable Speed, Diesel Engine
4.	Starting	Rope Start
<b>Transmission &amp; Clutch</b>		
5.	Type	Sliding /Constant Mesh or Combination of both
6.	No of Speed	4- Forward & 1- Reverse
7.	Clutch Type	Dry Friction Disc
<b>Steering &amp; Mechanical Brakes</b>		
8.	Steering Mechanism	By dog clutch on drive axle and pedal on steered wheel
9.	Brake Mechanism	Internal expanding shoe/ring
<b>Reaping Unit</b>		
10.	Effective width of cutter bar (mm)	1200
11.	Type of crop dividers	Shoe
12.	Number of crop dividers	Two
13.	Type of knife section	Serrated
14.	Number of knife sections on cutter bar	As per design
15.	Length of ledger plate (mm)	As per design
16.	Material of knife section	High carbon steel EN42 J and above
17.	Material of ledger plate	High carbon steel EN44 and above
18.	Hardness of knife section ,HRC	38 (min)
19.	Hardness of ledger plate, HRC	45 (Min)
<b>Lifting fo Cutter Bar</b>		
20.	Type	Manual lifting
21.	Operation	By pulling down the handle bar to raise the cutter bar from ground and locking it at the raised position

## 5. SELF PROPELLED FODDER HARVESTER – 4 WHEEL

S.No.	Parameters	Specifications
Machine Detail		
1.	Type	Self propelled , Ride on, Fodder Harvester
2.	Function	Harvesting and Windrowing of fodder crops
Engine		
3.	Engine Type	4 Stroke, Air Cooled, Single Cylinder, Variable Speed, Diesel Engine
4.	Starting	Electric Start
Transmission & Clutch		
5.	Type	Sliding /Constant Mesh or Combination of both
6.	No of Speed	4- Forward & 1- Reverse
7.	Clutch Type	Dry Friction Disc
Steering & Mechanical Brakes		
8.	Steering Mechanism	Steering wheel with Gear plate and tie rod at rear axle
9.	Brake Mechanism	Internal expanding shoe/ring
Reaping Unit		
12.	Effective width of cutter bar (mm)	1500
13.	Type of crop dividers	Shoe
14.	Number of crop dividers	Two
15.	Type of knife section	Serrated
16.	Number of knife sections on cutter bar	As per design
17.	Length of ledger plate (mm)	As per design
19.	Material of knife section	High carbon steel EN42 J and above
20.	Material of ledger plate	High carbon steel EN44 and above
21.	Hardness of knife section ,HRC	38 (min)
22.	Hardness of ledger plate, HRC	45 (Min)
Lifting fo Cutter Bar		
20.	Operation	Hydraulic
21.	Type	DC Hydraulic power unit with the oil tank.
22.	Lifting method	Through single acting hydraulic cylinder

## 6. SELF PROPELLED REAPER BINDER – 3 WHEEL

S.No.	Parameters	Specifications
<b>Machine Detail</b>		
1.	Type	Self propelled , Ride on, Reaper Binder
2.	Function	Harvesting and Binding of Grain crops in a single operation
<b>Engine</b>		
3.	Engine Type	4 Stroke, Air Cooled, Single Cylinder, Variable Speed, Diesel Engine
4.	Starting	Rope Start
<b>Transmission &amp; Clutch</b>		
5.	Type	Sliding /Constant Mesh or Combination of both
6.	No of Speed	4- Forward & 1- Reverse
7.	Clutch Type	Dry Friction Disc
<b>Steering &amp; Mechanical Brakes</b>		
8.	Steering Mechanism	By dog clutch on drive axle and pedal on steered wheel
9.	Brake Mechanism	Internal expanding shoe/ring
<b>Reaping Unit</b>		
10.	Effective width of cutter bar (mm)	1200
11.	Type of crop dividers	Shoe
12.	Number of crop dividers	Two
13.	Type of knife section	Serrated
14.	Number of knife sections on cutter bar	As per design
15.	Length of ledger plate (mm)	As per design
16.	Material of knife section	High carbon steel EN42 J and above
17.	Material of ledger plate	High carbon steel EN44 and above
18.	Hardness of knife section ,HRC	38 (min)
19.	Hardness of ledger plate, HRC	45 (Min)
<b>Lifting of Cutter Bar</b>		
20.	Type	Manual lifting
21.	Operation	By pulling down the handle bar to raise the cutter bar from ground and locking it at the raised position
<b>Crop Collecting Unit</b>		
21.	Type	Forks with fingers
22.	No. of forks	6

<b>Crop binding mechanism</b>		
23.	Type	Knotting
24.	Type of ropes	Nylon/Jute/ PP Rope
25.	Provision of changing the crop bundle size	Provided
27.	Slip clutch/safety pins at cutter bar drive	Provided
28.	Provision of Parking break for storage/parking	Provided

## 7. SELF PROPELLED REAPER BINDER – 4 WHEEL

S.No.	Parameters	Specifications
Machine Detail		
1.	Type	Self propelled , Ride on, Reaper Binder
2.	Function	Harvesting and Binding of Grain crops in a single operation
Engine		
3.	Engine Type	4 Stroke, Air Cooled, Single Cylinder, Variable Speed, Diesel Engine
4.	Starting	Electric Start
Transmission & Clutch		
5.	Type	Sliding /Constant Mesh or Combination of both
6.	No of Speed	4- Forward & 1- Reverse
7.	Clutch Type	Dry Friction Disc
Steering & Mechanical Brakes		
8.	Steering Mechanism	Steering wheel with Gear plate and tie rod at rear axle
9.	Brake Mechanism	Internal expanding shoe/ring
Lifting of Cutter bar		
20.	Operation	Hydraulic
21.	Type	DC Hydraulic power unit with the oil tank.
22.	Lifting method	Through single acting hydraulic cylinder
Reaping Unit		
12.	Effective width of cutter bar (mm)	1200
13.	Type of crop dividers	Shoe
14.	Number of crop dividers	Two
15.	Type of knife section	Serrated
16.	Number of knife sections on cutter bar	As per design
17.	Length of ledger plate (mm)	As per design
19.	Material of knife section	High carbon steel EN42 J and above
20.	Material of ledger plate	High carbon steel EN44 and above
21.	Hardness of knife section ,HRC	38 (min)
22.	Hardness of ledger plate, HRC	45 (Min)
Crop Collecting Unit		

23.	Type	Forks with fingers
24.	No. of forks	6
Crop binding mechanism		
25.	Type	Knotting
26.	Type of ropes	Nylon/Jute/ PP Rope
27.	Provision of changing the crop bundle size	Provided
29.	Slip clutch/safety pins at cutter bar drive	Provided
30.	Provision of Parking break for storage/parking	Provided

## 8. TRACTOR DRAWN AGRICULTURAL TRAILER

S.No.	Parameters	Specifications
01.	Class of vehicle	LMV 2 wheel Trailer G.V.W. 3-5 T
03	Type of body – Solo/ Solo with Pillion / Hatch Back/sedan/saloon/estate etc.,	Semi Trailer 2 wheel Tipping Trailer
03	Type of vehicle / category	R 2
04.	Month and Year of Manufacture	As per Codification
05.	No of cylinders	-
06.	Chassis Number of the Inspecting vehicle	As applicable
07.	Engine Number or Motor Number in the case of Battery operated vehicle	As applicable
08	Fuel Used	-
09.	H.p /BHP	-
10	Cubic capacity	-
11	Makers classification	2 wheel Tipping Trailer GVW 3-5 T
12	Wheel Base	-
13	Seating Capacity	-
14	Colour	As applicable
15	ULW ( Unladen weight )	-
16	GVW ( Gross Vehicle Weight) or RLW (Registered Laden weight ) as certified by the manufacturer	- kgs
17	Number, Description, size and ply rating of tyre as declared by the manufacturer	
17(a)	Front axle	10.00x20, 16 PR Tube Type
17(b)	Rear axle	-
18	Registered Axle weight	
18(a)	Maximum (FAW)	-
18(b)	Maximum (RAW)	-
19	Dimension ( in mm)	
19(a)	Overall length	4100 mm
19(b)	Rear over hang	-
19©	Overall width	1830 mm
19(d)	Overall height	1675 mm
19(e)	Min, Ground clearance	-
20	Speed Governor (speed limiting function)	-



## 9. Tractor operated 3-row Sugarcane Planter

S.No.	Parameters	Specifications
1.	<b>Model</b>	<b>SCP03</b>
2.	Box Frame	50*6 mm
3.	Furrow Opener	6 mm
4.	Ridger Tyne	50*25 mm
5.	Function	Sugar cane Seeder
6.	Working Efficiency	High Output
7.	Color	As the Customer Requirement
8.	Seed Tank Capacity	3-4 quintal
9.	Fertilizer Tank Capacity (kg)	75
10.	Row Spacing (cm)	60-75 cm ( As the Customer Requirement)
11.	Number of Blade	6
12.	Number of Rubber	30
13.	Seed Distance	As the Customer Requirement
14.	Planting Density	15-20 P /m/ Row
15.	Insecticide Tank Capacity	100 Liters
16.	Fungicide Tank Capacity	200 Liters
17.	Soil Treatment Area	Only Seeds Placement Area
18.	Seeds Treatment	As per Cutting Points
19.	Gear Box	Heavy Duty Gear Box
20.	Close Furrow	6
21.	PTO Rotation (RPM)	540 to 1000
22.	Depth Control	Hydraulic and Rubber Wheel
23.	Sugar cane Machine Drive	2 Rubber Wheel
24.	Number of seats	3
25.	Drive	Ground Circular Wheel
26.	Seed Variety	All Seeds with Any Variety
27.	Required Power (HP)	50 above
28.	Planting Capacity/ Per Acre	5-6 Acre
29.	Productivities	5Km/H
30.	Linkage Category	Tractor Hydraulic with Three Point Linkage
31.	Use	Farm Machine to Plant Sugar cane Seeds
32.	Spare parts	Available
33.	After- Sale Service Provided available to service	Engineers
34.	Number of Furrow	3
35.	Transportation	Hydraulic Trailing

## 10. ROUND BALER

Sr. No	Parameter	Specification
1.	Working width (mm)	700 to 1970
2.	Recommended power source (hp)	35 to 65
<b>Pick-up Unit:</b>		
3.	No. of tine bars	4/5
4.	No. of tines on each bar	12/14/16/20/22 or 28/30/32
5.	Tine spacing (mm)	52 to 68
6.	Reel speed corresponding to 540 PTO rpm (rpm)	84 (min.)
<b>Bale Unit:</b>		
7.	No. of bale rollers Tight Bars	9 (min.) No. of tight bars : 58pcs in total (7pcs of 'with key' and 51pcs of 'without key')
8.	Dia. Of bale rollers (mm)	- With key :LxWxH = 776mm x 43mm x 34.6mm  - Without key :LxWxH = 776mm x 43mm x 28.6mm
9.	Speed of bale rollers corresponding to 540 PTO rpm (rpm)	: 1.24m/second
10.	Size of bale, LxD (cm)	
<b>Bale weight (kg)</b>		
11.	Provision for bale density adjustment	
12.	Provision of safety clutch/ device (shear bolt) in PTO drive shaft and pick-up unit	Provided
13.	Guard over propeller shaft	Provided
14.	Provision of guards over transmission for safety	Provided
15.	Provision for safety at feeder unit against overloading	Provided
16.	Provision for transportation	Provided
17.	-Any other	Shaft and Pin should be of min EN 9 or higher specification
18.	Name & Address of Manufacturer	Name & Address of Manufacturer
19.	Make	Make
20.	Model	Model
21.	Size/working width, (mm)	Size/working width, (mm)
22.	Country of origin	Country of origin
23.	Year of manufacturer	Year of manufacturer
24.	Chassis Serial Number	Chassis Serial Number

25.	Recommended PTO speed of prime-mover, (rpm)	Recommended PTO speed of prime-mover, (rpm)
26.	Maximum PTO Power required, kW	Maximum PTO Power required, kW , The SI No must be engraved on frame
27.	Printed Literature	Operator & service manual, part catalog must be provided in Hindi, English a7 regional language

## 11. ROTO-PUDDLER /RICE HARROW

S..N	Item	Specification
1	Working width	Min 2000 mm
2	Type of blade	S Type Blades
3	Thickness of blade(mm)	6 mm Min
4	No of blades	Min of 50 (Depending on sizes)
5	Total no holders	Min of 50 (Depending on sizes)
6	No of blades per holder	One
7	Diameter of rotor shaft(mm)	OD above 70 mm(Schedule 80)
8	Rotor diameter	380 mm
	(Including holder and blade mounted on holder, mm)	
9	Side drive	Chain drive
10	Depth controle mechanisam	Arc shaped skid on both side of machine
11	Material of blades	27MnCrB5
	(as per manufacturer declaration)	
12	Safty clutch/device	Provided
	(Shear bolt)in PTO drive shaft	
13	Rice harrow Stand	Provided
14	Guard over propeller shaft	Provided
15	Total weight of the machine(Kg)	325 Kg (approx.)
16	Marking/labeling of machine	The labeling plate riveted on the body of machine having name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial no, Type, Size, required size of prime mover(KW)
17	Literature	Operator manual, Service manual and Parts catalogue provided
18	Sheet metal	Reference IS2062 for content of primary elements in different category of sheet metal , defined by CFMTTI,NRFMTTI,AMMA
19	Gear used in transmission	16 T,27 T Bevel gears used Material EN353

## 12. Ridge Tiller

S. No.	Specification	Specification
1.	Working width (mm)	950
2.	Power Source	Tractor :Min 20 HP (540 RPM)
3.	Ridge Distance	Min 1200 mm
4.	Ridge height	Min 320 mm
5.	Depth of Cut	Min 200 mm
6.	Type of blade	C / L
7.	Thickness of blade (mm)	7-8
8.	No. of Blades	Min – 8
9.	Total number of flanges	2
10.	Number of blades per flange	Min 4 Max 6
11.	Diameter of rotor flange (mm)	Mini 145
12.	Rotor diameter (including flange and blade mounted on flange, mm)	Min 460 mm
13.	Drive	Gear drive
14.	Depth control mechanism	Harness Blade
15.	Material of blades (as per manufacturer declaration)	Spring Steel, Boron Steel
16.	Safety clutch/device( Shear bolt) in PTO drive shaft	Not Necessary
17.	Total weight of the machine (kg)	Mini 160 kgs

**13 SUPER STRAW MANAGEMENT SYSTEM (SMS) TO BE ATTACHED WITH  
Track Type COMBINE HARVESTER**

<b>Sl. No.</b>	<b>Parameters</b>	<b>Specifications</b>
<b>Rotor</b>		
1.	Rotor diameter, mm	114
2.	No. of lugs on rotor in a row	24
3.	No. of rows in periphery	4
4.	Length of pivotal flail, mm	117
5.	Width of flail, mm	50
6.	Thickness of flail, mm	5
7.	No. of flails in one set	1 1
8.	Distance between adjacent flail units, mm	296 mm (Fixed)
9.	No. of rows/bars of serrated blades	1
10.	No. of serrated blades in a row	25
11.	Spacing between serrated blades, mm	30
12.	Overlapping of pivotal blade on serrated blade, mm	30 to 52 (adjustable)
<b>Spreader</b>		
<b>Combine harvester track type: Spreading of chopped straw is done automatically (provided within the Unit) b the SMS unit fitted with combine harvester.</b>		
13	Length of flap	3+2 (side)
14	Length of flap, cm	38.5
15	Distance between flaps (left to right)	Adjustable
16	Spreader angle with horizontal, degree	Adjustable

17	Spreader angle with line of travel, degree	20 to 45 (adjustable)
18	Spreader sheet thickness, mm	1.5
19	SMS Sheet thickness, mm	5.0
20	Rotor balancing	Dynamically Balanced
21	Rotor rpm	Above 1600
22	Fitting of SMS on combine harvester	Rigidly fixed to the combine chassis
23	Fitting of power transmission system on combine harvester	Rigidly fixed to the combine chassis

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