

BUREAU OF INDIAN STANDARDS
MINUTES

Name of the Committee	No. of Meeting	Date	Time	Venue
Agricultural Machinery and Equipment Sectional Committee, FAD 11	26 th	28 February 2024 (Wednesday)	10:30am	Hybrid Mode Lal C Verma Hall, Bureau of Indian Standards, HQ, New Delhi

CHAIRPERSON:

Dr. C R Mehta
(Chairperson, FAD 11)
Director,
ICAR–Central Institute of Agricultural Engineering,
Bhopal

MEMBER SECRETARY:

Vikrant Chauhan
(Member Secretary, FAD 11)
Scientist-B / Assistant Director
Food & Agriculture Department,
Bureau of Indian Standards, New
Delhi

ITEM 0 GENERAL**0.1 Welcome**

Shri Vikrant Chauhan, Scientist-B/Assistant Director, Food and Agriculture Department, BIS welcomed Dr. C R Mehta, Chairperson, FAD 11 and members of FAD 11 to the 26th meeting of the committee. Shri Vikrant apprised the committee members regarding actions taken since the 25th meeting of the committee, various meetings of panels and working groups and discussions held with manufacturers. Requesting for support from the committee, Shri Vikrant urged for fruitful and conclusive deliberation on the issues raised in the agenda.

0.2 Opening Remarks by the Chairperson

Dr. CR Mehta, Director, ICAR-Central Institute of Agricultural Engineering, Bhopal and Chairperson, Agricultural Machinery and Equipment Sectional Committee, FAD 11, in his opening remarks extended a warm welcome to the members of the Committee to its 26th meeting. Dr. Mehta appreciated the progress made by committee in last few months in taking up revision of several pre-2000 Indian Standards. Further, appreciating a good participation in the meeting, Dr. Mehta urged the committee members to be active, engage in to the point, fruitful discussions to reach consensus on different issues raised in the agenda.

ITEM 1 CONFIRMATION OF THE MINUTES OF THE TWENTY FIFTH MEETING

1.1 The committee confirmed the minutes of the 25th meeting of Agricultural Machinery and Equipment Sectional Committee, FAD 11 held on 24 November 2023 (through hybrid mode) as circulated vide our email dated 17 January 2024, without any change.

ITEM 2 SCOPE, ACTIVITIES AND COMPOSITION OF THE SECTIONAL COMMITTEE

2.1 Scope & Program of Work of the Committee

2.1.1 The committee noted the scope of Agricultural Machinery and Equipment Sectional Committee, FAD 11 as mentioned in **2.1.1** of the agenda.

2.1.2 The committee noted the program of work of FAD 11 as enclosed in Annex 1 of the agenda.

2.2 Composition of the Sectional Committee

2.2.1 The committee noted the composition of FAD 11 as provided in Annex 2 of the agenda.

2.2.1.1 In its last meeting of FAD 11, the committee had recommended withdrawal of National Innovation Foundation – India, Gandhinagar due to lack of participation. However, considering that a request has now been received from NIF-India, Gandhinagar for retention, the committee after due deliberation decided to retain their membership and directed NIF-India to continue their participation in upcoming committee meetings.

2.2.1.2 The committee noted the updated nominations received from TI Clean Mobility Pvt., Ltd., Chennai, Tractor and Mechanisation Association, New Delhi and ICAR-AICRP on Ergonomics and Safety in Agriculture, Bhopal.

2.2.1.3 As the experts nominated by OUAT, Bhubaneswar, have retired, the committee requested the BIS Secretariat to seek updated nominations from OUAT in the committee.

2.2.2 Co-option of Organizations/Members

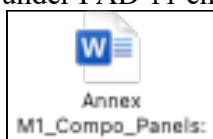
2.2.2.1 The committee noted the request (*see* Annex 2b and 2c of the agenda) received from TI Clean Mobility, Murugappa Group for co-opting Shri Shri Vivek Gupta, who has superannuated as R&D Head from the organisation. Recognizing Shri Gupta's extensive 43 years of experience and notable contributions to the tractor and agricultural machinery industry, the committee decided to co-opt him in a Personal Capacity within FAD 11 committee, as well as in FAD 11/Panel 5 and WG 1.

2.2.2.2 The committee on request of Agricultural Machinery Manufacturers Association (AMMA-India) decided to co-opt KisanKraft Ltd., Bangalore as a member in the committee and requested BIS Secretariat to seek nomination from the organization to represent in FAD 11.

2.3 Composition of Panels/WG Under the Committee

In view of the updated nominations received from several organisations, the composition of various Panels/WGs was changed. Further, in compliance with directions received from DG, BIS for discontinuing the concept of Sub-Committees and establishing standing panels, the FAD 11 committee resolved to constitute a new Panel, FAD 11/P 8 with the title “Panel to review and formulate Indian Standards on Plant Protection Equipment” which will replace “Plant Protection Equipment Sub-Committee, FAD 11: 01”.

The updated compositions of Panels/WGs under FAD 11 enclosed at Annex M1.



2.4 New/Revised Indian Standards Published/Under Publication

The committee noted the list of Indian Standards which are under publication as given in 2.4 of the agenda. The committee requested BIS secretariat to circulate the soft copies of Indian Standards among the committee members once published.

ITEM 3 FINALISATION OF DRAFT STANDARDS

Following drafts (Revised/New) were circulated into wide circulation for a period of 60 days as per the decision taken in earlier meetings of FAD 11. The decision of the committee on each of the documents is tabulated below:

Sl.No.	Document No.	Title	Decision of the Committee
i)	Doc No. FAD 11 (16313)F	Paddy transplanter — test code, and recommendations on selected performance characteristics	The committee noted that all the comments received during WC have been incorporated in the draft by WG 4 in their meeting. Therefore, the committee after due deliberation finalized the document for sending into publication.
ii)	DOC No. FAD 11 (23761)C	Sugarcane planter, semi-automatic — Specification (<i>first revision of IS 11976</i>)	It was apprised to the committee, that automatic sugarcane planters are also available in market, therefore the committee decided to incorporate specification related sugarcane planter in the draft and again sent for wide circulation for a period of 60 days. The committee requested AMMA-India to take up the task.
iii)	Doc No.: FAD 11 (22325)F	Straw management system (SMS) for combine harvesters — Performance test method	The committee noting that no comments have been received during the wide circulation staged, finalized the draft for sending into publication.
iv)	FAD 11(24449)F	Crop protection equipment - Hand-operated knapsack sprayer, piston type - Specification (Fifth Revision of IS 3906)	The committee noted that no technical comments have been received during the wide circulation staged and FAD 11:01 has also recommended for finalisation of these draft standards.
v)	FAD 11(24450)F	Crop protection equipment - Rocker sprayer - Specification (Fifth Revision of IS 3062)	The committee accordingly finalised the drafts for sending into publication.
vi)	FAD 11(24448)F	Crop protection equipment - Foot sprayer - Specification (Fifth Revision of IS 3652)	
vii)	FAD 11 (22456)C	Equipment for crop protection - Air-assisted sprayers - Dimensions of	The committee noted that till date (28 February 2024) no comments have been received on the documents. The last

		Nozzle Swivel Nuts (first revision of IS 15921)	date of sending comments is 14 April 2023. Therefore, the committee decided to send following documents into publication after the approval of Chairperson, FAD 11 if no comments are received during the wide circulation period.
viii)	FAD 11(22450)C	Preventive maintenance of agricultural wheeled tractors — Code of practice (<i>second revision</i> of IS 6840)	
ix)	FAD 11(22336)C	Agricultural tractors for use in wet land cultivation — Technical requirements (First Revision of IS 11082)	
x)	FAD 11(22451)C	Drawbar for agricultural tractors — Link type — Specification (<i>first revision</i> of IS 12953)	
xi)	FAD 11(24876)C	Double action pruning saw — Specification (third revision of IS 3108)	
xii)	FAD 11(24864)C	Tree pruner - Specification (first revision of IS 10684)	

ITEM 4 APPROVAL OF DRAFT INDIAN STANDARDS FOR WIDE CIRCULATION

4.1 Indian Standards on Gardening/Horticultural Tools and Machinery submitted by FAD 11/Panel 3

The appreciated the contribution made by Falcon Garden Tools Pvt Ltd, Ludhiana and Kisan Kraft Ltd, Bangalore by providing valuable inputs regarding revision of below mentioned Indian Standards on various aspects including raw material, important dimensions, types/models available, etc. The decision taken by the committee on each of the standards is tabulated below:

S.No.	IS No./Title	Decision of the Committee
i)	IS 13377 : 1992 Forestry tools — Shrub cutting Knife — Specification	The committee after due deliberations decided to send draft revisions of IS 13377, IS 2563, IS 14541 and IS 7825 (enclosed at Annex 4, 5, 6 and 7 of the Agenda respectively) to CIAE, Bhopal for including requirements from ergonomics POV such as diameter of handles used in these tools/machines for easy grip, mass of these tools, etc, in these drafts.
ii)	IS 2563 : 1978 Specification for hedge shears, straight-edge type	
iii)	IS 14541 : 1988 Forestry and plantation tools —Hoes and Forks — Specification	
iv)	IS 7825 : 2004 Cylinder type hand lawn mower — specification	
		The committee requested Dr. SP Singh and Dr. KN Agrawal, CIAE, Bhopal to provide their feedback w.r.t. above.
		Upon incorporation of the comments, the draft revision of IS 13377, IS 2563, IS 14541 and IS 7825 will be sent into wide circulation for a period of 60 days after approval of Chairperson, FAD 11.

4.2 Indian Standards on Agricultural Implements submitted by FAD 11/Panel 3

4.2.1 The committee appreciated the efforts made by Dr. Surendra Singh, Technical Advisor, AMMA-India in preparation of the draft revisions of Indian Standards on agricultural implements (sowing/planting/tillage) taking inputs on raw material requirement, etc., from agricultural machinery manufacturers based in Karnataka. The decision taken by the committee on each of the standards is tabulated below:

S.No.	IS No./ Title	Decision of the Committee
i)	IS 2192 : 1998 Soil working equipment — Animal drawn mould board plough fixed type specification (<i>second revision</i>)	The committee after due deliberation decided to send the draft revision of IS 2192 (<i>see Annex 8 of Agenda</i>) into wide circulation for a period of 60 days in which following modifications have been made : <ol style="list-style-type: none"> Raw material requirement and important dimensions updated Specification for Tractor Drawn MB plough has been incorporated. Test code for MB Plough (IS 6288 : 1971) has been merged. Specification for share used in Tractor-operated MB Plough (IS 10691) has been merged. <p>Accordingly, after publication of the revised IS 2192, IS IS 6288 : 1971 and IS 10691 : 1983 shall be withdrawn.</p>
ii)	IS 4366 (Part 1) : 1985/ISO 5679 : 1979 Specification for Agricultural Tillage Discs Part 1 Concave Type (<i>second revision</i>)	The committee after due deliberation decided to send the draft document (<i>see Annex 9 of Agenda</i>) into wide circulation for a period of 60 days which is a merger of IS 4366 Part 1 & Part 2. Testing procedure for agricultural discs covered in IS 9217 : 1979 has also been merged with necessary modifications in relation to raw material requirement and important dimensions as per current manufacturing practices.
iii)	IS 4366 (Part 2) : 1985 / ISO/TR 412 : 1977 Specification for Agricultural Tillage Discs : Part 2 Flat Type (Second Revision)	
iv)	IS 6638 : 1972 Specification for Tractor - Mounted Spring - Loaded Cultivators	The committee after due deliberation decided to send the draft document(<i>see Annex 10 of Agenda</i>) into wide circulation for a period of 60 days in which is a merger of IS 6638 : 1972, IS 7565 (Part 1) : 1975 and IS 7565 (Part 2) : 1988 incorporating necessary modifications as per current manufacturing have been made.
v)	IS 7565 (Part 1) : 1975 Specification for Tines for Tractor - Operated Cultivators - Part I Rigid Tines	
vi)	IS 7565 (Part 2) : 1988 Specification for Tines for Tractor - Operated cultivators Part 2 - S - Type Tines	
vii)	IS 6635 : 1972 Specification for Tractor Operated Disc Harrows	The committee after due deliberation decided to send the draft document (<i>see Annex 11 of Agenda</i>) into wide

viii)	IS 3606 : 1998 Soil working equipment — Disc harrow, animal drawn — Specification (<i>second revision</i>)	circulation for a period of 60 days in which is a merger of IS 6635 : 1972, IS 3606 : 1998, IS 7640 : 1975 and IS 7230 : 1974.
ix)	IS 7640 : 1975 Test code for disc harrows	
x)	IS 7230 : 1974 Specification for Plain Spool for Tractor Operated Disc Harrows	This standard will be published with a new IS number superseding IS 6635 : 1972, IS 3606 : 1998, IS 7640 : 1975 and IS 7230 : 1974.
xi)	IS 6813 : 2000 Sowing equipment - Seed - Cum - Fertilizer drill - Specification <i>Second Revision</i>	The committee after due deliberation decided to send the draft document (<i>see Annex 12 of Agenda</i>) into wide circulation for a period of 60 days which is a merger of IS 6813 : 2000 and IS 6316 : 1993. Along with this, necessary modifications as per current manufacturing have been made such as updating raw material requirements and important dimensions. This standard will be published as revision of IS 6813 and after publication IS 6316 : 1993 shall be withdrawn.
xii)	IS 6316 : 1993 Sowing-equipment seed-cum fertilizer drill —Test code (<i>first revision</i>)	
xiii)	IS 3342 : 1998 Soil Working Equipment — Cultivators, animal-drawn — Specification (<i>Second Revision</i>)	The committee requested FAD 11/P 3 to review the draft (<i>see Annex 13 of Agenda</i>) again to incorporate testing procedure as well.
xiv)	IS 11893 : 1986 Specification for Potato Planter, Semi - Automatic	The committee requested FAD 11/P 3 to review the draft (<i>see Annex 14 of Agenda</i>) again to incorporate specifications of automatic potato planter.
xv)	IS 9856 : 1981 Test Code for Potato Planters	
xvi)	IS 12337 : 1988 Specification for Manually Operated Fertilizer Broadcaster	The committee approved the draft revision of IS 12337 (<i>see Annex 15 of Agenda</i>) for sending into wide circulation for a period of 60 days for commenting.

4.2.2 The committee noted the information provided in **4.2.2** of the agenda regarding revised drafts of following Indian Standards. The decision of the committee is tabulated below:

S.No.	IS No./ Title	Decision of the Committee
i)	IS 9818 (Part 1) : 1981 Glossary of Terms relating to tillage and Intercultivation Equipment Part 1 General Terms	The committee after due deliberation decided to send the draft document (<i>see Annex 16 of Agenda</i>) into wide circulation for a period of 60 days which is a merger of IS 9818 (Part 1) : 1981 and IS 9818 (Part 2) : 1981. This will be published as a new standard superseding IS 9818 (Part 1) : 1981 and IS 9818 (Part 2) : 1981 while retaining the IS number.
ii)	IS 9818 (Part 2) : 1981 Glossary of Terms Relating to Tillage and Intercultivation Equipment Part 2 Terms Relating to Equipment	
iii)	IS 9826 : 1981 Glossary of Terms Relating to Harvesting and Threshing Equipment	The committee approved the draft revision of IS 9286 (<i>see Annex 17 of Agenda</i>) to be sent into wide circulation for a period of 60 days for commenting.
iv)	IS 9821 : 1981 Glossary of Terms Relating to Farm Transport Equipment	The committee approved the draft revision of IS 9821 (<i>see Annex 18 of Agenda</i>) to be sent into wide circulation for a period of 60 days for commenting.

v)	IS 9855 : 1981 Glossary of Terms Relating to Sowing Planting Fertilizer and Manure Application Equipment	The committee approved the draft revision of IS 9855 (<i>see</i> Annex 19 of Agenda) to be sent into wide circulation for a period of 60 days for commenting.
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4.3 Indian Standards on Power Tillers reviewed by FAD 11/Panel 6

4.3.1 The committee noted the information provided in 4.3.1 of the agenda regarding review of Indian Standards on Power Tillers allocated to FAD 11/P 6 and took the following decision:

S. No.	IS No./Title	Decision of the Committee
1.	IS 6690 : 1981 Specification for Blades for Rotavator for Power Tillers (First Revision)	The committee noting the information provided in the agenda requested PTAI to submit chemical composition of Boron Steel to be incorporated in the draft revision of IS 6690. Upon, incorporation the draft will be sent for wide circulation for a period of 60 days for commenting.
2.	IS 13064 : 1991 Power Tillers – Installation and Preventive: Maintenance – Guidelines	The committee requested SRFMTTI, Anantpur to review IS 13064 and make modifications as per latest installation and preventive maintenance being followed and submit the revised draft by end of April 2024.
3.	IS 9935 : 2002 Power Tiller - Test Code (Second Revision)	The committee requested SRFMTTI, Anantpur to review IS 9935 and make modifications as per latest testing procedure followed at the Institute and submit the revised draft by end of April 2024.
4.	IS 10747 : 1983 Dimensions of Hitch for Power Tillers	The committee on recommendation of FAD 11/P 6 decided to revise the standard (IS 10747) in latest style and format without any technical modifications and send the revised draft into wide circulation for a period of 60 days for commenting.
5.	IS 11858 : 1986 Specification for Handle Grip for Power Tiller	The committee on recommendation of FAD 11/P 6 decided to revise the standard in latest style and format without any technical modifications and send the revised draft into wide circulation for a period of 60 days for commenting
6.	IS 11905 : 1986 Specification for Shaft Assembly for Rotavator for Power Tiller	The committee noted the information provided in the agenda and decided to send the draft revision (<i>see</i> Annex 22 of the agenda) of IS 11905 submitted by FAD 11/P 6 into wide circulation for a period of 60 days for commenting.
7.	IS 10806 : 2003 Trailers for Power Tillers - Specification <i>First Revision</i>	The committee noted the inputs provided by FAD 11/P 6 on revision IS 10806 (<i>see</i> Annex 23 of the agenda). However, as the complete standard couldn't be reviewed, the committee recommended FAD 11/P 6 to take further inputs from Trailer manufacturers. The committee requested AMMA-India and FAD 11/P 6 to identify certain trailer manufacturers and take inputs on the latest manufacturing practices in trailers attached with power tillers as well as tractor.

8.	IS 9980 : 1988 Guidelines for Field Performance and Haulage Tests of Power Tillers (<i>First Revision</i>)	The committee requested SRFMTTI, Anantpur to review IS 9980 and make modifications as per latest haulage test procedure followed at the Institute and submit the revised draft by end of April 2024.
9.	IS 12239 (Part 3) : 1988 Guide for Safety and Comfort of Operator of Agricultural Tractors and Power Tillers Part 3 Requirements Relating to Power Tillers	The committee requested SRFMTTI, Anantpur to review IS 12239 (Part 3) and make modifications as per latest safety and comfort requirements provided or should be provided in power Tillers and submit the revised draft by end of April 2024.

4.3.2 Review of IS 13539 : 2018 Power Tiller – Recommendations on Selected Performance and Other Characteristics (*Second Revision*)

4.3.2.1 The committee noted the information provided in **4.3.2** of the agenda regarding review of IS 13539 : 2018 and recommendations provided by FAD 11/P 6 during its 2nd meeting at SRFMTTI, Anantpur.

4.3.2.2 To differentiate between Rotary Tiller (Power Weeder) as per see IS 15925 and Power Tiller based on power, the definition of Power Tiller was modified through Amendment No. 1 to IS 13539 : 2018 which got published in August 2023. The amended definition is given below:

“Power Tiller is an agricultural machinery used for soil preparation having a single axle, in which the direction of travel and its control during field operation is performed by the operator. It is self-powered, self-propelled, and can pull cultivator, harrow, plough, various seeders, harvester and such other suitable attachments. The equipment may be walk behind or riding attachment type and should be capable of being coupled to a trailer that can be used for transportation of goods of not less than 1 ton capacity. The maximum speed of the power tiller when coupled to a trailer shall not exceed 22 kmph. The rated horsepower output of the power tiller engine shall be above 10 bhp (break horsepower).”

4.3.2.3 During the FAD 11/P 6 meeting at SRFMTTI, Anantapur, and based on a letter received by the Director, SRFMTTI (see **4.3.3** and Annex 25 of the Agenda) from KAMCO Ltd., Kerala, it was brought to the committee's attention that KAMCO Ltd. manufacture Power Tillers with a rated power of 9 hp (horsepower) and 400+ kg weight and this would fall outside the category of Power Tiller as per new definition. Therefore, KAMC, Ltd., requested for re-reviewing the definition of Power Tiller.

4.3.2.4 The committee thoroughly deliberated on the definition of Power Tiller and Power Weeder. The compiled recommendations and suggestions provided by the members regarding the issue are given below:

- i) It was observed that the utilization and capabilities of Power Tillers and Power Weeders differ significantly. Power Tillers, equipped with various attachments, can be used for numbers of operations such as, tilling, sowing, harvesting, puddling, pulling load (when trailers are attached), etc., while with power weeder limited operations can be performed. Notably, the operations such as puddling, load pulling etc, cannot be executed using a Power Weeder.
- ii) The committee noted that while a Drawbar pull and rotary test is conducted on Power Tillers, such tests are absent in the case of Power Weeders.
- iii) Weight plays a crucial role in determining the traction efficiency of agricultural machines. Power Tillers typically have a higher weight compared to Power Weeders, which contributes to better

traction. In light of this, a suggestion was made to establish a minimum weight requirement for Power Tillers.

- iv) Recommendations were put forth to distinguish between the two machines based on several parameters, including **power rating, weight, the range of agricultural operations facilitated by attachments, required tests, pulling capacity, and the dimensions of cut (depth and width) when equipped with a rotavator.**
- v) It was further noted that the import of Power Tillers into India is regulated by HSN Code 84328020, which refers to the definition provided in IS 13539 : 2018.

4.3.2.5 The committee also noted the proposal received from AMMA-India (see **4.3.4** of the agenda) to revise IS 15925 : 2012 “Walk-behind powered rotary tillers — Definitions, safety requirements and test procedures” identical adoption of IS 11449 : 1995, which will act as separate standard for Power Weeder Specification.

4.3.2.6 After due deliberation, the committee took the following decisions :

- i) It was decided to review both, IS 13539: 2018 and IS 15925 : 2012. However, as IS 13539 : 2018, was due for five yearly review, the committee decided to reaffirm the standard and simultaneously take it up for revision.
- ii) The committee requested FAD 11/P 6 to take up the task on priority and conduct a physical meeting in the month of April for thorough discussion on two standards.
- iii) Dr. Surendra Singh, Technical Advisor, AMMA-India and a representative from BCS, Ludhiana were co-opted in FAD 11/P 6 for the purpose.
- iv) To develop separate standard and test code specifically for Power Weeder.

4.4 Indian Standards on Harvesters reviewed by FAD 11/P1

4.4.1 The committee noted the information provided in 4.4.1 of the agenda review of Indian Standards on combine harvesters allocated to FAD 11/P 1 and took the following decision:

S.No.	IS No./Title	Decision of the Committee
i)	IS 8122 (Part 1) : 1994 “Test Code for Combine Harvester — Thresher Part 1 Terminology (First Revision)”	The committee on recommendation of FAD 11/P 1 decided to send the draft revision [<i>see</i> Annex 27 of the agenda] of IS 8122 (Part 1) into wide circulation for a period of 60 days for commenting.
ii)	IS 8122 (Part 2) : 2000 “Combine Harvester - Thresher - Test Code Part 2 Performance Test (First Revision)”	The committee on recommendation of FAD 11/P 1 decided to send the draft revision [<i>see</i> Annex 28 of the agenda] of IS 8122 (Part 2) into wide circulation for a period of 60 days for commenting.
iii)	IS 9877 : 1981 “Code of Practice for Installation Operation and Preventive Maintenance of Grain Combine”	The committee requested NRFMTTI, Hisar to review IS 9877 and make modifications as per latest installation and preventive maintenance of Combine, being followed and submit the revised draft by end of April 2024.

4.4.2 Draft Amendment to IS 17626 : 2021 “Self-Propelled Sugarcane Harvester — Test Methods”

The committee noted the information provided in 4.4.2 of the agenda and after due deliberation decided to send the draft amendment (see Annex 29 of the agenda) to IS 17626 : 2021 prepared by FAD 11/P 1 into wide circulation for a period of 30 days for commenting. Further, the committee decided that, the draft amendment may be sent into publication after approval of Chairperson, FAD 11, in case no comments are received during wide circulation period.

4.5 Revised Draft of IS 15806 : 2018 “Combine Harvester - Recommendations on Selected Performance and Other Characteristics (First Revision)”

The committee noted the draft revision of IS 15806 (see Annex 30 of the agenda) submitted by AMMA-India incorporating all the three amendments issued to the standard in 2020, 2021 and 2022. To make standard more implementable, the committee after due deliberation decided to revise the standard making all the necessary corrections and send the draft into wide circulation for a period of 60 days for commenting.

ITEM 5 NEW SUBJECTS FOR STANDARDIZATION**5.1 Draft Indian Standard on Square Baler Machine**

The committee requested NRFMTTI, Hisar to provide few test reports of Square Baler to Shri Sujit Hinje for analysing, to as to incorporate criteria for minimum performance characteristics in the draft standard on Square Baler.

The draft thus prepared after discussion in WG 4 will be circulated as P-draft among the committee members for a period of 21 days.

5.2 Draft Indian Standard on Drone Seeder and Drone Sprayer [FAD 11(24816)]

The committee taking up the matter on priority requested FAD 11/P 7 to discuss the comments received from Dr. Agrawal and FAD 11:01 Sub-committee on draft standard for drone sprayer which was circulated among committee members as P-draft. Further, the committee decided to send the draft into wide circulation for a period of 60 days, in case, only minor modifications are made in the draft after taking approval from Chairperson, FAD 11.

Further, draft standard on drone seeder (see Annex M2) was received from Dr. R Kavitha, Convenor FAD 11/ P7. The committee requested BIS Secretariat to circulate the document among the FAD 11/P 7 members, FAD 11/P8 (earlier FAD 11:01) members and as well as among the committee members as P-draft for a period of 21 days for commenting.

**5.3 Draft Indian Standard on Electric Tractor**

5.3.1 The committee noted the information provided in 5.3 of the Agenda. Dr. SP Singh, CIAE, Bhopal (Project Coordinator, AICRP on UAE) and Convenor, WG 1 briefed the committee on the discussions held on 18 January during 1st meeting of WG 1.

- i) Currently, 18 Indian Standards are being referred by CFMTTI, Budni for testing agricultural tractors (diesel engine). Among these, around 6 to 7 standards require revision to accommodate testing procedures for Electric Tractors, while the remainder can be directly applied
- ii) Standards for initial inspection, noise measurement, brake test, nominal speed test, mechanical vibration, haulage test, lifting and hydraulic capacity test, location of centre of gravity, turning ability and operator's field of vision test can be directly utilized for Electric Tractors.
- iii) The current testing procedure involves prolonged running of the tractor/engine, which may not be feasible for Electric Tractors due to limitations in continuous power supply from the battery.
- iv) Unlike conventional agricultural tractors tested in both dry and wet land conditions, Electric Tractors may encounter challenges during wet land testing..
- v) Battery performance and its safety is a crucial aspect while testing Electric Tractor.
- vi) For higher horsepower (hp) tractors or to supply power for long duration, bigger batteries are needed which further increases the weight of the tractor.

5.3.2 The committee thoroughly deliberated on the issues informed by Dr SP Singh. The compiled recommendations and suggestions provided by the members regarding these issues are given below:

- i) For testing the performance of the battery and safety, AIS standards are already developed which may be referred.
- ii) The committee was apprised to the fact that, current electric tractors in India typically operate for maximum four hours on a single charge. Due to the high cost of battery, E-tractors price goes up compared to diesel tractors, thus hindering widespread adoption. However, with the government's emphasis on electric vehicles, it is anticipated that electric tractors will soon become more prevalent in the market. Consequently, there is a pressing need for a standardized testing procedure for these electric tractors.
- iii) It was brought to attention that the OECD is also developing standards for testing electric tractors, with a draft expected in near future.

5.3.3 The committee considered all these comments and decided as under:

- i) To initiate development of a test code for electric tractors, which would serve as the basis for evaluating their performance. Testing centers would then be able to issue test reports specifying the limitations/failures of each electric tractor based on test results.
- ii) While acknowledging the importance of establishing minimum performance standards for electric tractors, the committee suggested deferring this until sufficient data on their performance becomes available.
- iii) The committee requested WG 1 to take up the matter on priority and prepare the draft test code for Electric Tractor by end of April 2024. The draft test code will be structured in a manner similar to test code for Diesel Engine Tractor i.e., IS 5994. Further, the committee requested BIS Secretariat to provide word copies of IS 5994 and all the standards referred in it to WG 1 for review.

6 NEW WORK ITEM PROPOSAL

6.1 Battery Powered Sprayers

The committee noted the information provided in **6.1** of the agenda regarding proposal for taking up “Battery-operated knapsack sprayer” as a new subject for standardization. The committee noted the fact that, a number of battery-operated knapsack sprayers are being used nowadays manufactured by various companies, however due to non-availability of a standard, there is no check on their quality. Therefore, the committee requested FAD 11/P 8 (earlier FAD 11:01) to take up the subject and work for preparing a working draft. Further, the committee requested ASPEE Group, Mumbai to share the technical information available on battery operated knapsack sprayer with the Panel.

6.2 Bio-mass pellet Making Machine

The committee noted the information provided in **6.2** of the agenda regarding proposal for taking up “Bio-mass pellet Making Machine” as a new subject for standardization received from FAD 20.

A Bio-mass pellet making machine is a mechanical device designed to compress biomass materials such as wood, agricultural residues, or waste into dense pellets. These pellets are ideal for efficient combustion in biomass boilers or stoves.

Further, the Member Secretary apprised the committee that, under Mechanical Engineering Division Council, Renewable Energy Sources Sectional Committee, MED 4 formulates standards in the field of Renewable energy sources such as solar energy, bio-gas energy, bio-mass energy etc..

The committee after due deliberation concluded that, pellet making is a post-harvest process involving conversion of renewable organic matter (bio-mass) into a fuel which is a sustainable energy source, therefore the subject doesn't fall under the scope of FAD 11.

The committee requested BIS Secretariat to refer the subject to MED 4 and FAD 20 for further action.

ITEM 7 REVIEW OF INDIAN STANDARDS

7.1 The committee took the following decisions regarding review of Indian Standards due for review as per BIS's five yearly review criteria:

S.No.(A)	IS No. and Title	Last Reaffirmation Year(D)	Due Date(E)	Decision of the Committee
1)	IS 13539 : 2018 Power Tiller - Recommendations on Selected Performance and Other Characteristics (Second Revision)		September 2023	Based on recommendation of FAD 11/P 6, the committee decided to reaffirm the standard and simultaneously take up for revision.
2)	IS 15805 (Part 2) : 2008 Straw Reaper - Combine Test Code : Part 2 Performance Tests	2018	June 2023	The committee decided to reaffirm the standard for the time being and requested FAD 11/P 3 to review the standard for its revision.
3)	IS 9253 : 2013 Agricultural wheeled tractors - Field performance and haulage tests - Guidelines (Third Revision)	2019	January 2024	Based on recommendation of CFMTTI, Budni the committee decided to reaffirm the standard as there is no change in conducting haulage tests of tractors.
4)	IS 12409 : 1988 Specification for Garden Sword	2019	January 2024	Being a Pre-2000 standard, the committee As the standard is, Pre-2000, the committee decided to reaffirm the standard and simultaneously take up for revision.
5)	IS 15805 (Part 1) : 2008 Straw Reaper - Combine - Test Code : Part 1 Terminology	2019	January 2024	The committee decided to reaffirm the standard for the time being and requested FAD 11/P 3 to review the standard for its revision.
6)	IS 12162 : 1987 Specification for Lifting Hook	2019	January 2024	In its 28 th meeting of FADC held on 21 August 2023, the council on recommendation of FAD 11 approved for transfer of standards on forestry tools (S.No. 6 to 24) to PGDC. Accordingly, Communication was made to PGD, however no response was received till date (28 February 2024). Therefore, the FAD 11 committee decided to reaffirm the standards, till further communication is received from PGD department.
7)	IS 12163 : 1987 Specification for Cant Hook	2019	January 2024	
8)	IS 12164 : 1987 Specification for Log Tongs	2019	January 2024	
9)	IS 12627 : 1989 Forestry Tools - Loop Handles Two Men Cross Cut Saws - Specification	2019	January 2024	
10)	IS 12651 : 1989 Forestry Tools - Setting Anvil for Raker Toothed Two Men Cross Cut Saws - Specification	2019	January 2024	
11)	IS 12652 : 1989 Forestry Tools - Raker Adjuster - Cum - Setting Iron For Two Men Cross Cut Saws - Specification	2019	January 2024	

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12)	IS 12653 : 1989 Rubber Tapping Tools - Coagulation Tray - Specification	2019	January 2024		
13)	IS 12696 : 1989 Forestry Tools - Setting Pliers, Bow Saw Blade - Specification	2019	January 2024		
14)	IS 12697 : 1989 Forestry Tools - Setting Hammer Raker Toothed Two Men Cross Cut Saws - Specification	2019	January 2024		
15)	IS 12698 : 1989 Forestry Tools - Tree Marking Digit Set - Specification	2019	January 2024		
16)	IS 12703 : 1989 Forestry Tools - Tree Marking Hammers - Specification	2019	January 2024		
17)	IS 12704 : 1989 Forestry Tools - Wooden Jointer For Bow Saw Blade - Specification	2019	January 2024		
18)	IS 13376 : 1992 Forestry Tools - Debarking Spud - Specification	2019	January 2024		
19)	IS 13377 : 1992 Forestry Tools - Shrub Cutting Knife - Specification	2019	January 2024		
20)	IS 13378 : 1992 Forestry Tools - Felling Lever - Specification	2019	January 2024		
21)	IS 13485 (Part 1) : 1992 Forestry Tools - Stalk Puller - Specification Part 1 Light Duty	2019	January 2024		
22)	IS 13821 : 1993 Forestry Tools - Wooden Filing Vice - Specification	2019	January 2024		
23)	IS 14526 : 1998 Forestry tools - Plant carrier - Specification	2019	January 2024		
24)	IS 13485 (Part 2) : 1998 Forestry Tools - Stalk Puller - Specification : Part 2 Heavy Duty	2019	January 2024		
25)	IS 12224 : 1987 Method of Test for Hydraulic Power and Lifting Capacity of Agricultural Tractors	2019	January 2024		<p><i>As per the decision taken in the 25th meeting, the standard was reaffirmed and simultaneously taken up for revision.</i></p> <p>The committee after due deliberation decided to revise the standard in latest style and format of Indian Standards along with incorporating two amendments</p>

				issued the standard and updating referred Indian Standards. The committee decided to send the draft revision into wide circulation for a period of 60 days.
26)	IS 10743 : 1983 Method for Determination of Centre of Gravity of Agricultural Tractors	2019	January 2024	<p><i>As per decision taken in 21st meeting of FAD 11, draft revision of IS 10743 (identical adoption of ISO 789-6 : 2019) was sent into wide circulated on 3 March 2023. However, in 24th meeting of FAD 11, it was decided to send the draft revision of IS 10743 (major part taken from ISO 789-6 and additional test for measuring vertical coordinate as mentioned in Clause 8, 8.0 to 8.9 of IS 10743: 1983) to wide circulation.</i></p> <p>In its 26th meeting of FAD 11, Member Secretary apprised the committee that ISO 789-6 : 2019 covers number of alternative methods to determine Vertical Coordinate in different tractor positions. Therefore, the committee after due deliberation requested CFMTTI, Budni to reanalyse ISO 789-16 : 2019 and submit its feedback on possibility of its identical adoption.</p>

ITEM 8 ITEMS IDENTIFIED UNDER SNAP 22-27 AND THEIR STATUS

8.1 The committee noted the subject areas identified under SNAP 22-27 and status. The committee requested Members of (Mirror Working Group -7) MWG 7 (group constituted parallel to ISO/TC 23/SC 19 ‘Agricultural Electronics’ for ISO balloting) for identifying/reviewing ISO standards pertaining to functional safety, use of AI in agriculture, autonomous agricultural machinery, standards for testing electronics used in agriculture machinery, etc, which may directly be adopted or reference may be drawn for developing indigenous standards.

8.2 Shri Deshmukh apprised the committee regarding ISO 25119 series, which covers requirements, design of safety related parts of control systems used in Agri machinery. The committee requested BIS Secretariat to circulate the ISO 25119 series among the committee members for review.

8.3 As per decision taken in earlier meetings of FAD 11, ISO 4254 series (Safety Standards for Agricultural Machinery) was circulated among the committee members for review. However, no inputs were received. The committee requested all its members to share their feedback on possibility of adoption of those ISO standards.

8.4 For year 2024-25, the committee took up development of Indian Standard on Super Seeder and Strip Till Drill and allocated the task for preparation of draft to Punjab Agricultural University. Further, the committee requested TMA to initiate the task for converting Automotive Industry Standards for tractors into draft Indian Standards.

ITEM 9 INTERNATIONAL ACTIVITIES

9.1 Approval of Indian Delegates for Participation in 35th Plenary meeting of ISO/TC 23/SC 19

The committee noted and approved the nomination (*see* Annex 32 of agenda) of Shri Chandrashekhar Deshmukh, John Deere India Pvt. Ltd., Pune for participating in the 35th Plenary Meeting of International Standardization Committee on Agricultural Electronics, ISO TC 23/SC 19 physically which scheduled to be held on 21 June 2024 at Minato City, Japan in hybrid mode.

9.2 Ist Plenary Meeting of ISO/TC 347 ‘Data-driven agrifood systems’

The committee noted the scope and information provided in **9.2** of the agenda and requested BIS Secretariat to circulate the agenda for the Ist Plenary meeting of ISO/TC 347 among the committee members for inputs. The inputs, thus sought will be shared with FAD 22.

9.3 Status of ISO Balloting

The committee noted the excel sheet enclosed at Annex 33 of the agenda showing the status of ISO Balloting.

ITEM 10 ANY OTHER BUSINESS

10.1 In recognition of their significant contributions to the standardization work, BIS issued appreciation letters to Dr. Surendra Singh, AMMA-India and Shri Chandrashekhar Deshmukh, John Deere India. The committee expressed appreciation for their valuable contribution and encouraged other members to contribute similarly.

10.2 Furthermore, the committee nominated Dr. K N Agrawal, Projector Coordinator, AICRP-FIM, Bhopal, and Dr. Mukesh Jain, Director, NRFMTTI, Hisar for sending appreciation letters for their contribution in revising Indian Standards on hand/foot operated sprayers and Combine Harvester respectively.

ITEM 11 TIME AND PLACE FOR THE NEXT MEETING

After due deliberation, the committee decided to hold its 27th meeting in the 4th week of May 2024 in Physical Mode. The venue and exact date of the meeting will be finalised in consultation with Chairperson, FAD 11 later and will be communicated to members accordingly.

ANNEX A

**Attendance for 26th Meeting of Agriculture Machinery and Equipment Sectional Committee
FAD 11 held on 28th February 2024**

Sl.No.	Organization Represented	Members
1.	ICAR - Central Institute of Agricultural Engineering, Bhopal	Dr. C. R. Mehta (<i>Chairperson</i> , FAD 11)
2.	Agriculture Machinery Manufacturers Association (AMMA), Pune	Dr. Surendra Singh
3.	CLAAS India Private Limited, Chandigarh	Shri Krishna Prabhakar Singh
4.	ICAR - All India Coordinated Research Project on Ergonomics and Safety in Agriculture, Bhopal	Dr. K N Agrawal
5.	ICAR - All India Coordinated Research Project on Utilization of Animal Energy, Bhopal	Dr. S P Singh
6.	ICAR - Central Institute of Agricultural Engineering, Bhopal	Dr. V P Chaudhary
7.	John Deere India Private Limited, Pune	Shri Chandrashekhar Deshmukh
8.	Kerala Agro Machinery Corporation Ltd. (KAMCO), Athani	Shri P. C. Sajimon
9.	Tractor and Mechanization Association, New Delhi	Shri Veenit Negi Smt Devyani
11.	Tube Investments Clean Mobility Private Limited, Chennai	Shri Abhishek Sinha Shri S O Tyagi
Members Joined Virtually		
13.	Agriculture Machinery Manufacturers Association (AMMA), Pune	Shri Mitul Panchal
14.	All India Farmers Alliance, New Delhi	Dr. Rajaram Tripathi Smt Apurva Tripathi
15.	Aspee Agro Equipment Private Limited, Mumbai	Shri Jatin S. Patel Shri Gangadhar Varpe Dr. Narendra Kumar (<i>invitee</i>)
16.	Automotive Research Association Of India, Pune	Shri A Akbar Badusha Shri Girish Tanawade
17.	CCS Haryana Agricultural University, Hisar	Shri Naresh (<i>invitee</i>)
18.	CNH Industrial India Private Limited, Pune	Shri Sujit Hinge
19.	Central Farm Machinery Training and Testing Institute, Budni	Shri A K Upadhyay Shri R P Pandey (<i>invitee</i>) Shri Parth Lodh (<i>invitee</i>)
20.	Consumer Guidance Society Of India, Mumbai	Shri Sitaram Dixit
21.	Dasmesh Mechanical Works Private Limited, Malerkotla	Shri Sarbjeet Singh Panesar Shri Gurdeep Singh Panesar
22.	ICAR – Central Institute of Agricultural Engineering, Bhopal	Dr. Uday R. Badegaonkar Dr. Dilip Jat Shri Ankur Nagori (<i>invitee</i>)
23.	Indian Council Of Agricultural Research, New Delhi	Dr. Panna Lal Singh
24.	John Deere India Private Limited, Pune	Shri Anand Raj Shri Pratik Duraphe
25.	Kerela Argo Machinery Corporation Ltd. (KAMCO), Athani	Shri A. Unnikrishnan

26.	Kubota Agricultural Machinery India Private Limited, Faridabad	Shri Ashish Kumar Mallarh Shri Vaibhav Tiwari (<i>invitee</i>)
27.	Maharana Pratap University Of Agricultural And Technology, Udaipur	Dr. Sanwal Singh Meena
28.	Mahatma Phule Krishi Vidyapeeth, Rahuri	Dr. Sachin Madhukar Nalawade Dr. Vikram Parasharam Kad
29.	Mahindra and Mahindra Limited, Mumbai	Shri Pradeep Shinde
30.	Ministry Of Agriculture, Department Of Agriculture, New Delhi	Dr. V.N. Kale Shri C. R. Lohi (<i>invitee</i>)
31.	National Institute of Plant Health Management, Hyderabad	Dr. Vidhu Kampurath P. Smt Mutyala Udaya Bhanu
32.	National Innovation Foundation India	Shri Rakesh Maheshwari
33.	Northern Region Farm Machinery Training and Testing Institute, Hisar	Dr. Mukesh Jain Shri Sanjay Kumar Shri C K Tijare (<i>invitee</i>)
34.	Power Tillers Manufacturers Association, Kolkata	Shri A R Ganesh Kumar
35.	Punjab Agricultural University, Ludhiana	Dr. Mahesh Kumar Narang Dr. Rajesh Goyal
36.	Southern Region Farm Machinery Training and Testing Institute, Tractor Nagar	Dr. B. M. Nandede
37.	Tamil Nadu Agricultural University, Coimbatore	Dr. R. Kavitha Dr. A Surendra Kumar Dr. A P Mohankumar
38.	Tirth Agro Technology Pvt. Ltd. 'Shaktiman', Bhunava, Gujarat	Shri Parag Devidas Badgujar Shri Audhi Narayan Reddy Shri Vishwa Somannavar (<i>invitee</i>)
39.	Tractor and Mechanization Association, New Delhi	Shri Philip Koshy
40.	Voluntary Organisation In Interest Of Consumer Education (Voice), New Delhi	Shri B K Mukhopadhyay