BUREAU OF INDIAN STANDARDS
MINUTES

Name of the Committee	No. of Meeting	Date	Time	Venue
Farm Irrigation and Drainage Systems Sectional Committee, FAD 17	22nd	**30 April 2024 (Tuesday)**	**02:30 PM**	Hybrid (Virtual + Physical) Green Room, Bureau of Indian Standards, HQ, New Delhi

CHAIRMAN:

Dr. T B S Rajput
(In Personal Capacity)
Former Project Director,
Water Technology Centre,
ICAR-IARI, New Delhi

MEMBER SECRETARY:

Vikrant Chauhan
(Member Secretary, FAD 17)
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. T.B.S. Rajput, Chairperson, FAD 17 and members of FAD 17 to its 22nd meeting. Member Secretary apprised the committee members regarding actions taken since the 21st meeting of the committee and publication of various standards. Requesting for support from the committee, Member Secretary urged for fruitful and conclusive deliberation on the issues raised in the agenda.

0.2 Opening Remarks by the Chairman

Dr. T.B.S. Rajput, Former Project Director, Water Technology Centre, ICAR-IARI, New Delhi and Chairperson, Farm Irrigation and Drainage Systems Sectional Committee, FAD 17 in his opening remarks extended a warm welcome to the members of the Committee to its 22nd meeting. Chairperson congratulated the experts for the newly published standards. Further, appreciating the contribution being made by all the experts in the committee and various panels, Dr. Rajput urged for an active participation in the meeting.

ITEM 1 CONFIRMATION OF THE MINUTES OF THE TWENTIETH MEETING

The committee confirmed the Minutes of the 21st meeting of Farm Irrigation and Drainage Systems Sectional Committee, FAD 17 held on 14 December 2023 as circulated vide our email dated 27 December 2023 without any change.

ITEM 2 SCOPE, ACTIVITIES & COMPOSITION OF THE SECTIONAL COMMITTEE

2.1 Scope & Activities of the Committee

2.1.1 Scope of FAD 17

The committee noted the scope of the Farm Irrigation and Drainage Systems Sectional Committee, FAD 17 as mentioned in **2.1.1** of the agenda.

2.1.2 The committee noted the program of work of Farm Irrigation and Drainage Systems Sectional Committee, FAD 17 as enclosed in Annex 1 of the agenda.

2.2 Composition of the Sectional Committee

The committee noted the composition of FAD 17 as provided in Annex 2 of the agenda.

2.3 Composition of Panels Under the Committee

There are total of 6 panels operating under FAD 17. The Committee after due deliberation co-opted certain new experts to various panels and requested the convenors of the Panels to initiate work on new subjects and complete all the long pending projects. The updated composition of different panels is given below:

S.No.	Panel	Composition
1.	P1 - To formulate Indian Standard on Remote Monitoring and Control System Panel	1. Dr. T.B.S. Rajput, In Personal Capacity (***Convenor***) 2. Dr. C.D. Singh, ICAR-CIAE, Bhopal 3. Dr. Manoj Kumar, IIT Kharagpur 4. Shri Abhijeet B. Joshi, Jain Irrigation Systems Limited (JISL), Jalgaon 5. Shri Anand Zambre, National Committee on Precision Agriculture and Horticulture (NCPAH), New Delhi 6. Manish Kumar Patel, Netafim Irrigation Private Limited, Vadodara 7. Dr. Rakesh Sharda, CIPHET, Ludhiana 8. Dr. Nagraj S. Patil, Visvesvaraya Technological University (VTU), Belgavi
2.	P2 - To Review of Indian Standards on Micro-Irrigation Components Panel	1. Dr. Nagraj S. Patil, Visvesvaraya Technological University (VTU), Belgavi (***Convenor***) 2. Shri Bajirao Bhosale, Finolex Plasson Industries Limited (FPIL), Pune 3. Shri Sunil Lodha, Jain Irrigation Systems Limited, Jalgaon 4. Shri Rajeev Deshpande, Mahindra EPC Irrigation Limited, Nashik 5. Shri Ashish Kumar, Mahindra EPC Irrigation Limited, Nashik

		6. Shri Rohit Lall, National Committee on Precision Agriculture and Horticulture, New Delhi 7. Shri Sethuramalingam S., Netafim Irrigation Private Limited, Vadodara, 8. Shri G. K. Kumar, Premier Irrigation Adritec Limited (PIAL), Nagpur ***New Experts Co-Opted*** 9. Shri Gopi Kethavath, Rivulis Irrigation India Pvt., Ltd., Vadodara 10. Shri Dinesh Kumar, Automat Industries Pvt., Ltd., (AIPL), New Delhi
3.	P3 - To Review Indian Standards on Water quality and Drainage System Panel	1. Dr. J.P. Singh, Punjab Agricultural University, Ludhiana (***Convenor***) 2. Dr. K.V. Ramana Rao, ICAR - Central Institute of Agricultural Engineering, Bhopal 3. Dr. Devendra Singh Bundela, ICAR - Central Soil Salinity Research Institute, Karnal 4. Dr Sunil Garg, Punjab Agricultural University, Ludhiana 5. Dr. Mohanlal Gupta, Haryana Operational Pilot Project, Haryana 6. Shri C.B. Dandekar, Dandekar Brothers LLP (Former Director of Rex Poly Extrusion) 7. Dr. MS Shirahatti, University of Agricultural Sciences, Dharwad 8. Dr CM Tejawat, In Personal Capacity 9. Dr. Man Singh, In Personal Capacity ***New Expert Co-Opted*** 10. Dr. A.K. Vashisht, College of Agricultural Engineering & Post Harvest Technology, CAU, Ranipool
4.	P4 - To formulate Indian Standard on Water Management in Natural Farming Panel	1. Dr. Neelam Patel, NITI Aayog, New Delhi (***Convenor***) 2. Dr. Rajeshwar Singh Chandel, Dr Y.S. Parmar University of Horticulture and Forestry, Solan 3. Dr. Mini Abraham, ARS, Chalakudy 4. Dr. T Vijay Kumar, Executive Director, Govt. of Andhra Pradesh 5. Shri Abhijeet B. Joshi, Jain Irrigation Systems Limited, Jalgaon 6. Shri Sethuramalingam S., Netafim Irrigation Private Limited, Vadodara

		New Expert Co-opted 7. Dr. Susama Sudhishri, WTC, ICAR-IARI, New Delhi
5.	P5 - To provide recommendation for Plastic waste management coming out of irrigation equipment and drainage Panel	1. Shri Anand Zambre, NCPAH, New Delhi (***Convenor***) 2. Shri Rohit Lall, NCPAH, New Delhi 3. Shri Rajeev Deshpande, Mahindra EPC Irrigation Limited, Nashik ***New Experts Co-Opted*** 4. Shri Manish Patel, Netafim Irrigation Private Limited, Vadodara 5. Shri Gopi Kethavath, Rivulis Irrigation India Pvt. Ltd., Vadodara 6. Shri G K Kumar, Premier Irrigation Adritec Ltd., Nagpur 7. Shri Amit Shah, Reliance Industries Ltd., Mumbai 8. An expert from Ministry of Environment, Forest and Climate Change, New Delhi
		The committee requested the panel to initiate the work for preparing some draft on practices for safe disposal or utilization of plastic waste (damaged plastic pipes, fittings of micro-irrigation systems, plastic mulch etc.,) coming from agricultural land.
6.	P7 - To formulate standards in By-pass Assembly, Control Valve, Flush Valve & Throttle Valve Panel	1. Shri Bajirao Bhosale, Finolex Plasson Industries Limited, Pune (***Convenor***) 2. Shri Dinesh Kumar, Automat Industries Private Limited, New Delhi, 3. Dr. Sandesh Kumar Jain, CIPET, Chennai 4. Shri Vijay Jadav, Finolex Plasson Industries Limited, Pune 5. Shri Manish Khandelwal, GAIL (India) Limited, New Delhi 6. Shri K. L. Nemade, Jain Irrigation Systems Limited, Jalgaon 7. Shri Rajeev Deshpande, Mahindra EPC Irrigation Limited, Nashik 8. Shri Amit Shah, Reliance Industries Limited, Mumbai

2.4 New/Revised Indian Standards Published

The committee noted the list of newly published Indian Standards as given in **2.4** of the agenda.

ITEM 3 FINALISATION OF ANNUAL PROGRAM FOR STANDADISTAION FOR 2024-25 AND MEETING CALENDAR

3.1 The committee reviewed the proposed Annual Program for Standardisation, 2024-25 (enclosed at Annex 4 of the agenda) and after due deliberation approved the same for implementation.

Further, the committee requested the conveners of the various panels for implementation of Annual Program for Standardisation, 2024-25 sticking to the allocated timeframe.

3.2 Proposed Annual Calendar for Technical Committee Meetings:

The FAD 17 committee approved annual meeting calendar proposed by Member Secretary, FAD 17 as follows:

a) 4th Week of April 2024 (already completed)
b) 4th Week of August 2024
c) 2nd Week of December 2024
d) 2nd Week of March 2025

Further, the committee directed, convenors of different Panels and working groups to schedule meetings and discussion as per priority to complete the allocated task in given timeline.

ITEM 4 FINALISATION OF DRAFT INDIAN STANDARDS

Following drafts were circulated into wide circulation for a period of 60 days as per the decision taken in earlier meetings of FAD 17. The decision of the committee on each of the documents is tabulated below:

Sl.No.	Document No.	Title	Decision of the Committee
i)	**FAD 17 (24327)WC**	Recommended Criteria for Adoptability of Different Irrigation Methods (first revision of IS 11711)	The committee had a deliberation on the comments received from VDBO, BIS. The decision taken by the committee corresponding to various comments is given in Annex A.  Annex A_Response to Comments on IS Further, the committee requested Dr. Susama, WTC, ICAR-IARI, New Delhi to suitably make changes in the draft as per the decision taken by committee. The draft upon reciept will be circulated among the committee members of review. In case no comments would be received, the draft revision

			of IS 11711 with Chairperson, FAD 17 approval will be sent for publication.
ii)	**FAD 17 (24341) WC**	Prevention and Treatment of Blockage Problem in Drip Irrigation System — Code of Practice (first revision of IS 14791)	Noting no comments, the committee finalised the draft revision [FAD 17 (24341)] of IS 14791 and approved it for publication.
iii)	**FAD 17 (24374) WC**	Fertilizer and Chemical Injection System: Part 2 Water – Driven Chemical Injector Pump (first revision of IS 14483 (Part 2))	The committee had a deliberation on the comments received from VDBO, BIS. The decision taken by the committee corresponding to various comments is given in Annex B.  Annex B_Response to Comments on IS Due to lack of inputs from manufacturers side on operation of chemical injector pump between a temperature range of 5 °C to 50 °C as enquired in Comment no. 3, the committee requested Member Secretary to discuss the same with JISL and Netafim. Upon suitable incoporation of the comments, the draft will be circulated among the committee members for a period of 7 days for review. In case no comments are received, the draft revision of IS 14483 (Part 2) with Chairperson, FAD 17 approval will be sent for publication.
iv)	**FAD 17 (24389) WC**	Code of Practice for Design and Installation of Farm Drainage Pumping Plants (first revision of IS 11538)	Noting no comments, the committee finalised the draft revision [FAD 17 (24389)] of IS 11538 and approved it for publication.
v)	**FAD 17 (24677) WC**	Fertilizer and Chemical Injection System Part 1 Venturi injector — Specification [first revision of IS 14483 (Part 1)]	The committee had a deliberation on the comments received from Shri Vijay Jadav, FPIL enclosed at Annex 7 of the agenda. Editorial The committee accepted all the comments and finalised the draft revision [FAD 17(24677)] of IS 11483 (Part 1) into publication.

vi)	**FAD 17(25120) WC**	Irrigation equipment — Emitters — Specification (first revision of IS 13487)	The committee accepted the editorial comments received from Shri Ashish Kumar, EPC enclosed at Annex 8 of the agenda. Member Secretary apprised the committee that, as per definition of emitter given in ISO 9261 : 2004 'Agricultural irrigation equipment — Emitters and emitting pipe — Specification and test methods' flow rate of the emitter can go maximum up to 24 l/h. Accordingly, the committee had a deliberation. It was noted that, drip irrigation systems deliver water directly to crop roots through emitters in the form of drops, using minimal water. Increasing the flow rate of emitter/drippers may not justify their intended purpose. Therefore, the committee decided not to increase the flow rate and kept the maximum limit same as 15 l/h, as specified in IS 13487. The committee after due deliberation finalised the draft revision [FAD 17(25120)] of IS 13487 and approved it for publication.

ITEM 5 NEW STANDARDS FOR STANDARDIZATION

5.1 Micro-Irrigation System — Guidelines for Organic Fertigation

Member Secretary provided an overview of the technical aspects of the draft to the committee members which was enclosed at Annex 9 of the agenda. The draft covers guidelines for organic fertigation prepared based on research done at the Agronomic Research Station, Chelakudy.

Dr. Neelam Patel from NITI Aayog and Shri Rohit Lall from NCPAH informed the committee that similar organic fertigation techniques are being successfully implemented by farmers in few states of the country including Gujarat, Andhra Pradesh, etc., highlighting the need to establish standards for the practice.

After a due deliberation, the committee requested that a detailed presentation on the Organic Fertigation Concept and Practices to be delivered by Dr. Mini Abraham, Head of the Agronomic Research Station at Chelakudy (a member of FAD 17/P4) at the next meeting to provide a clearer understanding of the topic.

Dr. Susama Sudhishri, Principal Scientist, WTC, ICAR-IARI also shared updates on the research being conducted on organic fertigation at WTC. The committee decided to include Dr. Susama, in FAD 17/P4 and asked her to contribute to the development of the draft standard. The committee further requested Dr. Susama, to also give a brief presentation on the research work done on organic fertigation.

Given that this topic is also under consideration at ISO, with Dr. Neelam acting as the Convenor of Adhoc Group 2 under ISO/TC 23/SC 18 working on it, the committee requested Dr. Neelam to organize a meeting soon and gather inputs from international experts involved in the group.

5.2 Irrigation techniques — Localised and remote Monitoring and Control System for Irrigation — Tests

Noting that no comments were received from committee members on Preliminary Draft enclosed at Annex 10 of the agenda, the committee after due deliberation decided to send the draft [**FAD 17 (24278)]** into wide circulation for a period of 60 days for commenting.

ITEM 6 REVIEW OF INDIAN STANDARDS

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

For the year 2024-25, following Indian Standards are due for review :

S.No.	IS No.	Title	Decision of the Committee
1	IS 11538 : 1986	Code of Practice for Design and Installation of Farm Drainage Pumping Plants	The standard is already under review and draft revision has been approved for publication. *see* 4, Sl.No. 4
2	IS 15386 : 2003	Pressurized Irrigation Systems — Graphic Symbols	The committee requested Member Secretary to circulate the standard and its corresponding ISO standard (ISO 15081 : 2011) among the committee for review for a period of 15 days. In case no comments are received, the standard may be reaffirmed as it is.
3	IS 17411 (Part 2) : 2020/ ISO 9912-2 : 2013	Agricultural Irrigation Equipment — Filters for Micro-Irrigation : Part 2 Strainer — Type Filters and Disc Filters	To avoid duplication with revision of IS 12785 (Strainer type filter), the committee in its 21st meeting held on 14 December 2023, decided to withdraw the standard. *see* 6.2, Sl.No. 2
4	IS 17425 : 2020	Irrigation Equipment — Quick Coupled Polyethylene Pipes and Fittings for Sprinkler Irrigation Systems — Specification	The committee noted that the draft revision of the standard has already been approved for wide circulation in the 21st meeting of FAD 17 held on 14 December 2024. The committee requested MS to expedite the process for sending draft into wide circulation.

6.2 Review of Indian Standards on Micro-Irrigation Component

Sl. No.	IS Number	Decision of the Committee
1	**IS 12785 : 1994** Irrigation equipment - Strainer - Type filters - Specification (first revision)	The committee noted the, recommendations of FAD 17/P 2 on the draft revision of IS 12785 (enclosed at Annex 12 of the agenda). The committee noted that, in its earlier meeting, it was decided to change title and scope of the standard to cover both strainer and disc type filters. However, during discussion in the FAD 17/P2, it was made clear that, disc filter is type of strainer filter, which has a disc filter element. Therefore, the title and scope of the standard was not alerted. However, few other modifications were made. Further, 17411 : 2020 identical adoption of ISO 9912-2 : 2013 which covers requirement of strainer type and disc type filters will also be withdrawn as already decided in the 21st meeting of FAD 17 to avoid duplication of standards.
2	**IS 13479 : 1992/ISO 3501 : 1976** Assembled joints between fittings and polyethylene (PE) pressure pipes — Test of resistance to pull out	ISO 3501 : 2021 latest version published by ISO/TC 138/SC 5 of which CED 50 "Plastic Piping System Sectional Committee" under Civil Engineering Department, BIS is the National Mirror Committee (NMC). Noting this, the committee decided to transfer the standard (IS 13479 : 1992/ISO 3501 : 1976) to CED Dept. further requesting priority revision by adopting latest version of ISO 3501 with some modifications as given below. The committee requested BIS Secretariat to put the following requested to CED 50 whenever IS 13479 is taken up for revision : 'The test temperature to be kept as 27 ± 3 °C in the modified adoption which is currently been followed by the manufacturers in India for testing of various pipes used in micro-irrigation systems.'
3	**IS 14178 : 1994** Pressurized irrigation equipment terminology	The committee noted that draft revision of IS 14178 submitted by Dr. Ramana Rao. Only few editorial modifications were made in the draft. As no further inputs were there, the committee decided to send the draft revision into wide circulation for a period of 60 days.
4	**IS 14605 : 1998** Irrigation equipment - Micro sprayers - Specification	The committee agreed to the comments received from Shri Dinesh on IS 14605. As no further inputs/comments were there, the committee after due deliberation decided to revise the in latest style and format of Indian Standards and send the draft revision into wide circulation for a period of 60 days.

6.3 Review of Indian Standards on Water Quality and Drainage Systems

S. No.	IS No./Title	Decision of the Committee
1	**IS 11494 : 1986** Code for Construction and Maintenance of Surface Farm Drainage Systems	The committee requested Dr. M.S. Shirahatti, UAS, Dharvad (Member of FAD 17/P 3) to expedite the review of IS 11494 and submit the revised to FAD 17/ P 3 for review and then to committee before its next meeting.
2	**IS 11495 : 1986** Code for Design of Surface Farm Drainage System	The committee deliberated upon the draft revision of IS 11495 (enclosed at Annex 15 of the Agenda) submitted by Dr. Shirahatti UAS, Dharvad (Member of FAD 17/P 3). Following decisions were take: a. The concept of piped drain connected to field lateral for collection of water coming from field may be reviewed. The committee requested Dr. Bundela to submit case study of successful implementation of such type of surface drainage system before Panel 3 and the committee. b. The committee noted that the draft contains a lot of information which might not be needed in a standard, therefore the committee requested FAD 17/P 3 to re-review the draft. c. Further, the committee also requested Dr. Shirahatti to give a presentation to the committee in order to get a better understanding of the content included in the draft revision of IS 11495.
3	**IS 13939: 1994** Farm Drainage – Interceptor Drains for Steep Hill Slopes Under Plantation Crops - Guidelines for Laying	The committee requested Dr. Bundela, CSSRI, Karnal (member of FAD 17/P 3) to coordinate with Dr. Chedilal Verma, Scientist at CSSRI Research Station, Lucknow in completing the review of IS 13939 on faster pace and to FAD 17/ P 3 for review and then to committee before its next meeting.
4	**IS 14632 : 1999** Farm Drainage System – Performance Evaluation of Horizontal Subsurface Drainage — Guidelines	The committee requested Dr. Bundela, CSSRI, Karnal to expedite the review of IS 14632, IS 10907 and IS 9696 and submit the revised draft to FAD 17/ P 3 for review and then to committee before its next meeting.
5	**IS 10907 : 1984** Code for Design of Farm Drainage Tile or Pipe System	
6	**IS 9696 : 1980** Code of Practice for Installation of Farm Drainage Tile or Pipe System	

ITEM 7 COMMENTS ON EXISTING INDIAN STANDARD

Comments on IS 12786 : 2024 Irrigation equipment — Polyethylene pipes for irrigation laterals — Specification (*first revision*)

The committee noted the comments enclosed at Annex 16 of the agenda received from MDBO, BIS on draft revision of IS 12786 [FAD 17 (23623) F], now published as IS 12786 : 2024.

1. The committee after due deliberation agreed that, as per standard practice **carbon black master batch,** which is a mixture of carbon black, polyethylene, ash, etc., is one of the components of extrusion compound used to produce irrigation laterals, however, **clause 4.1 (c) of IS 12786 states usage of carbon black only.**
2. The committee further noted that, IS 17425 and IS 4984 gives requirement of carbon black master batch for manufacturing of polyethylene pipes which may be referred in IS 12786 as well.
3. Member Secretary apprised the committee that, in earlier meetings of the committee, same issue was deliberated, however, at that time it was concluded that, as per clause **4.2** of IS 12786, final product (pipe) is being tested for carbon black content ranging between 2 percent to 3 percent which is sufficient to ensure UV stability of pipe, therefore it wasn't felt necessary to give requirement of carbon black master batch separately.
4. Due to lack of response from the manufacturers side, decision was not reached, therefore the committee decided to re-discuss the issue in its next meeting.

ITEM 8 NEW PROPOSALS FOR STANDARDISATION

The committee deliberated upon the new subjects proposed by Irrigation Association of India, Pune through its standardization cell to be taken up for standard formulation. The decision of the committee corresponding to each new subject is as follows:

1. Plastic Butterfly valves

Member Secretary apprised the committee that there exists two standards with BIS for the butterfly valves i.e., IS/ISO 16136 : 2006 'Industrial valves — Butterfly valves of thermoplastics materials' and 13095 : 2020 'Butterfly Valves for General Purposes (First Revision)' under Mechanical Engineering Department, BIS.
Shri Dinesh Kumar apprised the committee that, AIPL, is manufacturing plastic butterfly valves as per sizes, types, design and dimensions given in IS 13095 however, the product doesn't not falls under the scope of IS 13095 which only covers metal butterfly valves. Though, the issue was raised to BIS to include plastic as raw material in IS 13905, but no solution was reached.

However, to avoid duplication of standards for just raw material requirement, the committee requested Member Secretary to write to Mechanical Engineering Department, BIS on behalf of FAD 17 to include additional raw material as Plastic for manufacturing of butterfly valves in IS 13905.

In case, the MED dept., does not agrees with the proposal, the subject for plastic butterfly will be taken by FAD 17 for standard formulation.

2. Air valve

Member Secretary apprised the committee that, there exits an ISO standard ISO 9635-4 : 2014 'Agricultural irrigation equipment — Irrigation valves Part 4: Air valves' which covers the requirement for air valve used in irrigation systems. The committee requested FAD 17/P 7 to review the ISO standard first and check if the ISO standard may be identically adopted. FAD 17/P 7 was requested to give parameters which are affecting identical adoption of the ISO standard.

3. Irrigation Control Heads

Member Secretary apprised the committee that, there exits an ISO standard ISO 11738 : 2021 'Agricultural irrigation equipment — Control heads' which covers the requirement for irrigation control heads used in irrigation systems. The committee requested FAD 17/P7 to review the ISO standard first and check if the ISO standard may be identically adopted. FAD 17/P 7 was requested to give parameters which are affecting identical adoption of the ISO standard.

4. Filters for Organic Fertigation

The committee agreed that, as already guidelines for adopting organic fertigation system is under preparation, therefore, simultaneously a draft on filters of organic fertigation should also be prepared. The committee requested FAD 17/P 4 to take up the subject on priority and start the work for preparation of draft on above subject.

ITEM 9 INTERNATIONAL ACTIVITIES

9.1 Status of ISO Balloting and Published Standards under ISO/TC 23/SC 18

The committee noted the excel sheet enclosed at 17 of the agenda showing the status the ISO Balloting. Chairperson, FAD 17 requested all the members of the committee to kindly go through the ballots whenever circulated and provide comments on the ISO ballots pertaining to their expertise.

ITEM 9 TIME AND PLACE FOR THE NEXT MEETING

The committee decided to hold its next meeting in Physical Mode in 4th week of August 2024.

Attendance for 22nd Farm Irrigation and Drainage Systems Sectional Committee, FAD 17 held on 30 April 2024

Sl No.	Organization Represented	Members
1.	IN PERSONAL CAPACITY Former Project Director, WTC, ICAR-IARI, New Delhi	Dr. T. B. S. Rajput (***Chairperson, FAD 17***)
2.	Water Technology Centre, ICAR-Indian Agricultural Research Institute, New Delhi	Dr. Anil Kumar Mishra Dr. Susama Sudhishri

3.	National Committee on Precision Agriculture and Horticulture, New Delhi	Shri Rohit Lall
4.	Rivulis Irrigation India Private Limited, Vadodara	Shri Gopi Kethavath
5.	School of Agriculture, Indira Gandhi National Open University, New Delhi	Dr. Mukesh Kumar
Members Joined Virtually		
6.	Automat Industries Private Limited, New Delhi	Shri Dinesh Kumar Shri Nawal Kr. Shah
7.	CIPET, Chennai	Shri Vishal Verma
8.	Finolex Plasson Industries Limited, Pune	Shri Vijay Jadhav Shri Bajirao Bhosale
9.	Gujarat Green Revolution Company Limited, Vadodara	Dr. Ashutosh Vasant Vadawale
10.	ICAR - Central Institute of Agricultural Engineering, Bhopal	Dr. Yogesh A Rajwade
11.	Indian Council of Agricultural Research, New Delhi	Dr. K.V. Ramanarao
12.	Mahindra EPC Irrigation Limited, Nashik	Shri Rajeev Deshpande Shri Ashish Kumar
13.	NITI Aayog, New Delhi	Dr. Neelam Patel
14.	National Committee on Precision Agriculture and Horticulture, New Delhi	Shri Anand Zambre
15.	Netafim Irrigation Private Limited, Vadodara	Shri Sethuramalingam S.
16.	Nimbus Pipes Limited, Jaipur	Shri Haridwar Tiwari
17.	Premier Irrigation Adritec Limited, Nagpur	Shri A.K. Pradhan Shri G. K. Kumar Shri P K Basak (*invitee*)
18.	Punjab Agricultural University, Ludhiana	Dr. J.P. Singh Dr. Sunil Garg
19.	Reliance Industries Limited, Mumbai	Shri Amit Shah
20.	Saurashtra Plastics Manufacturer's Association, Rajkot	Shri Arun Rokad Shri J. K. Patel
21.	Visvesvaraya Technological University (VTU), Belgavi	Dr. Nagraj S. Patil
22.	ICAR-Central Soil Salinity Research Insititute, Karnal	Dr. D.S. Bundela (*invitee*)
23.	Dr Y.S. Parmar University of Horticulture and Forestry, Solan	Sudhir Verma (*invitee*)