**CAPACITY BUILDING PROGRAMME FOR OFFICIALS OF**

**Agriculture Department**

**DATE: at \_\_\_\_\_\_\_\_\_\_\_\_\_**

**SCHEDULE OF PROGRAMME**

**DAY- 1**

|  |  |  |  |
| --- | --- | --- | --- |
| **Session** | **Time** | **Topic** | **Speaker** |
|  | 0930 - 100 | REGISTRATION |
| 1 | 1000 - 1130 | **Agricultural Mechanisation** – Tillage to Threshing | **TBD-FAD** |
|  | 1130 - 1145 | TEA |  |
| 2 | 1145 - 1315 | **Plant Health Management** – Pesticides, Bio-Pesticides, Insecticides, Neem extracts, Integrated Pest Management | **TBD-FAD** |
|  | 1315 - 1415 | Lunch |  |
| 3 | 1415 - 1545 | **Soil Health Management** –Fertilizers, Manure, Vermicompost , Municipal solid waste compost | **TBD-FAD** |
|  | 1545 - 1600 | Tea |  |
| 4 | 1600 - 1730 | **Irrigation –** Micro-Irrigation Systems (Drip and Sprinkler Irrigation) | **TBD-FAD** |
| 5 | 1730 - 1800 | Pumps and pumping systems for agricultural purpose | **TBD-MED** |

**DAY- 2**

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| **Session** | **Time** | **Topic** |  |
| 6 | 0930 - 1100 | **Agricultural Practices** – Good Agricultural Practices (India GAP), Organic Farming, Urban Farming, Protected Cultivation | **TBD-FAD and PCD** |
|  | 1100 - 1130 | TEA |  |
| 7 | 1130 - 1300 | **Agricultural Mechanization** – Post-Harvest Processing  | **TBD-FAD** |
|  | 1300 - 1400 | LUNCH |  |
| 8 | 1400 - 1530 | **Post Harvest Practices** – Storage, warehousing and transportation of Fruits and Vegetables | **TBD-FAD** |
|  | 1530 - 1600 | TEA |  |
| 9 | 1600 - 1730 | **Agro Textiles**  – Current practices, Discussions on Indian Standards on Jute agro-textiles, Nets, Layflat tubes, HDPE Woven beds for vermiculture. | **TBD-TXD** |

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| **SESSION NUMBER** | **SESSION TITLE****AND DURATION** | **OBJECTIVE** | **SESSION TRANSACTION PLAN** | **EXPECTED OUTCOME****AND FOLLOW-UP****RESOURCES** |
| **SESSION 1** | **Session Title:**Agricultural Mechanisation: Tillage to Threshing **Duration**:1.5 Hours | **Objective:**To provide participants withcomprehensiveknowledge of Indian Standards on Preharvest Agricultural Machinery covering essential guidelines, technical specifications, and safety requirements that govern the design, manufacturing, and use of machinery like tractors, tillers, seed drills, crop protection tools, etc. | **Session Breakdown**1. Introduction (10 minutes)
* **Objective**: Introduce the session and highlight about Agricultural Mechanization, importance of usage of Agricultural Machinery for increasing crop productivity.
* **Content:**
	+ Overview of Agricultural Mechanization in India.
	+ Significance of usage of Agricultural Machinery
	+ Importance of Standards in the Agricultural Machinery
	+ Implementation
* **Methodology:**
	+ Presentation with an overview of session objectives and key terms.
1. Tractors and Power Tillers (15 minutes)
* **Objective:** Familiarize participants with key standards on Tractors and Power Tillers

• Content:* + Detail of IS 12207 and IS 5994 (Performance and Testing standard of Agricultural Tractor)
	+ Installation and Maintenance of Agricultural Tractor (IS 6840)
	+ Detail of IS 13539 (Performance standard of Power Tiller)
	+ Importance of adhering to the provisions for compliance and safety.
* **Methodology:**
	+ Interactive lecture with handouts giving details about the standards.
1. Tillage Machinery (10 minutes)
* **Objective:** Familiarize participants with key standards on Tillage Machinery
* **Content:**
	+ List of important standards
	+ Detail of standard on Rotavator, MB/Disc Plough, Land Leveller
	+ Safety Requirements
* **Methodology:**
	+ Interactive lecture with handouts giving details about the standards.
1. Sowing/Planting Machinery (15 minutes)
* **Objective:** Familiarize participants with key standards on sowing, planting and transplanting Machinery

• Content:* + List of important standards
	+ Detail of standard on Seed Drill, Paddy transplanter
	+ Critical requirements
* **Methodology:**
	+ Interactive lecture with handouts giving details about the standards.
1. Crop Protection Equipment (15 minutes)
* **Objective:** Familiarize participants with key standards on Crop Protection Equipment

• Content:* + List of important standards
	+ Detail of standard on hand operated knapsack sprayer, foot sprayer, hydraulic sprayer.
	+ Drone Sprayer
	+ Environmental requirement of sprayers
	+ Safety requirements
* **Methodology:**
	+ Interactive lecture with handouts giving details about the standards.
1. Harvesting and Threshing Machinery (15 minutes)
* **Objective:** Familiarize participants with key standards on Harvesting and Threshing Machinery
* **Content:**
	+ **List** of important standards
	+ Performance standard of Combine Harvestor, Minimums qualify criteria for passing the testing.
	+ Importance of adhering to the provisions for compliance and safety.
	+ Details of Power Thresher standard, its importance, installation and safety guidelines
* **Methodology:**
	+ Interactive lecture with handouts giving details about the standards.
1. Gardening and Horticultural Tools (10 minutes)
* **Objective:** Familiarize participants with key standards on gardening and horticultural tools
* **Content:**
	+ **List** of important standards
	+ Give day to day examples of these tools
	+ Detail of standard on garden rake, khurpi, pruning secateur, etch
* **Methodology:**
	+ Interactive lecture with handouts giving details about the standards.
 | **Expected Outcomes:*** Knowledge of Available Standards in the Agricultural Machinery Sector.
* Understanding of the key performance, safety and other requirements of different agricultural machinery set through the standards.
* Interpretation of the standards.
* Areas lacking for standardization may be brought up.

Follow-up Resources:* Access to relevant Indian Standards on Preharvest Agricultural Machinery
* Contact information for further queries or guidance.
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| **SESSION 2** | **Plant Health Management** – Pesticides, Bio-Pesticides, Insecticides, Neem extracts, Integrated Pest Management**Duration**:1.5 Hours | **Objective:**To provide participants withcomprehensiveknowledge of Indian Standards on pesticides. | **1. Introduction (10 minutes)****Objective:**Introduce the session, set expectations, and explain the importance of pesticides in agriculture, with a focus on safety, quality, and regulation.* **Activity:**
	+ Brief introduction of the session and its objectives.
	+ Overview of pesticides and their importance in plant health management.
* **Content:**
	+ What are Pesticides?
	+ Importance of Pesticides
	+ Need for Regulation
* **Methodology:**
	+ Facilitator-led discussion.
	+ Participants' quick responses on their understanding of pesticides.

**2. Role of Pesticides in Plant Health Management (15 minutes)****Objective:**To highlight how pesticides contribute to plant health management and improve crop productivity.* **Activity:**
	+ Explain the role of pesticides in protecting crops.
	+ Discuss the different categories of pesticides and their specific roles.
* **Content:**
	+ The Role of Pesticides in Plant Health Management (PHM)
	+ Types of Pesticides
	+ Integrated Pest Management (IPM)
* **Methodology**
	+ Participant engagement with questions about their use of pesticides in agriculture.

**3. Registration of Pesticides in India (15 minutes)****Objective:**Explain the registration process for pesticides in India, ensuring they are safe for use.* **Activity:**
	+ Walk through the process of pesticide registration in India.
	+ Discuss the key regulatory bodies involved in pesticide registration.
* **Content:**
	+ Registration Process
	+ Key Steps
	+ Role of Registration
* **Methodology:**
	+ Interactive presentation with visuals of the registration process.
	+ Discussion on the importance of pesticide registration for ensuring public health and safety.

**4. Role of BIS in Formulating Indian Standards on Pesticides (10 minutes)****Objective:**Introduce the Bureau of Indian Standards (BIS) and its role in the formulation of pesticide standards in India.* **Activity:**
	+ Explain BIS’s role in the development of pesticide standards.
	+ Discuss the importance of these standards in ensuring pesticide safety and quality.
* **Content:**
	+ Bureau of Indian Standards
	+ Role of BIS in Pesticide Standards
	+ Pesticides Sectional Committee (FAD 1**)**
* **Methodology:**
	+ Use of slides to introduce BIS and its role in the development of pesticide standards.
	+ Group discussion on how standards impact daily agricultural practices.

**5. Indian Standards on Pesticides and Their Formulations (15 minutes)****Objective:**Provide an overview of the key standards related to pesticide formulations, ensuring they are effective, safe, and stable.* **Activity:**
	+ Discuss the different pesticide formulations and their respective standards.
	+ Explain the importance of these formulations in achieving optimal pesticide application.
* **Content:**
	+ Pesticide Formulations
	+ Indian Standards for Pesticide Formulations
	+ Importance of Formulations
* **Methodology:**
	+ Interactive discussion on the formulations used in agricultural practices.

**6. Indian Standards on Test Methods of Pesticides (IS 6940) (15 minutes)****Objective:**Introduce participants to the standard test methods for evaluating the quality of pesticides and formulations.* **Activity:**
	+ Explain the test methods defined in **IS 6940** and their relevance to pesticide quality.
	+ Discuss how these test methods ensure pesticides meet the required standards for use.
* **Content:**
	+ IS 6940: Test Methods for Pesticides
	+ Key Tests
	+ Importance of Testing
* **Methodology:**
	+ Encourage participants to ask questions about the testing process and its implications.

**7. Indian Standards on Packaging of Pesticides (IS 8190) (10 minutes)****Objective:**Explain the importance of packaging in ensuring pesticide safety and compliance with Indian Standards.* **Activity:**
	+ Discuss the packaging standards for pesticides and their role in ensuring safety during storage, transportation, and use.
* **Content:**
	+ IS 8190: Packaging of Pesticides
	+ Key Requirements
	+ Importance of Proper Packaging
* **Methodology:**
	+ Discussion on how poor packaging affects pesticide safety and effectiveness.

**8. Conclusion and Q&A (10 minutes)****Objective:**Summarize key points from the session, answer any questions, and engage participants in a final discussion.* **Activity:**
	+ Recap the main points covered in the session.
	+ Open the floor for questions and clarifications.
* **Content:**
	+ Recap
	+ Q&A
* **Methodology:**
	+ Open-ended Q&A session.
	+ Ask for participant feedback on how the session can be improved.
 | **Expected Outcomes:*** Enhanced understanding of Indian Standards on pesticides.
* Applicability of these standards.

**Follow-up Resources:*** Access to BIS documents and standards.

Contact information for further queries or guidance |
| **SESSION 3** | **Soil Health Management** –Fertilizers, Manure, Vermicompost , Municipal solid waste compost**Duration** :1.5 Hours | **Objective:**To provide participants withcomprehensiveknowledge of Indian Standards on chemical fertilizers, bio-fertilizers, organic manure and soil quality | **1. Introduction (10 minutes)****Objective:**Introduce the concept of soil health management and the importance of Indian Standards in quality control of fertilizers and manure.* **Activity**
	+ Overview of soil health and its significance in agriculture.
	+ Briefly explain the role of standards in regulating soil health management inputs like chemical fertilizers, bio-fertilizers, and organic manure.
* **Content**
	+ What is Soil Health?
	+ Why Soil Health Management?
	+ Indian Standards and Their Role
* **Methodology:**
	+ Facilitator-led discussion with an introduction to the session and key objectives.
	+ Use visuals of healthy and degraded soils for context.

**2. Indian Standards on Chemical Fertilizers (20 minutes)****Objective:**Explain the role of chemical fertilizers in soil health and present Indian Standards regulating their quality, usage, and safety.* **Activity:**
	+ Discuss the types of chemical fertilizers and their respective Indian Standards.
	+ Highlight the standards that regulate the composition, purity, and safety of fertilizers.
* **Content:**
	+ What are Chemical Fertilizers?
	+ Types of Chemical Fertilizers
	+ Indian Standards for Chemical Fertilizers
	+ Benefits and Risks
* **Methodology:**
	+ Interactive discussion on the importance of fertilizer quality and safety.
	+ Use of slides with visual examples of fertilizers and their packaging.
	+ Question-based engagement: "How do you ensure quality when buying fertilizers?"

**3. Indian Standards on Bio-Fertilizers (20 minutes)****Objective:**Provide an overview of bio-fertilizers, their role in soil health, and the Indian Standards that regulate their quality and usage.* **Activity:**
	+ Discuss different types of bio-fertilizers and relevant Indian Standards.
	+ Highlight the sustainable role of bio-fertilizers in enhancing soil microbial activity.
* **Content:**
	+ What are Bio-fertilizers
	+ Types of Bio-fertilizers
	+ Indian Standards for Bio-fertilizers
	+ Benefits of Bio-fertilizers
	+ Challenges
* **Methodology:**
	+ Presentation on the types of bio-fertilizers, their uses, and benefits.
	+ Group activity: Discuss how bio-fertilizers could be integrated with chemical fertilizers in farm management.

**4. Indian Standards on Organic Manure (20 minutes)****Objective:**Discuss the role of organic manure in soil health and present the Indian Standards that govern its quality and usage.* **Activity:**
	+ Present types of organic manure and their role in enhancing soil fertility and structure.
	+ Explain the standards that ensure the quality and safety of organic manure.
* **Content:**
	+ What is Organic Manure?
	+ Types of Organic Manure:
	+ Indian Standards for Organic Manure:
	+ Benefits of Organic Manure:
	+ Challenges
* **Methodology:**
	+ Explanation of standards with visual aids (e.g., images of organic manure application).
	+ Interactive Q&A on the use of organic manure and challenges faced by farmers.

**5. Integrated Soil Health Management (10 minutes)****Objective:**Introduce an integrated approach to soil health management combining chemical fertilizers, bio-fertilizers, and organic manure, supported by Indian Standards.* **Activity:**
	+ Discuss the benefits of combining chemical fertilizers, bio-fertilizers, and organic manure for optimal soil health.
	+ Present examples of integrated nutrient management (INM) in action.
* **Content:**
	+ **Why Integrate Fertilizers and Manures?**
	+ **Best Practices for Integrated Soil Health Management**
	+ **Indian Standards Supporting Integrated Management**
* **Methodology:**
	+ Group discussion on how participants could implement INM in their farming practices.

**6. Conclusion and Q&A (10 minutes)****Objective:**Summarize the session’s key points and engage in an open discussion to clarify doubts and share insights.* **Activity:**
	+ Recap the importance of Indian Standards in regulating fertilizers and manure.
	+ Address any participant questions and offer solutions to challenges they may face in soil health management.
* **Content:**
	+ Key Takeaways
	+ Q&A Session
* **Methodology:**
	+ Open-ended Q&A session.
	+ Interactive feedback: "What is one change you will implement in your soil health management practices after this session?"
 | **Expected Outcomes:**By the end of the session, participants should:* Understand the importance of Indian Standards in regulating fertilizers and manure.
* Be familiar with the various types of chemical fertilizers, bio-fertilizers, and organic manure and their respective roles in soil health.
* Learn how to implement integrated soil health management using these inputs.
* Gain practical insights into improving soil fertility while adhering to national quality standards.
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| **SESSION 4** | **Session Title:** Micro Irrigation Systems: Understanding the Essentials of Drip and Sprinkler Irrigation Systems**Duration:**1.5 Hours | To provide participants with knowledge of standards on drip and sprinkler irrigation systems for. efficient and sustainable water management. | 1. **Introduction (10 minutes)**
* **Objective:** Emphasize the significance of water management in agriculture.
* **Content:** Overview of Irrigation, Micro Irrigation, Factors Affecting, Today’s Scenario.
* **Methodology:** Presentation with an overview of session objectives and key terms.

 1. **Drip Irrigation Systems (15 minutes)**
* **Objective:** Familiarize participants with importance of Drip Irrigation and key standards on Drip Irrigation Systems.
* **Content:**
	+ Detail of IS 12786, IS 13488, IS 13487
	+ Types of Pipes, Emitting Pipes, Emitters, their applicability, important requirements.
* **Methodology:** Lecture with presentations and real-world examples.

 1. **Sprinkler Irrigation System (15 minutes)**
* **Objective:** Familiarize participants with importance of Sprinkler Irrigation and key standards on Sprinkler Irrigation Systems.
* **Content:**
	+ Detail of IS 17425, IS 12232 (Part 1 & 2), IS 14605 and IS 18286
	+ Types of Pipes, Sprinklers, Valves, their applicability, important requirments.
* **Methodology:** Lecture with presentations and real-world examples..
1. **Filters (10 minutes)**
* **Objective:** Familiarize participants with importance of usage of certified filters in Micro Irrigation Systems
* **Content:** Overview of Filters, Types of Filters Used, Strainer Filter, Media Filter, Hydrocyclone Filter, Their Applicability, Important Requirments
* **Methodology:** Presentation with an overview of session objectives and key terms.
1. **Fertigation (10 minutes)**
* **Objective:** Familiarize participants with concept and importance of Fertigation and relevant Indian Standards
* **Content:**
	+ About Fertigation, methods and equipment for fertigation.
	+ Detail of Venturi Injector, Chemical Injector Pump, Fertilizer Tank
	+ Their Types, Their Applicability, Important Requirements.
* **Methodology:** Lecture with presentations and examples.
1. **Preventive Maintenance of DIS (10 minutes)**
* **Objective:** Familiarize participants with importance of Preventative Maintenance of Drip Irrigation Systems.
* **Content:**
	+ Problems of Clogging in Drip Irrigation
	+ Maintenance and Prevention
	+ Detail of IS 14791
* **Methodology:** Lecture with presentations and real-world examples.
1. **Design, Installation and Operation of Sprinkler Irrigation System (10 minutes)**
* **Objective:** Familiarize the participants with guidelines for Design, Installation and Operation of Sprinkler Irrigation System
* **Content:** Details of IS 14792
* **Methodology:** Lecture with presentations and real-world examples
1. **Conclusion and Q&A (10 minutes)**
* **Objective:** Summarize key takeaways and provide clarity.
* **Methodology:** Facilitator-led summary and Q&A session.\
 | **Expected Outcomes:*** Enhanced understanding of Indian Standards on Micro Irrigation Systems.
* Applicability of these standards.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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| **SESSION 5** | **Session Title:** Pumps and pumping systems for agricultural purpose**Duration** : 30 min |  | **1. Introduction to Pumping Systems (5 minutes)** **• Objective**: Provide an overview of pumps and their significance. • **Content**: o Types of pumps and their applications in agricultural purpose. o Brief introduction to the role of standardization. • **Methodology**: o Presentation with diagrams and examples of different types of pumps. **2. Importance of Standardization in Pumps (5 minutes)** **• Objective**: Highlight the benefits of standardization in ensuring efficiency, safety, and reliability. • **Content**: o Key objectives of standardization: uniformity, interoperability, and quality assurance.o Impact of standards on performance, maintenance, and lifecycle of pumping systems. • **Methodology**:o Interactive presentation. **3. Overview of BIS Standards for Pumps and Pumping Systems (15 minutes)** **• Objective**: Familiarize participants with the specific BIS standards related to different pumps. • **Content**: o Detailed review of key BIS standards (e.g., IS 8034 for submersible pumps, IS 9079 for monoblock pumps, IS 17018 (Part 1) for solar photovoltaic water pumping system).o Explanation of criteria covered in standards: materials, design, testing, and performance.o Procedures for compliance and certification. **• Methodology:****o** Presentation with handouts summarizing BIS standards and their applications. 4. **Conclusion and Q&A** (5 minutes) • **Objective**: Recap the key points and address participant queries. • **Methodology**:o Facilitator-led summary and interactive Q&A session. | **•** Understanding of the importance and benefits of standardization in pumps and pumping systems. • Familiarity with relevant BIS standards and their application. Follow-up Resources: • Access to relevant BIS standards and documents. • Contact information for further queries or guidance**.** |
| **SESSION 6** | **Agricultural Practices** – Good Agricultural Practices (India GAP), Organic Farming, Urban Farming, Protected Cultivation**Duration** :1.5 Hours | **Objective:**To provide participants withcomprehensiveknowledge of Indian Standards on good agricultural practices, organic farming, protected cultivation technologies and urban farming technologies. | **Session Breakdown**1. Good Agricultural Practices (40 minutes)
* **Objective**: Familiarizing the participants regarding different aspects of good agricultural practices and requirements for IndiaGAP certification.
* **Content:**
	+ Importance of good agricultural practices and introduction to existing national and international standards in GAP.
	+ Control points and compliance criteria under IndiaGAP
	+ Requirements of IndiaGAP for different aspects of agriculture. E.g. land and soil management, irrigation, plant health managements etc.
* **Methodology:**
	+ Interactive presentation.
1. Organic Farming (30 minutes)
* **Objective**: Familiarizing the participants regarding concept of organic farming, certification ecosystem of organic farming in India, requirements for different aspects of organic farming practices.
* **Content:**
	+ Brief status of national and international organic farming market along with national ecosystem of orgnic certification.
	+ Difference between conventional farming and organic farming.
	+ Requirements for different aspects or operations under orgniac farming practices like crop production plan, conversion requirements, nutrient management, pest disease and weed management etc.
	+ The labelling requirement of organic products.
* **Methodology:**
	+ Interactive presentation.
1. Protected Cultivation and Urban Farming (20 minutes)
* **Objective**: Familiarizing the participants regarding concept of protected cultivation, requirements for important protected cultivation structure, concept of urban farming, requirements for urban farming technologies.
* **Content:**
	+ Brief introduction of protected cultivation and various protected cultivation technologies.
	+ Specification for designing greenhouse structure
	+ Brief introduction of urban farming technology
	+ Specifications for designing, operation and maintenance of hydroponic farming production system.
	+ Specification for design, installation, operation, and maintenance of artificial lighting systems used in protected cultivation.
* **Methodology:**
	+ Interactive presentation.
 | **Expected Outcomes:*** Knowledge of Available Standards in the good agricultural practices, organic farming, protected cultivation, urban farming technologies.
* Understanding of the key requirements of different agricultural practices and production systems through the standards.
* Interpretation of the standards.
* Areas lacking for standardization may be brought up.

Follow-up Resources:* Access to relevant Indian Standards on IndiaGAP, organic farming, protected cultivation technology, hydroponic, artificial lighting system for protected cultivation.

Contact information for further queries or guidance. |
| **SESSION 7** | **Agricultural Mechanization** – Post-Harvest Processing**Duration** : 1.5 Hours | **Objective:** To provide participants with comprehensive knowledge of standard equipment for cleaning, grading, shelling, washing, polishing, drying for food grains, seeds & horticulture produce and equipment used in value addition to agri-by products. | 1. **Introductio**n (10 minutes)
* **Objective**: Introduce the session and highlight the importance of post-harvest processing in reducing the losses percentage.
* **Content** : Percent of losses occur after harvesting & significance of post-harvest processing to reduce the same
* **Methodology** : Presentation with an overview of session objectives and key terms.
1. **Overview of Indian Standards on Equipment used in post-harvest processing (10 Minutes)**
* **Objective**: Familiarize participants with key areas of the post-harvest processing where Indian Standards have been developed so far
* **Content** : Area wise list of Indian Standards of the equipment used in various operations e.g. rice milling, pulse & seed processing, millet processing, horticulture produce processing, chaff cutting, and rice fortification etc.
* **Methodology**: Interactive presentation.
1. **Indian Standards on Equipment Used in Rice Milling (20 Minutes)**
* **Objective**: Explaining the requirements of standards meant to ensure performance & durability of the equipment
* **Content** : Requirements for rice length grader (IS 10048)
* **Methodology**: Interactive presentation.
1. **Indian Standards on Chaff Cutters (20 Minutes)**
* **Objective**: Explaining the requirements of standards meant to ensure performance & durability of the equipment
* **Content** : Requirements for manually & power operated chaff cuttrer (IS 7898 & IS 11459)
* **Methodology**: Interactive presentation.
1. **Indian Standards on Millet Processing Equipment (20 Minutes)**
* **Objective**: Explaining the requirements of standards meant to ensure performance & durability of the equipment
* **Content**: Requirements for millet dehusker(IS 19040)
* **Methodology**: Interactive presentation.
1. **Conclusion (10 Minutes)**
* **Objective**: Recap key points and address participant questions.
* **Content**: Remaining Key Indian Standards followed by a quiz session
* **Methodology**: Facilitator-led summary and interactive Q&A session.
 | **Expected Outcomes:*** Enhanced understanding of Indian Standards on various agriculture & food processing equipment

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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| **SESSION 8** | **Session Title: Post Harvest Practices** – Storage, warehousing and transportation of Fruits and Vegetables**Duration** : 1.5 Hours  | **Objective:**To provide participants with comprehensive knowledge of standards storage and transportation of on fruits and vegetables. | * 1. **INTRODUCTION** (15 minutes)
* **Objective**: Introduce the session and highlight on the importance of storage of Fruits and Vegetables.
* **Content**: Types of Indian Standards on Storage of Fruits & Vegetables.
* **Methodology**: Presentation with an overview of session objectives and key terms.
	1. **METHODS OF F&V STORAGE** (30 Minutes)
* **Objective**: Explaining the different techniques for the storage of fruits and vegetables.
* **Content** : Describing different storage (Refrigeration, Controlled Atmospheric Storage) techniques for storage of fruits and vegetables along with recommended storage temperature & storage life.
* **Methodology**: Interactive presentation.
	1. **INDIAN STANDARDS ON STORAGE AND TRANSPORTATION OF F&V** (30 Minutes)
* **Objective**: Understanding the guidelines for storage and transportation of F&V as per the Indian Standards.
* **Content**: Explanation in detail about the IS 9304:2022 - Storage and Ripening of Mangoes, IS 9311: 2021 -Guide to Storage of Onions and brief explanation on other F&V storage and transportation guidelines.
* **Methodology**: Interactive presentation.
	1. **CONCLUSION** (15 Minutes)
* **Objective**: Recap key points and address participant questions.
* **Content**:

Summary of session highlights.Open floor for questions and clarifications.* **Methodology**: Facilitator-led summary and interactive Q&A session.
 | **Expected Outcomes:**Knowledge of Available Standards in the storage of fruits, vegetables, and allied products.**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.

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|   **SESSION 9** | **Session Title**:Agrotextiles for Agricuture and horticulture**Duration** : 1.5 Hours | **Objective:**To equip participants with a thorough awareness of various agrotextiles Indian Standards, encompassing their applications throughout distinct agrotextile subsectors, along with technical requirements and optimal installation practices. | **1. Introduction (10 Minutes)****Objective**: Introduce the session, set the context for importance and usage of agrotextiles**Content:*** Overview of agrotextiles and their applications
* Importance and significance of agrotextiles for farmers, environment and economy.
* Key areas of focus: crop protection, efficient water management and soil health management
* List of Agrotextiles standards under QCO

**Methodology**:* Brief presentation with an overview and objectives of the session.

**2. Agrotextiles for crop protection (20 Minutes)****Objective**: familiarize participants with key standards on crop protection. **Content**: * List of important Indian standards for crop protection: shade net (IS 16008), wind protection (IS 17356), hail protection (IS 17730), bird protection (IS 18310).
* Details of standards, importance & installation guidelines.

**Methodology**:* Interactive lecture with handouts giving details about the standards.

**3. Agrotextiles for soil health management (20 Minutes)****Objective**: familiarize participants with key standards on soil health. **Content**: * List of important standards for soil health: mulch mat (IS 17355), ground covers (IS 16202), weed suppression (IS 17070), vermiculture (IS 15907).
* Details of standards, different types specified in standard.

**Methodology**:* Interactive lecture with handouts giving details about the standards.

**4. Agrotextiles for effective water management (20 Minutes)****Objective:** familiarize participants with key standards for effective water management.**Content**: * List of important standards : geomembrane for water proof lining (IS 15907), woven layflat tube for irrigation (IS 16190), flexible water storage (IS 17729)
* Details of standards, importance & installation guidelines.

**Methodology**:Interactive lecture with handouts giving details about the standards.**5. Interactive Activity** Agrotextile samples from different technologies **(10 minutes)****Objective:** Hand on experience to identify samples from different technologies**Content:*** Participant work in group to develop an awareness of agrotextiles products based on different technologies with their relative advantages
* Focus on shade nets, bird protection nets, nonwoven covers.

**Methodology:**Participant will be asked to identify provided samples(prototypes) for same application but from different technologies.**6. Conclusion and Q&A (10 minutes)****Objective**: Recap key points and provide an opportunity for participant questions.**Content**: * Summary of session highlights.
* Open floor for questions and clarifications.

**Methodology**:Facilitator-led summary and Q&A session. | * Comprehensive understanding of Agrotextiles uses in agricultural & horticultural sector.
* Familiarity with BIS standards for Agrotextile.
* Ability to apply awareness, knowledge about products and standards to real-world field projects.
* Ability to select the appropriate agrotextile for a given application based on Indian Standards and specific requirements.

**Follow-up Resources**:* Access to BIS documents and standards.

Contact information for further queries or guidance. |