A

Training Manual

on

Eco Friendly Plant Protection Technology

Duration: 10 Days

National Agriculture Training Academy
Gazipur-1701
www.nata.gov.bd

Preface

The author humbly expresses his endless regards, profound gratitude and sincere homage to the Almighty Allah for the successful completion of the training manual.

National Agriculture Training Academy becomes a center of excellence for developing competent human resources in agriculture sector. Its mission is to develop a common platform of all organizations under the Ministry of Agriculture (MoA) for human resource development by imparting quality training, research & development and publications.

Eco-friendly agriculture is just a comprehensive agricultural production system intensively engaged in accordance with the principles of ecology. Now a days it is crucial for all agricultural sectors. Our farmers and also many officers have inadequate knowledge on eco friendly plant protection technology. For this NATA re-design the training course for the officers to deliver techniques & technology to the farmers.

The author wishes to express deepest sense of gratitude & sincere appreciation to DG & Director (Training), NATA and also to the expert members for their scholastic guidance, valuable suggestions, criticism and continuous inspiration throughout the entire period of work.

I believe this manual will guide the interested stakeholders to track their training needs.

The Author

PART I

Introduction to National Agriculture Training Academy (NATA)

1.1 The Academy

National Agriculture Training Academy (NATA) is the apex training institute for human resource development of officers (grade-9 and above) under the Ministry of Agriculture (MoA) for providing training on diversified fields of professional interest in agriculture sector. The Academy organizes various training programs related to modern agricultural technologies and office management issues throughout the year. The academy is established in Gazipur as Central Extension Resources Development Institute (CERDI) on 14 March 1975 with the financial assistance of Japan International Cooperation Agency (JICA). Afterwards, on 27 June 1984, CERDI was undertaken to the Training Wing of Department of Agricultural Extension (DAE). On 03 April 2013, Government of the People's Republic of Bangladesh abolished CERDI and established NATA as an independent organization of MoA and on 07 June 2014, NATA has been started it`s journey as a training academy.

After emergence as NATA, the Academy began it's training functions with only 10 faculty members. Though Government approved strength is 184, at present NATA has 84 staff members including 30 faculty members.

1.2 Vision

National Agriculture Training Academy becomes a center of excellence for developing competent human resources in agriculture sector.

1.3 Mission

We are pledged to achieve the shared vision through:

i. Development of skilled human resources of all organizations under MoA by imparting quality training, research and development and publications;
ii. Enhancement of linkage between education, research and extension to endow agriculture service delivery system;
iii. Building a network with reputed institutions of home and abroad for organizational capacity development; and
iv. Fostering a culture of continuous learning for development of knowledge-intensive agriculture service.

1.4 Functions

The NATA has been entrusted to perform the following functions:

i. Develop skilled human resources of the government, semi-government, autonomous organizations under MoA through imparting training program on modern and sustainable agriculture technology and office management topics;
ii. Transfer modern and sustainable agriculture technology developed by the research organizations for obtaining higher yield of crops of the farmers;
iii. Conduct demonstration, adaptive research and research of proven technologies;

iv. Impart all sorts of in-service training with special emphasis on induction, foundation and senior staff course;
v. Exchange publications, participants and resource persons in seminars, workshops, conferences and training among the stakeholders;
vi. Advice government and other organizations on training, achieving food and nutrition security, ICT, transfer of agriculture technology, agro-based industries and conservation environments etc.;
vii. Help government and policy makers in framing and analyzing agricultural policies;
viii. Conduct different training activities of academy in consonance with provision of the public administration training policy, 2003; and
ix. Perform all kinds of duties directed by the government.

1.5 Location of the Academy

The Academy is about 25 km away from the capital city Dhaka and 3 km away from Joydevpur Chandana Chowrasta towards Gazipur district head quarter. It is located adjacent to Bangladesh Rice Research Institute (BRRI) and occupied 49 acres of land. The academy provides the trainees an ample scope to get free access to the adjacent institutions like Bangladesh Agriculture Research Institute (BARI), Bangladesh Rice Research Institute (BRRI), Seed Certification Agency (SCA), Bangabondhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Telecommunication College, and other government offices in Gazipur.

1.6 Facilities

1.6.1 Physical Facilities

The Academy is well equipped with some physical facilities to run the training programs successful though it began its voyage recently. Existing facilities of the academy are as follows.

- Office building-2
- Class room- 3
- Laboratory (Subject wise technical)
- Plant protection museum- 1
- Conference room- 1
- Auditorum-1
- Dormitory- 4
- Cafeteria- 1
- Greenhouse- 3
- Workshop-1
- Mosque-1

1.6.2. Digital Computer cum Language Lab. and IT facilities

There is one Digital Computer cum Language Lab in the Academy. It is located on the 1st floor of the Administrative building. IT facilities available include LAN and Wi-Fi and the whole campus under Wi-Fi coverage. To expedite foreign language learning, NATA set up a Digital Computer cum Language Lab. as part of the Academy's drive for capacity building of government officials. Participants can avail the opportunity of learning the foreign language while they stay in NATA.

1.6.3 Recreational Facilities

The Academy has a recreation room with color T.V in the dormitory. The daily newspapers are also available in recreation room for the participants.

1.6.4 Linkage with other Training Organizations

NATA maintains good relations with other training Academies in the country including BPATC, RPATC,BCS Administration Academy, BIAM, FIMA and so on. NATA has a plan to collaborate with international training institutes for improvement its human resources. NATA also collaborate with national research organizations for research in agriculture sector.

1.7 Evaluation

Course coordinator and asst. course coordinators are given the responsibility to evaluate the participants. The course is evaluated during pre and post training situation. Furthermore, the participants are given the chance to evaluate the resource speakers by using a prescribed format.

1.8 Sessions

Everyday the session is started at 9.00 am in the morning and ends at 5:00 pm in the afternoon. There are two health breaks started at 10.30 am for snacks and 03.30 pm for tea as well as lunch with prayer break at 01.05pm respectively. Participants are advised to attend in the class in time without fail for avoiding any kinds of disciplinary action.

Daily Schedule

Activities	Duration
Recap	09.00-09.15
1st Session	09:15-10:30
Tea Break	10:30-11:00
2nd Session	11:00-12:00
3rd Session	12:05-01:05
Prayer & Lunch	01:05-02:10
4th Session	02:15-03:30
Tea Break	03:30-04:00
5th Session	04:00-05:00

1.9 Norms to be followed during the training

- No casual leave is allowed during training period;
- Participants living in the dormitory are advised to follow the norms of the dormitory;
- The campus area is a “Non Smoking Zone”. Participants are advised to refrain from smoking inside the Academy; and
- Participants are not allowed to enter the dormitory after 10:00 pm at night.

Part II

Title of the Manual:
Eco Friendly Plant Protection Technology.

Rationale:
Officers of different organizations under Ministry of Agriculture need to develop their knowledge, skill on Eco Friendly Plant Protection Technology. This training program will provide advanced knowledge and skill on it.

Summary of the Manual:
The manual of Eco Friendly Plant Protection Technology contains eight (08) modules and in total 45 sessions. Sessions are categorized in lecture, discussion, exercise and field visit. A glance view of manual is given as follows:

Module No.	Title	No. of Sessions
1	Concepts and principles of Eco-friendly Agriculture	6
2	Insect pests of different cereal crops and its eco-friendly management systems.	5
3	Insect pests of different vegetables and fruits and its eco-friendly management systems.	5
4	Diseases of different cereals, pulses, oil seed crops and spices and its eco-friendly management systems	5
5	Diseases of different vegetables and fruits and its eco-friendly management systems	5
6	Insect pests and diseases of cash crops and other pestiferous problems	4
7	Pesticide using pattern, safe use of pesticides & bio-pesticides	8
8	Field Visit	7
	Total	**45**

MODULE- 01

Title : Concepts and principles of Eco-friendly Agriculture

Objectives : To teach the concept and principles of IPM and the effect of climate change on insect population so that the participants can conceptualize the issues and apply it in the own situation.

Learning outcomes : After completion of module-1, the participants will be able to:

- define eco plant protection;
- challenges & opportunities in BD
- define IPM concept;
- name the principles of IPM ;
- name and identify beneficial and harmful insects;
- mention the effect of climate change on insect population;
- use nano-technology in agriculture; and
- prepare a plan to apply the IPM technology in the crop field.

Reference	Session	Contents/Topics	Methods
9.1.1	1	Eco-friendly Agriculture in Bangladesh: Concepts, Challenges and Opportunities.	L & D
9.1.2	2	Concepts and Principles of IPM.	L & D
9.1.3	3	Introduction to Biological control, Beneficial insects and Microorganisms.	L, D & E
9.1.4	4	Augmentation and Conservation measures of Natural Enemy (N/E).	L & D
9.1.5	5	Climate change and its effects on biological control agents	L & D
9.1.6	6	Use of Nano-particle for eco friendly pest management.	L & D

➲ L= Lecture, D = Discussion, E=Exercise

Session Plan

Ref. 9.1.1

Session : 1
Title : Eco-friendly Agriculture in Bangladesh: Concepts, Challenges and Opportunities.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To acknowledge the participants on eco agriculture, its challenges & opportunities in Bangladesh.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define eco friendly agriculture;
- ➲ eco plant protection;
- ➲ eco agriculture challenges in BD and
- ➲ eco agriculture opportunities in BD.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking: greetings • Linkage with previous learning experiences • Pre-assessment: (Q+A) • Topic: Eco-friendly Agriculture in Bangladesh: Concepts, Challenges and Opportunities. • Importance: Establish eco agriculture & conserve nature. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Orientation of eco friendly agriculture • Concepts of eco agriculture • Eco agriculture benefits • Challenges & opportunities of eco agriculture • Motivation (Energize the group) • Check attention (wrong sentence) • Feed back (Q+A)	Lecture/ Discussion/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

Session Plan

Ref. 9.1.2

Session : 2
Title : Concepts and Principles of IPM.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To inform participants about the IPM concept, principles and IPM practices in the field.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define IPM concept;
- ➲ mention the principles of IPM; and
- ➲ select and use IPM practices in pest management.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Concept & principles of IPM. • Importance: IPM concept/principles and its effects on pest management. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Concept and principles of IPM • Selection of IPM practices in pest control; • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q+A)	Lecture/ Discussion/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.1.3

Session : 3
Title : Introduction to Biological control, Beneficial insects and Microorganisms.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about beneficial insects, microorganisms and biological control so that the participants can identify beneficial insects, microorganisms and apply biological control measures.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define biological control ;
- ➲ name beneficial insects and other natural enemies;
- ➲ state functions/procedures of biological control measures; and
- ➲ mention and select appropriate biological control measures.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Introduction to biological control, beneficial insects and microorganisms. • Importance: Introduction of N/E and role of biological control in pest management. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Concepts • Type of beneficial insect and pathogen (predator, parasitoid, microorganism) • Pheromone trap • Most common biological control measures • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q+A)	Lecture/ Discussion/ Pictorial presentation/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

Session Plan

Ref. 9.1.4

Session : 4
Title : Augmentation and Conservation measures of Natural Enemy.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To inform participants about the principles and future perspective of natural enemies of agriculture.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define natural enemy of agriculture;
- ➲ Augmentation and Conservation measures of N/E; and
- ➲ conservation benefit of N/E.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Augmentation and Conservation measures of N/E. • Importance: Save nature for future agriculture • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Concept and principles of N/E • Characterization of N/E; • Augmentation and Conservation measures of N/E • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q+A)	Lecture/ Discussion/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.1.5

Session : 5
Title : Climate change and its effects on biological control agents.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about climate change so that the participants can assess its effects on insect population and can apply knowledge in real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define climate change;
- ➲ state the causes of climate change ;
- ➲ mention the effects of climate change on insect population; and
- ➲ state the climatic factors which affect insect population.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Climate change and its effects on biological control agents. • Importance: Climate change and its effect on insect pest population. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Increase of temperature, flood, drought; • Effect of temperature, humidity, CO_2 on insect pests, insect and environment • Overwintering of insect • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q+A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.1.6

Session : 6
Title : Use of Nano-particle for eco friendly pest management.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about nano-technology on agriculture so that they and can apply knowledge in real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define nano-technology & nano-particle;
- ➲ know nano-technology for pest management ;
- ➲ brief its importance for pest management; and
- ➲ know probability of nano in BD perspective.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Use of Nano-particle for eco friendly pest management. • Importance: More appropriate technology for PM. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Nano-technology, nano-particle; • description on nano-technology • Field/lab Application of nano tech. for PM. • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q+A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

MODULE- 02

Title : Insect pests of Major cereal crops and its eco-friendly management systems.

Objectives : To teach participants about the major insect pests of different crops, nature of damage and their integrated management practices so that the participants can adopt eco-friendly management in the field.

Learning outcomes : After completion of module-2, the participants will be able to:

- identify major insect pest of cereal crops;
- name control measure of insect pest of cereal crops; and
- eco friendly management of insect pest of cereal crops.

Reference	Session	Contents/Topics	Methods
9.2.1	7	Bio-ecology of rice stem borer, gall midge and leaf folder, its nature of damage and eco-friendly management systems.	L, D & E
9.2.2	8	Bio-ecology of rice bug, case worm, ear cutting caterpillar and rice hispa, whorl maggot, its nature of damage and eco-friendly management systems.	L, D & E
9.2.3	9	Bio-ecology of BPH, WBPH, GLH and its nature of damage and eco-friendly management systems.	L, D & E
9.2.4	10	Introduction to major insect pests of maize, its bio-ecology, nature of damage and eco-friendly management systems.	L, D & E
9.2.5	11	Introduction to major insect pests of wheat, its bio-ecology, nature of damage and eco-friendly management systems.	L, D & E

➲ L= Lecture, D = Discussion, E=Exercise

Session Plan

Ref. 9.2.1

Session : 7
Title : Bio-ecology of rice stem borer, gall midge and leaf folder, its nature of damage and eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about major insect pests of rice so that the participants can identify and management of insect pests of rice
Learning Outcomes : End of the session the participants will be able to:
- describe destructive stages of mentioned insect pests of rice;
- identify and mention the damage symptoms of that insects; and
- eco friendly management of mentioned rice insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Bio-ecology of rice stem borer……eco-friendly management systems. • Importance: eco management of rice insects. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Major insects of rice • Stages of insects of rice • Nature of damage • eco friendly management • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.2.2

Session : 8
Title : Bio-ecology of rice bug, case worm, ear cutting caterpillar and rice hispa, whorl maggot, its nature of damage and eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about major insect pests of rice so that the participants can identify and management of insect pests of rice
Learning Outcomes : End of the session the participants will be able to:
- describe destructive stages of mentioned insect pests of rice;
- identify and mention the damage symptoms of that insects; and
- eco friendly management of mentioned rice insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Bio-ecology of rice bug……eco-friendly management systems. • Importance: eco management of rice insects. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Major insects of rice • Stages of insects of rice • Nature of damage • eco friendly management • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.2.3

Session : 9
Title : Bio-ecology of BPH, WBPH, GLH and its nature of damage and eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about major insect pests of rice so that the participants can identify and management of insect pests of rice
Learning Outcomes : End of the session the participants will be able to:
- describe destructive stages of mentioned insect pests of rice;
- identify and mention the damage symptoms of that insects; and
- eco friendly management of mentioned rice insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Bio-ecology of BPH…….and eco-friendly management systems. • Importance: eco management of rice insects. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Major insects of rice • Stages of insects of rice • Nature of damage • eco friendly management • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.2.4

Session : 10
Title : Introduction to major insect pests of maize, its bio-ecology, nature of damage and eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about major insect pests of maize so that the participants can identify and management of insect pests of rice
Learning Outcomes : End of the session the participants will be able to:
- describe destructive stages of mentioned insect pests of maize;
- identify and mention the damage symptoms of that insects; and
- eco friendly management of mentioned maize insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Introduction to major insect pests……and eco-friendly management systems. • Importance: eco management of maize insects. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Major insects of maize • Stages of insects of maize • Nature of damage • eco friendly management • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.2.5

Session : 11
Title : Introduction to major insect pests of wheat, its bio-ecology, nature of damage and eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about major insect pests of wheat so that the participants can identify and management of insect pests of rice
Learning Outcomes : End of the session the participants will be able to:
- describe destructive stages of mentioned insect pests of wheat;
- identify and mention the damage symptoms of that insects; and
- eco friendly management of mentioned wheat insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Introduction to major insect pests……and eco-friendly management systems. • Importance: eco management of wheat insects. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Major insects of wheat • Stages of insects of wheat • Nature of damage • eco friendly management • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

MODULE- 03

Title : Insect pests of different vegetables, pulses, oil seeds and fruits and its eco-friendly management systems.

Objectives : To teach participants about the major insect pests of different vegetables, pulses, oil seeds and fruits, nature of damage and their eco-friendly management.

Learning outcomes : After completion of module-3, the participants will be able to:

- identify major insect pest of mentioned vegetables, pulses, oil seeds and fruits;
- name control measure of insect pest of plants; and
- eco friendly management of insect pest of vegetables, pulses, oil seeds and fruits.

Reference	Session	Contents/Topics	Methods
9.3.1	12	Major insect pests of cucurbits, cabbage and cauliflower and its eco-friendly management	L, D & E
9.3.2	13	Major insect pests of beans, pulses and oil seed crops and its eco-friendly management	L, D & E
9.3.3	14	Major insect pests of brinjal, okra and tomato and its eco-friendly management systems	L, D & E
9.3.4	15	Major insect pests of mango, guava and litchi and its eco-friendly management	L, D & E
9.3.5	16	Introduction to Major insect pests of banana, papaya and jackfruit and its eco-friendly management	L, D & E

➲ L= Lecture, D = Discussion, E=Exercise

Session Plan

Ref. 9.3.1

Session : 12
Title : Major insect pests of cucurbits, cabbage and cauliflower and its eco-friendly management.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about major insect pests of mentioned vegetables so that the participants can identify and management of insect pests of it.
Learning Outcomes : End of the session the participants will be able to:
➲ describe destructive stages of mentioned insect pests of vegetables;
➲ identify and mention the damage symptoms of that insects; and
➲ eco friendly management of mentioned vegetables insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major insect pests of cucurbits, cabbage and cauliflower and its eco-friendly management. • Importance: eco management of those vegetables. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • List of vegetable insect pests • Different stages & life cycle of those insect pests • Nature of damage of those insect pests • Eco friendly management of those insect pests • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.3.2

Session : 13
Title : Major insect pests of beans, pulses and oil seed crops and its eco-friendly management.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about major insect pests of mentioned crops so that the participants can identify and management of insect pests of it.
Learning Outcomes : End of the session the participants will be able to:
- describe destructive stages of mentioned insect pests of those crops;
- identify and mention the damage symptoms of that insects; and
- eco friendly management of mentioned crops insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major insect pests of beans ……and its eco-friendly management. • Importance: eco management of those crops. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • List of major insect pests beans, pulses and oil seed crops. • Different stages & life cycle of those insect pests • Nature of damage of those insect pests • Eco friendly management of those insect pests • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.3.3

Session : 14
Title : Major insect pests of brinjal, okra and tomato and its eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about major insect pests of mentioned vegetables so that the participants can identify and management of insect pests of those vegetables.
Learning Outcomes : End of the session the participants will be able to:
- describe destructive stages of insect pests of those vegetables;
- identify and mention the damage symptoms of that insects; and
- eco friendly management of those vegetables insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major insect pests of brinjal……and its eco-friendly management systems. • Importance: eco management of those vegetables. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • List of major insect pests of brinjal, okra and tomato. • Different stages & life cycle of those insect pests • Nature of damage of those insect pests • Eco friendly management of those insect pests • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.3.4

Session : 15
Title : Major insect pests of mango, guava and litchi and its eco-friendly management.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach and demonstrate to the participants about major insect pests of mango, guava & litchi so that the participants can identify and manage of insect pests of those crops.
Learning Outcomes : End of the session the participants will be able to:
- describe destructive stages of insect pests of those fruits;
- identify and mention the damage symptoms of that insects; and
- eco friendly management of those fruits insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major insect pests of mango….and its eco-friendly management. • Importance: eco management of those fruits. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • List of major insect pests of mango, guava and litchi • Different stages & life cycle of those insect pests • Nature of damage of those insect pests • Eco friendly management of those insect pests • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.3.5

Session : 16
Title : Introduction to Major insect pests of banana, papaya and jackfruit and its eco-friendly management.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach and demonstrate to the participants about major insect pests of banana, papaya and jackfruit so that the participants can identify and manage of insect pests of those crops.
Learning Outcomes : End of the session the participants will be able to:
- describe destructive stages of insect pests of those fruits;
- identify and mention the damage symptoms of that insects; and
- eco friendly management of those fruits insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Introduction to Major insect pests of banana…… and its eco-friendly management • Importance: eco management of those fruits. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • List of major insect pests of banana, papaya and jackfruit • Different stages & life cycle of those insect pests • Nature of damage of those insect pests • Eco friendly management of those insect pests • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

MODULE- 04

Title : Diseases of Major cereals, pulses, oil seed crops and spices and its eco-friendly management systems.

Objectives : To improve participants' knowledge and skills in different crop diseases and their eco friendly management.

Learning outcomes : After completion of module-4, the participants will be able to:

- identify the diseases;
- mention symptoms & of causes of disease infection;
- identify proper time/stages of control measures of diseases;
- eco friendly control measures of diseases.

Reference	Session	Contents/Topics	Methods
9.4.1	17	Major diseases of rice (Blast, Sheath blight, BLB and Sheath rot) and its eco-friendly management	L, D & E
9.4.2	18	Major diseases of rice (Tungro, Ufra, Brown spot and False smut) and its eco-friendly management	L, D & E
9.4.3	19	Major diseases of wheat and maize and its eco-friendly management systems	L, D & E
9.4.4	20	Important diseases of spices (Onion, Garlic, Ginger, Turmeric and Chili) and its eco-friendly management	L, D & E
9.4.5	21	Important diseases of pulses and oil seed crops and its eco-friendly management	L, D & E

➲ L= Lecture, D = Discussion, E=Exercise

Session Plan

Ref. 9.4.1

Session : 17
Title : Major diseases of rice (Blast, Sheath blight, BLB and Sheath rot) and its eco-friendly management.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To discuss about four major diseases of Rice and their eco management so that the participants can apply their acquired knowledge and skills in the real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ name major diseases of rice;
- ➲ mention the disease symptoms of rice; and
- ➲ eco friendly control measures of rice diseases.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major diseases of rice…….and its eco-friendly management. • Importance: eco management of rice diseases. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Brief info on rice blast, sheath blight, BLB and sheath rot diseases. • Life cycle/Symptoms/diagnosis • Nature of damage of those diseases • Eco friendly management of those diseases • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

Session Plan

Ref. 9.4.2

Session : 18
Title : Major diseases of rice (Tungro, Ufra, Brown spot and False smut) and its eco-friendly management.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To discuss about four major diseases of Rice and their eco management so that the participants can apply their acquired knowledge and skills in the real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ name major diseases of rice;
- ➲ mention the disease symptoms of rice; and
- ➲ eco friendly control measures of rice diseases.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major diseases of rice…….and its eco-friendly management. • Importance: eco management of rice diseases. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Brief info on rice Tungro, Ufra, Brown spot and False smut diseases. • Life cycle/Symptoms/diagnosis • Nature of damage of those diseases • Eco friendly management of those diseases • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

Session Plan

Ref. 9.4.3

Session : 19
Title : Major diseases of wheat and maize and its eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To discuss about major diseases of wheat & maize and their eco management so that the participants can apply their acquired knowledge and skills in the real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ name major diseases of wheat & maize ;
- ➲ mention the disease symptoms of wheat & maize; and
- ➲ eco friendly control measures of wheat & maize diseases.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major diseases of wheat and maize and its eco-friendly management systems. • Importance: eco management of that crop diseases. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Brief info on wheat & maize diseases. • Life cycle/Symptoms/diagnosis • Nature of damage of those diseases • Eco friendly management of those diseases • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.4.4

Session : 20
Title : Important diseases of spices (Onion, Garlic, Ginger, Turmeric and Chili) and its eco-friendly management.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To discuss about major diseases of spices and their eco management so that the participants can apply their acquired knowledge and skills in the real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ name major diseases of spices ;
- ➲ mention the disease symptoms of spices; and
- ➲ eco friendly control measures of spices diseases.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Important diseases of spices…..and its eco-friendly management. • Importance: eco management of spices diseases. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Brief info on Onion, Garlic, Ginger, Turmeric and Chili diseases. • Life cycle/Symptoms/diagnosis • Nature of damage of those diseases • Eco friendly management of those diseases • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

Session Plan

Ref. 9.4.5

Session : 21
Title : Important diseases of pulses and oil seed crops and its eco-friendly management.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To discuss about major diseases pulses & oil seed crops and their eco management so that the participants can apply their acquired knowledge and skills in the real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ name major diseases of pulses and oil seed crops ;
- ➲ mention the disease symptoms of that crops; and
- ➲ eco friendly control measures of those crop diseases.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Important diseases of pulses and oil seed crops and its eco-friendly management. • Importance: eco management of those diseases. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Brief info on pulses and oil seed crops diseases. • Life cycle/Symptoms/diagnosis • Nature of damage of those diseases • Eco friendly management of those diseases • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Module- 05

Title : Diseases of different vegetables and fruits and its eco-friendly management systems.

Objectives : To improve participants' knowledge and skills in different crop diseases and their eco friendly management.

Learning outcomes : After completion of module-5, the participants will be able to:

- identify the diseases;
- mention symptoms & of causes of disease infection;
- identify proper time/stages of control measures of diseases;
- eco friendly control measures of diseases.

Reference	Session	Contents/Topics	Methods
9.5.1	22	Major diseases of potato and brinjal and its eco-friendly management systems	L, D & E
9.5.2	23	Important diseases of cucurbits, cabbage and cauliflower and its eco-friendly management systems	L, D & E
9.5.3	24	Major diseases of tomato, okra, and bean crops and its eco-friendly management systems	L, D & E
9.5.4	25	Major diseases of mango, jackfruit and banana and its eco-friendly management systems	L, D & E
9.5.5	26	Important diseases of guava, papaya, coconut and litchi and its eco-friendly management systems	L, D & E

➲ L= Lecture, D = Discussion, E=Exercise

Session Plan

Ref. 9.5.1

Session : 22
Title : Major diseases of potato and brinjal and its eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To discuss about major diseases of potato & brinjal and their eco management so that the participants can apply their acquired knowledge and skills in the real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ name major diseases of potato & brinjal;
- ➲ mention the disease symptoms of that vegetables; and
- ➲ eco friendly control measures of those vegetables diseases.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major diseases of potato and brinjal and its eco-friendly management systems. • Importance: eco management of those diseases. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Details on potato and brinjal diseases. • Life cycle/Symptoms/diagnosis • Nature of damage of those diseases • Eco friendly management of those diseases • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.5.2

Session : 23
Title : Important diseases of cucurbits, cabbage and cauliflower and its eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To discuss about major diseases of cucurbits, cabbage & cauliflower and their eco management so that the participants can apply their knowledge and skills in the real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ name major diseases of those vegetables;
- ➲ mention the disease symptoms of that vegetables; and
- ➲ eco friendly control measures of those vegetables diseases.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Important diseases of cucurbits…..and its eco-friendly management systems. • Importance: eco management of those diseases. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Details on cucurbits, cabbage and cauliflower diseases. • Life cycle/Symptoms/diagnosis • Nature of damage of those diseases • Eco friendly management of those diseases • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

Session Plan

Ref. 9.5.3

Session : 24
Title : Major diseases of tomato, okra, and bean crops and its eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To discuss about major diseases of tomato, okra, and bean crops and their eco management so that the participants can apply their knowledge and skills in the real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ name major diseases of those vegetables;
- ➲ mention the disease symptoms of that vegetables; and
- ➲ eco friendly control measures of those vegetables diseases.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major diseases of tomato….and its eco-friendly management systems. • Importance: eco management of those diseases. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Details on tomato, okra, and bean crops diseases. • Life cycle/Symptoms/diagnosis • Nature of damage of those diseases • Eco friendly management of those diseases • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

SESSION PLAN

Ref. 9.5.4

Session	**:**	25
Title	**:**	Major diseases of mango, jackfruit and banana and its eco-friendly management systems.
Target Group	**:**	9th Grade & above officers of different organization under MoA
Duration	**:**	60 minutes
Aims	**:**	To discuss about major diseases of mango, jackfruit & banana and their eco management so that the participants can apply their knowledge and skills in the real job situation.
Learning Outcomes	**:**	End of the session the participants will be able to: ➲ name major diseases of mentioned fruits; ➲ mention the disease symptoms of that fruits; and ➲ eco friendly control measures of those fruits diseases.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major diseases of mango….and its eco-friendly management systems. • Importance: eco management of those diseases. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Details on mango, jackfruit and banana diseases. • Life cycle/Symptoms/diagnosis • Nature of damage of those diseases • Eco friendly management of those diseases • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

Session Plan

Ref. 9.5.5

Session : 26
Title : Important diseases of guava, papaya, coconut and litchi and its eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To discuss about major diseases of guava, papaya, coconut & litchi and their eco management so that the participants can apply their knowledge and skills in the real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ name major diseases of mentioned fruits;
- ➲ mention the disease symptoms of that fruits; and
- ➲ eco friendly control measures of those fruits diseases.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major diseases of guava….and its eco-friendly management systems. • Importance: eco management of those diseases. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Details on guava, papaya, coconut and litchi diseases. • Life cycle/Symptoms/diagnosis • Nature of damage of those diseases • Eco friendly management of those diseases • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

MODULE- 06

Title : Insect pests and diseases of cash crops and other pestiferous problems.

Objectives : To improve participants' knowledge and skills in different crop diseases and their eco friendly management.

Learning outcomes : After completion of module-6, the participants will be able to:

- identify the diseases;
- mention symptoms & of causes of disease infection;
- identify proper time/stages of control measures of diseases;
- eco friendly control measures of diseases.

Reference	Session	Contents/Topics	Methods
9.6.1	27	Major insect pests of jute, cotton and sugarcane and its eco-friendly management	L, D & E
9.6.2	28	Important diseases of jute, cotton and sugarcane and its eco-friendly management	L, D & E
9.6.3	29	Bio-ecology of rat and its eco-friendly management practices	L, D & E
9.6.4	30	Major pests of store crops and its eco-friendly management systems	L, D & E

➲ L= Lecture, D = Discussion, E=Exercise

Session Plan

Ref. 9.6.1

Session : 27
Title : Major insect pests of jute, cotton and sugarcane and its eco-friendly management.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To discuss about major insect pests of jute, cotton & sugarcane and their eco management so that the participants can apply their knowledge and skills in the real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ name major insect pests of mentioned crops;
- ➲ mention the destructive symptoms of that crops; and
- ➲ eco friendly control measures of those crops insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major insect pests of jute…and its eco-friendly management. • Importance: eco management of those insect pests. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Details on jute, cotton & sugarcane insect pests • Destructive symptoms • Nature of damage of that crops • Eco friendly management of those insect pests • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.6.2

Session : 28
Title : Important diseases of jute, cotton and sugarcane and its eco-friendly management.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To discuss about major diseases jute, cotton & sugarcane and their eco management so that the participants can apply their knowledge and skills in the real job situation.
Learning Outcomes : End of the session the participants will be able to:
- ➲ name major diseases of mentioned crops;
- ➲ mention the disease symptoms of that crops; and
- ➲ eco friendly control measures of those crops diseases.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major insect pests of jute…and its eco-friendly management. • Importance: eco management of those diseases. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Details on jute, cotton & sugarcane diseases. • Life cycle/Symptoms/diagnosis • Nature of damage of those diseases • Eco friendly management of those diseases • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9

Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.

Behavior/Performance	Condition	Criteria

Session Plan

Ref. 9.6.3

Session : 29
Title : Bio-ecology of rat and its eco-friendly management practices.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about bio-ecology of rat so that the participants can assess and identify the nature and damage of rat and take necessary measures in the field.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define bio-ecology of rat;
- ➲ describe the nature of damage caused by rat; and
- ➲ name and select appropriate measures towards the use of eco friendly management practices in controlling rat.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Bio-ecology of rat and its eco-friendly management practices. • Importance: eco management of rat. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Bio-ecology of rat • Nature of damage by rat • Symptoms of rat attack • Eco-friendly management of rat • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.6.4

Session : 30
Title : Major pests of store crops and its eco-friendly management systems.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about major pests of store crops so that they can assess and identify the pests & eco friendly management them.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define stored pests;
- ➲ describe the nature of damage caused by stored pest; and
- ➲ eco friendly management of that pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Major pests of store crops and its eco-friendly management systems. • Importance: eco management of stored pests. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Details on stored pests • Nature of damage by stored pests • Eco-friendly management of stored pests • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

MODULE- 07

Title : Pesticide using pattern, safe use of pesticides & bio-pesticides.

Objectives : To improve participants' knowledge and skills on different kinds of pesticides and their eco friendly management.

Learning outcomes : After completion of module-7, the participants will be able to:

- define pesticide, bio-pesticide;
- mode of actions of pesticides;
- trico-compost, pheromone & weed control;
- pesticide rules & regulations; and
- safe se of different pesticides.

Reference	Session	Contents/Topics	Methods
9.7.1	31	Pesticide regulation and pesticide using pattern in Bangladesh. An impact analysis of pesticide use due to Eco-friendly practices.	L, D & E
9.7.2	32	Safe use and handling of pesticides in fruits and vegetables.	L, D & E
9.7.3	33	Type of pesticides, their mode of action and common pesticides using in Bangladesh.	L, D & E
9.7.4	34	Preparation of pheromone and its application.	L, D & E
9.7.5	35	Production techniques of bio-pesticides and their application	L, D & E
9.7.6	36	Use of Tricho-derma based products (trico compost, suspension & talc based formulation) for eco-friendly crop production.	L, D & E
9.7.7	37	Eco friendly weed management techniques.	L, D & E
9.7.8	38	Adverse effects and Residual effects of Pesticides and its Risk reduction.	L, D & E

➲ L= Lecture, D = Discussion, E=Exercise

Session Plan

Ref. 9.7.1

Session : 31
Title : Pesticide regulation and pesticide using pattern in Bangladesh. An impact analysis of pesticide use due to Eco-friendly practices.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about pesticides Regulation, Acts and using patterns with eco friendly practices.
Learning Outcomes : End of the session the participants will be able to:
- ➲ mention the pesticide Acts of Bangladesh;
- ➲ describe the rules and regulations of pesticides;
- ➲ compare the using pattern of pesticides in a given time; and
- ➲ explain the pesticide use patterns in Bangladesh.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Pesticide regulation and……pesticide use due to Eco-friendly practices. • Importance: pesticide use with eco friendly practices. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Details on pesticide • Pesticide regulations in BD • Pesticide use with eco friendly • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

Session Plan

Ref. 9.7.2

Session : 32
Title : Safe use and handling of pesticides in fruits and vegetables.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about safe use of pesticides in vegetables & fruits.
Learning Outcomes : End of the session the participants will be able to:
➲ list pesticides name for fruits & vegetables; and
➲ safe use of pesticides for fruits & vegetables.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Safe use and handling of pesticides in fruits and vegetables • Importance: safe food for all. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Concept on fruits & vegetables pesticides • Actual doses of those pesticides • Safe use (eco friendly) for fruits & vegetables • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.7.3

Session : 33
Title : Type of pesticides, their mode of action and common pesticides using in Bangladesh.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about details on pesticides in BD.
Learning Outcomes : End of the session the participants will be able to:
➲ categorized pesticides;
➲ know mode of action of pesticides ; and
➲ common practices if pesticides in BD.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Type of pesticides, their mode of action and common pesticides using in Bangladesh. • Importance: Details knowledge on pesticides. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Concept on pesticides • Types & mode of action of those pesticides • Common practices of pesticides in BD. • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

Session Plan

Ref. 9.7.4

Session : 34
Title : Preparation of pheromone and its application.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about pheromone trap preparation & application..
Learning Outcomes : End of the session the participants will be able to:
- ➲ define pheromone;
- ➲ prepare pheromone trap; and
- ➲ different applications of this trap.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Preparation of pheromone and its application. • Importance: Skill development on pheromone trap. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Concept on pheromone, pheromone trap • Making & its application in the field • Future needs of pheromone trap for agriculture. • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.7.5

Session : 35
Title : Production techniques of bio-pesticides and their application.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To share knowledge with participants about bio-pesticides & its application.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define bio-pesticide;
- ➲ knows techniques of bio-pesticide production; and
- ➲ know bio-pesticide application fields.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Production techniques of bio-pesticides and their application. • Importance: safe food production not hampering nature. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Concept on bio-pesticides • Production techniques & its applications • Eco friendly measures of bio-pesticides • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.7.6

Session : 36
Title : Use of Tricho-derma based products (trico compost, suspension & talc based formulation) for eco-friendly crop production.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach participants about details knowledge & techniques on trico compost.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define trico compost, trico lichet;
- ➲ knows techniques of trico compost production; and
- ➲ know uses of trico compost in the fields.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Use of Tricho-derma based products…….eco-friendly crop production. • Importance: Eco friendly crop production. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Details on trico compost, trico lichet • Production techniques & its applications • Eco friendly crop production using trico compost • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.7.7

Session : 37
Title : Eco friendly weed management techniques.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To teach eco friendly techniques on weed management.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define weed, types, nature of damage crop;
- ➲ common control measures of weed; and
- ➲ eco management of weed in the fields.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Eco friendly weed management techniques. • Importance: Eco friendly weed management. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • Details on weed in BD • Types, vigor, nature of damage crop, common control measures. • Eco friendly weed management in BD • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.7.8

Session : 38
Title : Adverse effects and Residual effects of Pesticides and its Risk reduction.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To share knowledge on adverse effect of pesticides.
Learning Outcomes : End of the session the participants will be able to:
➲ know about adverse effect of pesticides & its types;
➲ adverse effect on human, animal & nature; and
➲ pesticides risk reduction techniques.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Adverse effects and Residual effects of Pesticides and its Risk reduction. • Importance: Aware about pesticides. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • On & after affect of pesticides • Using status of pesticides in BD & its future • Its risk reduction using eco techniques. • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

MODULE- 08

Title : Field Visit

Objectives : To improve participants' practical knowledge and skills on different kinds agricultural items.

Learning outcomes : After completion of module-8, the participants will be able to:

- identify insect & diseases of crops;
- find out symptoms of diseases & insects attack on crops;
- interact with theory & practical knowledge; and
- prescribe farmers on agril. problems.

Reference	Session	Contents/Topics	Methods
9.8.1	39	An orientation to NATA Plant Protection Museum.	L, D & E
9.8.2	40	Visit of BARI IPM lab. (Rearing techniques of Bracon, Tricograma etc.)	L, D & E
9.8.3	41	Visit of BARI toxicology lab. (Residual effect of pesticides on fruits and vegetables)	L, D & E
9.8.4	42	Visit of BARI Pathology lab.	L, D & E
9.8.5	43	Visit of BRRI Insect and Pathology lab. An Insect case study (Insect zoo).	L, D & E
9.8.6	44	Visit of Bio-technology lab at BSMRAU	L, D & E
9.8.7	45	Field visit/Group Exercise/Weed Museum	L, D & E

➲ L= Lecture, D = Discussion, E=Exercise

Session Plan

Ref. 9.8.1

Session : 39
Title : An orientation to NATA Plant Protection Museum.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To show practical sign & symptoms of insects and diseases on crops.
Learning Outcomes : End of the session the participants will be able to:
➲ identify insects or diseases infestation; and
➲ describe life cycle of insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: An orientation to NATA Plant Protection Museum. • Importance: Skill development of participants. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • A brief on pest museum • Watching different sample in pest museum • Comment on museum register • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

Session Plan

Ref. 9.8.2

Session : 40
Title : Visit of BARI IPM lab. (Rearing techniques of Bracon, Tricograma etc.)
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To show practical knowledge on bio control agents.
Learning Outcomes : End of the session the participants will be able to:
➲ identify bracon, tricograma; and
➲ rear bracon, tricograma in the lab & apply in the field.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Visit of BARI IPM lab. (Rearing techniques of Bracon, Tricograma etc.) • Importance: Skill development of participants. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • A brief on BARI IPM Lab • Watching different sample in IPM Lab • Comment on lab register • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			

Session Plan

Ref. 9.8.3

Session : 41
Title : Visit of BARI toxicology lab. (Residual effect of pesticides on fruits and vegetables)
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To show practical knowledge on toxicity of different pesticides.
Learning Outcomes : End of the session the participants will be able to:
➲ define toxicity; and
➲ brief on residual effect of pesticides applied in the field.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Visit of BARI toxicology lab. (Residual effect of pesticides on fruits and vegetables) • Importance: Skill development of participants. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • A brief on BARI toxicology lab • Toxicity analysis with equipments. • Comment on lab register • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.8.4

Session : 42
Title : Visit of BARI Pathology lab.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To show pathological sign & symptoms of crops.
Learning Outcomes : End of the session the participants will be able to:
➲ identify different diseases of crops; and
➲ brief life cycle, destructive stages of diseases of crops.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Visit of BARI Pathology lab. • Importance: Skill development of participants. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • A brief on BARI pathology lab • Watching diseases samples in the lab • Comment on lab register • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.8.5

Session : 43
Title : Visit of BRRI Insect and Pathology lab. An Insect case study (Insect zoo).
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To show participants diseases symptoms & insects of rice.
Learning Outcomes : End of the session the participants will be able to:
- ➲ identify different diseases of rice;
- ➲ identify different insects of rice; and
- ➲ brief on life cycle, control measures of disease & insect pests.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Visit of BRRI Insect and Pathology lab. And Insect case study (Insect zoo). • Importance: Skill development of participants. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • A brief on BRRI insect & pathology lab • Watching diseases samples in the lab • Watching insects in the lab • Comment on lab register • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.8.6

Session : 44
Title : Visit of Bio-technology lab at BSMRAU.
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To show participants bio-technology techniques.
Learning Outcomes : End of the session the participants will be able to:
- ➲ define bio-technology;
- ➲ brief on bio technology in crop field; and
- ➲ future needs of bio technology.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Visit of Bio-technology lab at BSMRAU. • Importance: Skill development of participants. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • A brief on bio technology lab • Equipments in the lab • Bio technology agents • Comment on lab register • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Video clips/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc.			
Behavior/Performance	**Condition**	**Criteria**	

Session Plan

Ref. 9.8.7

Session : 45
Title : Field visit/Group Exercise/Weed Museum
Target Group : 9th Grade & above officers of different organization under MoA
Duration : 60 minutes
Aims : To show participants technologies in the field.
Learning Outcomes : End of the session the participants will be able to:
➲ practices technologies in hand;
➲ develop their skill in crop field.

Content	Methods/ Techniques	Resources / aids	Time (Minute)
Introduction: • Ice breaking : greetings • Linkage with previous learning/ experiences • Pre-assessment (Q+A) • Topic: Field visit/Group Exercise/Weed Museum. • Importance: Skill development of participants. • Outline of content	Lecture/ Discussion/ Q+A		6
Development: • A brief on visited field • Visit field • Comment on register • Motivation (Energize) • Check attention (using wrong statement) • Feedback (Q +A)	Lecture/ Discussion/ Q+A		45
Conclusion: • Assessment (LOs) • Summarization (Key Words) • Motivation (application of learning experience) • Reference • Forward planning	Discussion/ Q+A		9
Equipment and aids: Multimedia, White Board, WB Marker, Duster, Pointer etc. **Behavior/Performance** **Condition** **Criteria**			