

CLASS – IX
LESSON PLAN
CHAPTER-15: Improvement in Food resources

Unit	Biology (Chapter 15: Improvement in Food Resources)
Class Transaction	Total: 14 periods (approx. 40 min each)
Pre-requisite for the course	This lesson requires 1. Basic knowledge of crop, cropping practices 2. Basic knowledge of different crops, management practices already learnt in class VII and VIII
Assessment of qualifying knowledge	1. Written test 2. Lab activity 3. Group Discussion 4. HW notebook
Objective	Given the content (chapter) the students will be able to understand the basic management practices required for the raising of crops. They can also explain the management practices required for breeding, feeding and disease control required for poultry and dairy animals.
Dimensions of Learning	DOL 1, 2,3 and 4
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Students will be able to 1. To understand the objective of sustainable agriculture management. 2. To describe the factors for which crop variety improvement is done. 3. To explain hybridization. 4. To understand crop production management. 5. To explain the need for nutrients by plants. 6. To distinguish between macronutrients & micronutrients. 7. To understand the importance of manure & fertilizers. 8. To list different kinds of irrigation systems & water resources. 9. To understand the benefits of different cropping patterns. 10. To describe methods of crop protection. 11. To list the factors responsible for losses in agriculture produce. <u>SKILLS</u>- <i>Students would be able to</i> 1. Appreciate the importance of animal husbandry collaboratively. 2. Answer knowledge, understanding, application and diagrammatic skill based questions based on the topic. 3. Use analytical skills to critically visualize the given scenario and use the concepts learnt in everyday problems.

	4. Built character amongst themselves by discussing /communicating the equal contribution of plants and animal in maintaining life.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Active learning- <i>Frayer Model</i> on kharif crops. The students will draw 4 columns on a chart and will write about essential and non essential component of kharif crops. (Critical thinking) Group learning- The class will be divided in the group of 5 students. <i>Circle the Sage</i>- The question will be asked by the teacher about the different methods of crop productions and the students who knows the answer will stand at the various corners of the room in shape of circle. (Communication, Collaboration) Differentiation- The students in a group of 10 will be presenting a skit on different ways of animal husbandry. (Character, Citizenship) Questioning- <i>Multiple level question</i>- Teacher will prepare a list of question from the chapter and will ask these questions during discussions. (Critical thinking, Communication) <i>Brain Storming</i>-The class would start with a discussion on what the students have already learnt in the previous classes and hence what is it that they would learn now. They would also be told the significance of the topic that they would be studying. Teacher will ask few questions to introduce the topic - List the examples of various kinds of food which we will obtain from different crops. - Classify them as rabi and kharif crops <i>Introduction of the topic</i>- PPT and Digital Content would be shared <i>Guided practice followed by Independent Practice</i>- NCERT questions to be discussed in the classroom. Techniques to be used: Quiz Daily Practice Problem MCQ Peer Assessment Lab Activities Student -teacher interaction, Wipro- G.O.s(web chart, flow chart and differentiation table,compare- contrast matrix), silent/ loud reading,

	collaborative learning, Hands on experiment Experimental work Any Other
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions. HW notebooks to be marked as per the given plan: <i>Assessment Parameters:</i> The total marks for the activity is 5 marks On time submission.....1 mark Presentation/ Neatness.....1 mark Content.....3 marks It is also advised that the students come to the class with proper background knowledge of the topic under discussion. They can refer to the resources stated above.
Assessments	4 UNIT TESTS (20, 20, 20,20)80 Marks HALF YEARLY EXAMINATION 80 Marks ANNUAL EXAMINATION 80 Marks PERIODIC TEST Average of the best two tests to be taken that will have a weightage of 10 marks. INTERNAL ASSESSMENT20 Marks • Periodical Test 10 Marks • Note Book Submission 05 Marks • Subject Enrichment 05 Marks
Addressing Classroom Diversity	Due to various social backgrounds and multiple intelligences, the classroom might be a diverse arena. The following techniques can be used for various groups: <i>For gifted students:</i> • Exemplar questions to be done • Encouragement for referring other resources <i>For weak students:</i> • NCERT questions to be completed

	• Buddy help to be provided • Provide grade-up classes <i>For differently abled students:</i> • Ignore spelling mistakes. • Call parents at regular intervals • Provide grade-up classes
Marks	The weightage would be given by CBSE.

Topic	DAY 1- Classification of crops
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This lesson requires Basic knowledge of crop, cropping practices Basic knowledge of different crops, management practices already learnt in class VII and VIII
Assessment of qualifying knowledge	Oral questions
Objective	Students will be able to classify different type of crops.
Dimensions of Learning	DOL 1, 2
Learning Outcomes	Students will be able to write the comparison between kharif and rabi crops.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Wipro Technique (KWL- <i>What you Know, What you will Learn, What you have learned</i>). Competency- Collaboration, Communication, Creativity, Critical thinking Active learning- <i>Frayer Model</i> on kharif crops. The students will draw 4 columns on a chart and will write about essential and non essential component of kharif crops.(Critical thinking) The following questions will be asked to check their understanding: • What are the different ways by which we can classify the crops? • Compare kharif and rabi crop • What are the different nutrients which we get from cereals,pulses and oil seeds?
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	Correction by the teacher.

Topic	Day 2 -Crop variety improvement
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This lesson requires Basic knowledge of crop, cropping practices Basic knowledge of different crops, management practices already learnt

	in class VII and VIII
Assessment of qualifying knowledge	2 minute test
Objective	Students will be able to understand the various methods for which crop variety improvement is being done.
Dimensions of Learning	DOL 1, 2
Learning Outcomes	KNOWLEDGE- <i>Students will know and understand</i> Students will be able to To describe the factors for which crop variety improvement is done To explain hybridization
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Teaching strategy(WIPRO)–Discussion, think pair share, compare contrast matrix, explanation by teacher Competency- Collaboration, Communication, Critical thinking Activity- Visit to 3D lab The following questions will be asked to check their understanding: • List the various methods by which crop variety improvement is being done.. • How can we improve the crop variety by hybridization? • Give the advantages of genetically modified crops over other crops.
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	Summarization by students

Topic	Day 3 Crop variety improvement
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This lesson requires Basic knowledge of crop, cropping practices Basic knowledge of different crops, management practices already learnt in class VII and VIII
Assessment of	Oral questions

qualifying knowledge	
Objective	Students will be able to list the various factors for which crop variety improvement is being done.
Dimensions of Learning	DOL 1, 2
Learning Outcomes	<u>KNOWLEDGE</u> - <i>Students will know and understand</i> Students will be able to To describe the factors for which crop variety improvement is done To explain hybridization To understand crop production management
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Teaching strategy(wipro) - Group learning- The class will be divided in the group of 5 students. <i>Circle the Sage</i> - The question will be asked by the teacher about the different methods of crop productions and the students who knows the answer will stand at the various corners of the room in shape of circle. (Communication, Collaboration)
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	Based on the accuracy of the answers.

Topic	Day 4 Manures
Class Transaction	Total: 14 periods (approx. 40 min each)
Pre-requisite for the course	This lesson requires Basic knowledge of different crops, management practices already learnt in class VII and VIII
Assessment of qualifying knowledge	Questions based on previous day transaction.
Objective	Student will be able to compare manure and fertilizers and their benefits and advantages
Dimensions of Learning	DOL 1, 2
Learning	Students will be able to

Outcomes	To explain the need for nutrients by plants To distinguish between macronutrients & micronutrients To understand the importance of manure & fertilizers.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Teaching strategy(wipro) –Face and play, demonstration, graphic organizers Competency- Collaboration, Communication, Creativity, Critical thinking Activity-Collaborative work- Group discussion in a group of 5 students with one group leader,one moderator and one recorder where group leader will ensure the effective participation of all the students. Topics – Points of similarities and dissimilarities among manure and fertilizers . This group discussion will continue in next period as well and at the end of 5 day the following questions will be asked to check their understanding: • What are the differences between manure and fertilizer? • What are different types of manure? • What are the different methods of cropping pattern followed to increase crop productivity? • Compare crop rotation, intercropping and mixed farming. • Why manure are more beneficial to fertilizers.
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	Summarization by the students

Topic	Day 5 Fertilizers
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	Questions based on previous day transaction.
Assessment of qualifying knowledge	2 minute summarization
Objective	Student will be able to compare manure and fertilizers and their disadvantages

Dimensions of Learning	DOL 1, 2,3
Learning Outcomes	Students will be able to To distinguish between macronutrients & micronutrients To understand the importance of manure & fertilizers
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- <i>Brain Storming</i>-The class would start with a discussion on what the students have already learnt in the previous classes and hence what is it that they would learn now. They would also be told the significance of the topic that they would be studying. Teacher will ask few questions to introduce the topic - List the examples of various kinds of food which we will obtain from different crops. - Classify them as manures and fertilizers.
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	Oral questions asked by the teacher.

Unit	Day 6 Factors related to crop protection
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This lesson requires Basic knowledge of crop, cropping practices Basic knowledge of different crops, management practices already learnt in class VII and VIII
Assessment of qualifying knowledge	Oral questions
Objective	Student will be able to understand the need for crop protection management.
Dimensions of Learning	DOL 1, 2,3
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Students will be able to To understand crop production management <u>SKILLS</u>- <i>Students would be able to</i> Use analytical skills to critically visualize the given scenario and use the concepts

	learnt in everyday problems.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Teaching strategy(wipro) -Think pair share,brainstorming Competency- Collaboration, Communication, Creativity, Critical thinking Activity-Collaborative work- In group they will discuss the topic and frame questions from the topic and then they will cross question respective groups in the form of quiz. The following questions can be asked in the quiz • What are various methods used for crop protection management Which method is preferred for protection of crops and why? • What are weeds and why they are harmful for crops • What are various factors which are responsible for loss in agricultural produce? • List various biotic and abiotic factors responsible for loss in agricultural produce.
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	Peer correction

Topic	Day 7 Introduction to Animal husbandry
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This lesson requires basic knowledge of animals.
Assessment of qualifying knowledge	2 minute quiz
Objective	Student will be able to understand the need for animal husbandry
Dimensions of Learning	DOL 1, 2,3
Learning Outcomes	<u>SKILLS-</u> <i>Students would be able to</i> • Appreciate the importance of animal husbandry collaboratively.

Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Differentiation- The students in a group of 10 will be presenting a skit on different ways of animal husbandry. (Character, Citizenship)
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	On the basis of content and group work.

Topic	Day 8 Cattle Farming
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This lesson requires basic knowledge of keeping of cattle.
Assessment of qualifying knowledge	• Written test • Lab activity • Group Discussion • HW notebook
Objective	Student will be able to understand and list the practices which are use to improve cattle farming
Dimensions of Learning	DOL 1, 2,3
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Students will be able to know about dairy animals. <u>SKILLS</u>- <i>Students would be able to</i> • Appreciate the importance of animal husbandry collaboratively. • Answer knowledge, understanding, application and diagrammatic skill based questions based on the topic.
Transaction	Transaction would proceed in the following manner-

Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Teaching strategy(wipro) -Think pair share,demonstration,graphic organizers Competency- Collaboration, Communication, Creativity, Critical thinking Activity: Visit to lab to view the module on cattle farming and following questions will be asked to check their understanding 1 What are the objectives for which cattle farming is being done? 2 Give example of milch and draught labour 3 What is lactation period and on which factor does it depend? 4 Give example of exotic and indigeneous variety of cattle
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	On the basis of accuracy of questions answers by the students.

Topic	Day 9 Poultry Farming
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This lesson requires basic knowledge of poultry
Assessment of qualifying knowledge	Oral questions.
Objective	Student will be able to understand and list the management practices which are use to improve poultry farming
Dimensions of Learning	DOL 1, 2,3
Learning Outcomes	<u>KNOWLEDGE-</u> <i>Students will know and understand</i> Students will be able to To understand the benefits of poultry To describe methods of poultry <u>SKILLS-</u> <i>Students would be able to</i> • Appreciate the importance of animal husbandry collaboratively. • Answer knowledge, understanding, application and diagrammatic skill based questions based on the topic.
Transaction Methodology	Transaction would proceed in the following manner-

(The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Activity: Collaborative learning : Where they will sit in group and discuss the topic and then they will frame questions. Questioning strategy- Give instructions for creating a rubric . Reminds students that each question in the assessment should have a rubric that indicates clear and measurable components.
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	Correction by the teacher.

Topic	Day 10 Poultry Farming
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This lesson requires basic knowledge of poultry
Assessment of qualifying knowledge	Students have to write 5 key points from the last transaction
Objective	Student will be able to understand and list the management practices which are use to improve poultry farming
Dimensions of Learning	DOL 1, 2,3
Learning Outcomes	<u>KNOWLEDGE-</u> <i>Students will know and understand</i> Students will be able to To understand the benefits of poultry To describe methods of poultry <u>SKILLS-</u> <i>Students would be able to</i> • Appreciate the importance of animal husbandry collaboratively. • Answer knowledge, understanding, application and diagrammatic skill based questions based on the topic.
Transaction Methodology (The teacher can	Transaction would proceed in the following manner- <i>Brain Storming-</i>The class would start with a discussion on poultry farming what the students have already learnt in the previous classes and hence

use the mentioned techniques, wherever applicable, and can use any other too.)	what is it that they would learn now. They would also be told the significance of the topic that they would be studying. Teacher will ask few questions to introduce the topic .
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	2 minute discussion

Topic	Day 11 Fish Production
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This lesson requires basic knowledge of fishes
Assessment of qualifying knowledge	1 minute test
Objective	Student will be able to classify the different methods for fish production
Dimensions of Learning	DOL 2,3,4
Learning Outcomes	Students will be able to understand the objective of fish farming <u>SKILLS-</u> <i>Students would be able to</i> • Appreciate the importance of animal husbandry collaboratively. • Answer knowledge, understanding, application and diagrammatic skill based questions based on the topic.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and	Transaction would proceed in the following manner- DOL Dimensions-DOL1,2 and 3 Activity: Visit to nearby pond pr lake to view the different type of fishes. 1 What are the two methods via which we can obtain fishes? 2 List the various objectives for which fish farming is being done

can use any other too.)	
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	Notebook correction

Topic	Day 12 Fish farming
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	About fishes
Assessment of qualifying knowledge	Students have to write 5 key points from the last transaction.
Objective	Given the content (chapter) the students will be able to understand the basic fish management practices.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Students will be able to To understand the objective of fish farming <u>SKILLS</u>- <i>Students would be able to</i> • Appreciate the importance of animal husbandry collaboratively. • Answer knowledge, understanding, application and diagrammatic skill based questions based on the topic.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Teacher strategy (Cubing)- Students in the group of 5 will make a flow chart mentioning the comparison, application, description, analyzing of different types of fishes. (Collaborative and critical thinking)
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.

Assessments	Peer assessment

Topic	Day 13 Mariculture
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This lesson requires basic knowledge of fishes.
Assessment of qualifying knowledge	Oral questions
Objective	Student will be able to compare apiculture and mariculture
Dimensions of Learning	DOL 1, 2
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Students will be able to To understand the benefits of fishes. <u>SKILLS</u>- <i>Students would be able to</i> • Appreciate the importance of animal husbandry collaboratively. • Answer knowledge, understanding, application and diagrammatic skill based questions based on the topic.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Students will draw the diagrams of different types of the fishes by mentioning their names and benefits.
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	On the basis of drawing skills and sccuracy.

Topic	Day 14 Bee farming
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This lesson requires • Basic knowledge of honey bee and honey production
Assessment of qualifying knowledge	1 minute test
Objective	Students will be able to understand various practices which are used for apiculture
Dimensions of Learning	DOL 2,3 and 4
Learning Outcomes	KNOWLEDGE- <i>Students will know and understand</i> Students will be able to To understand the objective behind bee keeping SKILLS- <i>Students would be able to</i> Appreciate the importance of animal husbandry collaboratively.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Teaching strategy(Wipro) -Think pair share Competency- Collaboration, Communication, Creativity, Critical thinking Activity:Collaborative group work-Student will discuss apiculture and various management practices related to it. Following questions will be asked to check their understanding 1 What is apiculture? 2. Name the Italian bee variety which had been introduced in India? 3. List the various factors for which Italian bee varieties have been introduced in India. 4. What is pasturage and how is it related to honey production?
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the NCERT questions.
Assessments	Students will write any 10 points which they have learnt in this chapter.