PROJECT WORK

CLASS: X CLASS

SUBJET: BIOLOGY

NAM E OF THE LESSON: NATURAL RESOURCES

NAME OF THE PROJECT: FORMER BASED INTERVENTIONS FOR SUTAINABLE AGRICULTURE

STRATEGY: GROUP

GROUP LEADER:

GROUP MEMBERS & WORK DIVISION:

SN	NAME OF THE STUDENT	WORK ALLOTED
1		
2		
3		
4		
5		

GUIDE TEACHER: K. MANJULA, SA(BIO)

TIME ALLOTED: 6 DAYS

AIM: Understanding the need of former based interventions for sustainable agriculture and educating the formers.

OBJECTIVES:

1. To list out the area of agricultural land, productivity, number of bore wells, Families depending on agriculture and water source.
2. To Interview the farmer about the yield and problems in getting the yield.
3. To Interview the teacher about the farmer based interventions for sustainable agriculture with well prepared questioner.
4. To collect more information about former based interventions from the internet and articles.
5. Analyzing the importance of agriculture and its sustainability.
6. Motivating the formers to adopt former based interventions for sustainable agriculture.

TOOLS:

- Table showing different areas of survey as mentioned in the objective 1.
- Questioner to a former
- Questioner to teacher

PROCEDURE:

Agriculture is the most important sector of any developmental scheme of our country. Andhra Pradesh economy is mainly based on agriculture and live stock. Agriculture has been the chief source of income and main occupation of the state with 60% of population. But nowadays we frequently read the news of suicide of formers. Over 3lakh formers have committed suicide in India since 1995. A majority of them were from major agricultural states of Maharashtra, Madhya Pradesh, Andhra Pradesh, Karnataka and Chhattisgarh. Form suicides have been steadily increasing over the years. The main reason is economical loss in agriculture due to inefficient management approaches.

At this context we would like to undertake the project of former based interventions which can harness the agricultural productivity, so that we can sustain our source of food. As the earliest task we visited a village and tabulated the following details of considering different aspects such as area of agriculture, families dependent on farming, water source, etc.

SN	THEME	DATA
1	Area of agricultural land	1000 acres
2	Average earning per anum	500000 lakhs
3	Number of borewells	7
4	Families dependent	90%
5	Water source	Borewells only

We also approached a former and interviewed him about the agricultural management and productivity.

QUESTIONERE

1. What are the crops do you cultivate?
- Ground nuts, red gram, sugar cane, maize, etc
2. How many crops do you undertake per year?
- Two crops.
3. When you compare with last year, is your income increased?
- Last year I was bit satisfied with my income. But this year due to lack of rains I lost my crop production.
4. What type of fertilizers do you use in general?
- Generally I use NPK, urea some other phosphate related fertilizers.
5. What is the water source for you crop land?
- Bore wells.
6. What type of irrigation do you follow?
- We generally allow the water to flow in the forrows.
7. How did you try to overcome drought situation?
- I was helpless. I din't know what to do?

We could learn that the formers are needed to be educated in the concern of modern agricultural techniques because they are unaware of adverse effects of inefficiency of their agricultural practices. We approached our teacher and collected some information to steps further.

QUESTIONERE

1. What are the reasons for loss in agricultural production?
- Water scarcity, diseases, less quality seeds, soil infertility, inefficient water management, etc.
2. What steps to be taken to increase the agricultural production?
- It is time to educate the farmers about farmer based interventions for sustainable agriculture.
3. What are former based interventions?
- The proper form management techniques to be adopted by individual former in his crop field to attain incredible agriculture profit.
4. What are the different concepts of former based interventions?
- Maintenance of soil fertility, soil management, water management are some of the basic concepts of former based interventions.

We could gather valuable information from our teacher. We also collected more information from the internet and aggregated as follows.

INTRODUCTION:

Agriculture is a very important sector for sustained growth of Indian economy. About 70% of the rural households are dependent on agriculture for employment and livelihoods. But nowadays due to several reasons like drought, inefficient management techniques, there is a great loss in agricultural production. At this concern there is a great need to educate the formers about farmer based interventions and sustainable agriculture.

Farmer based interventions are nothing but the best practices followed by all the formers individually in their fields for water and soil conservation which results in sustainable agriculture. The most important factors for agriculture are sun, air, soil, nutrients and water. Of the five, water and soil quantity & quality are most amenable to former interventions. So the two main basic concepts of former based interventions for sustainable agriculture are soil management and water management.

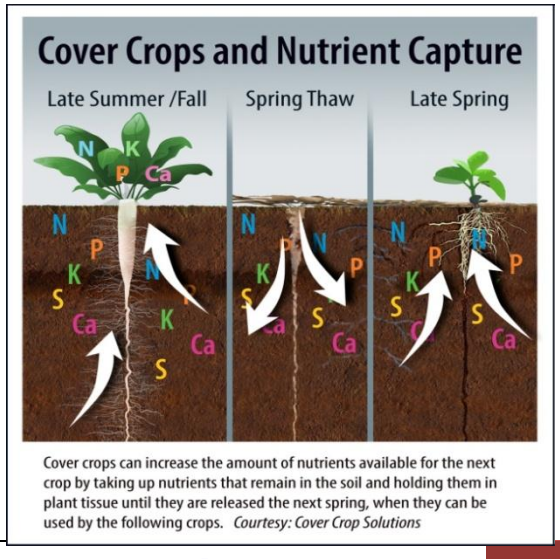
SOIL MNAGEMENT:

The soil sustains most living organisms, being the ultimate source of their mineral nutrients. Good management of the soil ensures that mineral elements do not become deficient or toxic to plants and that approximate mineral elements enter the food chain. Soil management is important both directly and indirectly to crop productivity, environmental sustainability and human health.

Soil management is an integral part of land management and may focus on difference in soil types and soil characteristics to define specific interventions that are aimed to enhance the soil quality of the farm land. Soil management concerns all operations, practices and treatments used to protect soil and enhance its performance. Practices. Since the soil management involve the nutrient sustainability it is needed to establish nutrients by adopting the techniques such as mixed crops, alternate crops, providing organic manure.

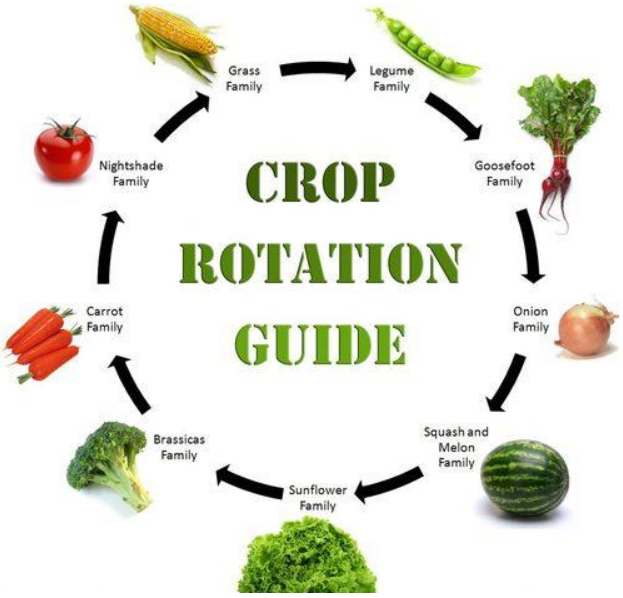
PRACTICES:

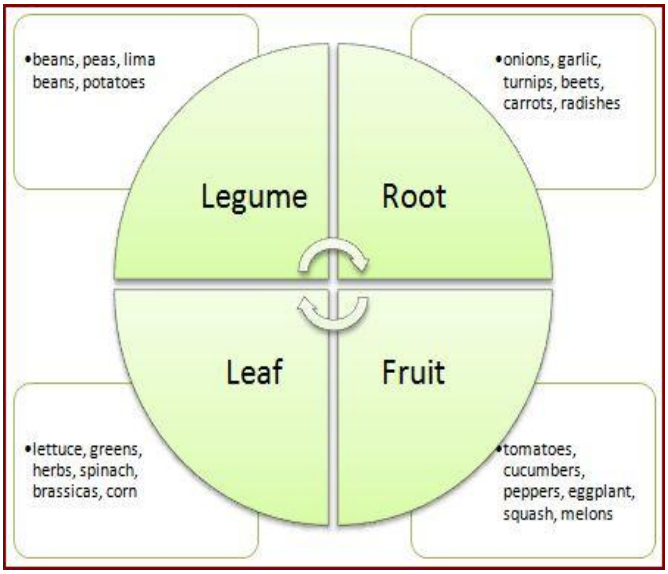
- **Cover the crops**- it keeps the soil anchored and covered to avoid erosion by wind and rain. This is called mulching.



Cover crops can increase the amount of nutrients available for the next crop by taking up nutrients that remain in the soil and holding them in plant tissue until they are released the next spring, when they can be used by the following crops. *Courtesy: Cover Crop Solutions*

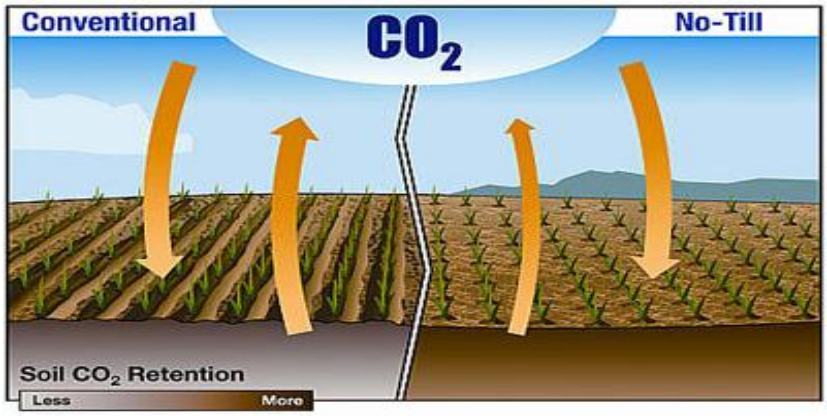
- **Crop rotation**- alternate high residue crops with residue crops to increase the amount of plant material left on the surface of the soil during the year to protect the soil from the erosion.





- **Nutrient management** – It helps to improve the fertility of the soil and amount of organic matter which improves the soil structure and function. It includes vermicompost, jeevamrutham, etc.

- **Reduced Tillage**- Especially reduced tillage or no tillage operations limit the amount of soil disturbance while cultivating a new crop and help to maintain plant plant residues on the surface of the soil for erosion protection and water retention.



- **Green manure with Gliricidia**- Enhancement of soil productivity and increase in crop yields wer found with the adition of Gliricidia leaf mannuring in several rainfed crops. Yeilds of different rainfed crops due to gliricidia leaf mannuring improved significantly in many regions like fingermillets in red soilsof Karnataka, ground nut in red soils of AndhraPradesh, pear millets in light textured soils of Gujarath, sorghum in medium to deep black solils of Maharastra. Ther are also so many plants which are grown as green manure other than glyricidia.

Advantages of soil management:

- Maintain soil fertility
- Restore soil fertility
- Make the agricultural process an economic one
- Help to increase yield

WATER MANAGEMENT: water is considered as the most critical resource for sustainable agricultural development worldwide. The sustainable use of irrigation water is a priority for agriculture in arid areas. So, under scarcity conditions and climate change considerable effort has been developed over time to introduce policies which aim to increase water efficiency considering more achievement with less water by adopting proper water management techniques. The following are the different irrigation systems by which more can be achieved by using less water.

- **Furrow bed system**: The system is often considered more appropriate for growing high value crops that are more sensitive to temporary water logging stress. Farmers often raise crops such as cotton, maize-soybean and wheat on the raised beds.


- **Drip irrigation system:** It is a form of irrigation that saves water and fertilizers by allowing water to drip slowly to the roots of many different plants, either onto the soil surface or directly on to the root zone, through a network of valves, pipes, tubing and emitters.


- **Sprinkler irrigation system:** It is a method of applying irrigation water which is similar to natural rainfall. Water is distributed through a system of pipes usually by pumping. It is then sprayed into the air through sprinklers so that it breaks up into small water drops which fall to the ground.
- **Centre pivot sprinkler irrigation system:** It is also called water wheel and circle irrigation. It is a method of crop irrigation in which equipment rotates around a pivot and crops are watered with sprinklers.


- **SWAR:** It is System of Water for Agricultural Rejuvenation. It involves storing of water in overhead tanks and sending it through a small diameter pipe to a local clay pot. The slow oozing of water provides moisture for a prolonged period. Thus SWAR uses less water and wastes nothing.


ANALYSIS:

As earlier said the growth in the agricultural economy is one of the parameter for the economic growth of a nation. We approached a farmer to analyze the agricultural practices followed by them. Small farmers in Andhapradesh are chronically on the brink of crisis. They face challenges of low and stagnant productivity, high input cost, unpredictable rain fall, crop failure, high debt and labour out migration. We would strongly say that there is a great need to educate the farmer about the coordination among climatic condition, natural resources, soil nature, water management and sustainable agriculture. By approaching our teacher and also internet, we could be aware of different techniques by which agricultural economy can be raised. Especially in rain fed areas by adopting farmer based interventions, we can easily achieve the aims of agricultural sustainability. The soil management methods such as usage of organic manure, crop rotation, mulching, mixed crops, etc are some of the techniques to retain the nutrient efficiency of the soil. As such the water management techniques such as drip irrigation, furrow bed irrigation, etc help to bring about a great yield with available water. These farmer based interventions play a key role in attaining the high yield even in rain fed areas which leads to agricultural sustainability. So each and every farmer should be educated in this concern to attain food security and the economic growth in agriculture.

CONCLUSION:

As we analyzed, the above mentioned farmer based interventions are the most conventional and eco-friendly methods for agricultural sustainability. At this concern we planned some of the activities to educate and promote the farmer based interventions. We tried to meet the farmers and explained about the food security, agricultural sustainability and farmer based interventions. We planned the following activities to be followed to bring awareness about farmer based interventions among the farmers such as conducting seminars by inviting agricultural experts, adasha raithu etc, motivating them by exposing the success stories.

OUR EXPERIENCES: The area which deals with our basic need is under crisis today. We felt responsible and proud to be the part of this project. We could learn the importance eco-friendly farmer based interventions.

QUESTIONS RISED:

- What steps can be taken to improve the quality of agricultural production?
- Are there any institutions to undertake research programmes to increase agricultural productivity? If so what are they?

ACKNOWLEDGEMENT: We thank our teacher for proper guidance to undertake this project. We also thank to the farmers who cooperated for information collection.

RESOURCES: Our teacher, farmer and internet.