

Rizvi College of Arts, Science and Commerce, Mumbai.
Environmental Studies (F.Y.B.Com. II Semester)

Second chapter

Agriculture and Industrial Development

By

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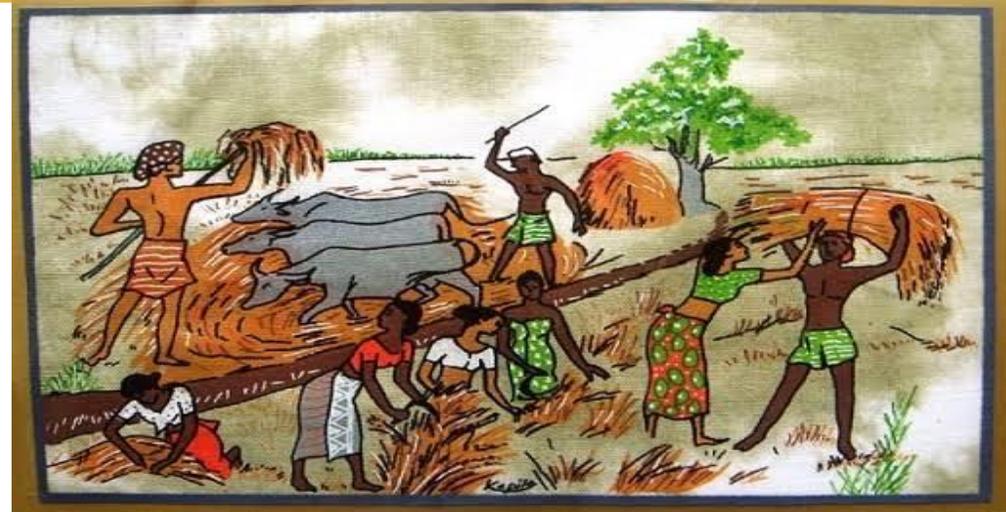


Introduction

- Agriculture is backbone of third world countries
- Agriculture provides employment to 70% of the total workforce in the world.
- Nearly one third of worlds land area is used for food production
- Green revolution helped to boost agriculture production in third world countries.

Major Types of Agriculture

1. Simple subsistence farming (Shifting Agriculture/ slash and burn farming): forest set on fire for practicing agriculture. The agriculture done by primitive tools. After two year due to less agriculture production new land will be chosen for agriculture. E.g. farming by tribal.
2. Intensive subsistence agriculture: this type of agriculture is followed in high density region where land holding size is small. Labors are cheap and multiple cropping methods are followed. E.g. Indian agriculture.



Major Types of Agriculture

1. Extensive mechanized : the agriculture practice in the region where the farm size are very large but population is very less. It is very highly mechanized and commercial farming. E.g.Russia
2. Mixed Farming: livestock raring and agriculture done on same land. E.g. America and Europe
3. Plantation: plants like tea, coffee, rubber, banana are comes under plantation method. This type of agriculture practice in hill region and tropical region.



Environmental problem associated with agriculture

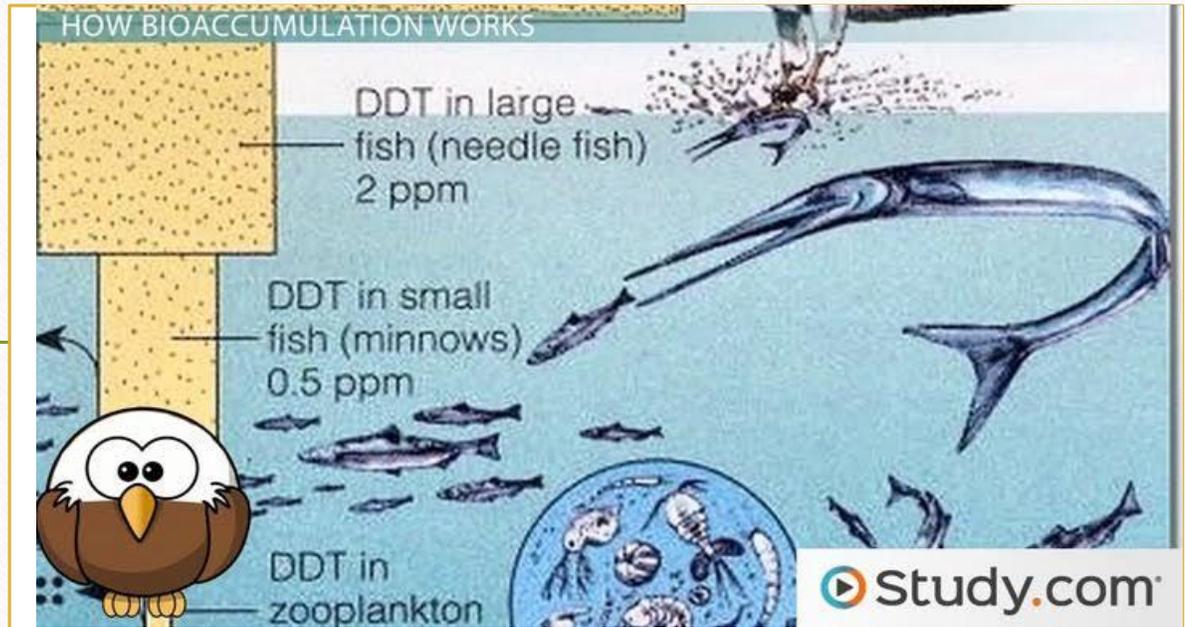
1. Micronutrient Imbalance: Nitrogen, potassium and phosphorus are essential micro nutrient. Excessive use of micro nutrient can cause imbalance in soil.
2. Nitrates excess concentration in water cause serious health hazard called “Blue Baby syndrome”. Which affect on infant child and cause death.
3. Nitrogen and Potassium in the water makes over nourishment of water, as a result algae and booms species increases in water body. This further effect in loss of aquatic life.



4.

Environmental problem associated with agriculture

1. Some species of pest survive even after pesticide spray give birth to highly resistance generation.
2. Poisons not only kill insect but also non target species like birds.
3. Poison in pesticides keeps accumulating in food chain.
4. water logging due to over irrigation
5. Salinity problem
6. Loss of biodiversity due to use of commercial species.



Food security

- Causes of food insecurity: fluctuating world food price, international trade rule, climate change, use of food grain for making alcohol and biofuel, calamities like drought and flood.
 - Food security: Food and Agriculture Organization: “ensure that all people to all time have both economic and physical access to basic food they need.”
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- Solution to food insecurity:
 1. Biotech and genetically modified crops
 2. Food aid: providing food to needy people
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- Food security in India: India achieved food security through Green Revolution. Public Distribution System was setup to provide food grain to poor citizen at medium price. Increasing employment opportunity, providing land to landless people, stabilizing food supply and food prices, maintain buffer stock for natural calamities are some strategies for food security.

FOOD SECURITY

CLIMATE CHANGE AND FOOD SECURITY

Problems caused by Climate change



DECREASE IN YIELD
Decrease in yield. Staple food like rice, wheat, maize worst hit by Climate change



DECREASE IN SOIL HEALTH
Loss of organic matter and fertile top soil, desertification, salinization



EXTREME WEATHER
Untimely monsoon, extreme weather events like floods and droughts impact agriculture



DECLINE IN NUTRITIOUS VALUE
Excess CO₂ is decreasing the nutritious value of food and increasing the sugar content

Status of hunger in India



103
is the rank of India on Global Hunger Index



1/4
of world's undernourished people live in India



21%
children suffer from child wasting i.e acute undernutrition



1/3
women of reproductive age are undernourished

Source: Global Hunger Index Report, UNICEF India



WHAT'S IN THE BILL?

The govt will provide food entitlement to 75% of the population in rural India and 50% of the population in cities

Each eligible household will get 5 kg of foodgrain per person per month

The grains will be available at Rs 3/2/1 per kg of rice/wheat/coarse grains

Anganwadis to provide age-appropriate meals to children aged between 6 months and 6 years

Mid-day meal scheme will provide food to children aged between 6 years and 14 years

Breastfeeding to be promoted for children below 6 months

State food commissions to be created that will monitor and evaluate the implementation of the Act as well as redress grievances

Central and state governments will undertake PDS reforms

The Central government will provide foodgrains (or, failing that, funds) to state governments, at prices specified, to implement the entitlements

The actual implementation of the scheme, thereafter, is the responsibility of the state governments, who will identify eligible households

Sustainable agriculture practices

- *Sustainable agriculture is regenerative farming. It is an effort to produce food on continue basis while adopting measures to overcome the damage caused in environment. It include sincere efforts to repair the damage cause by destruction practices.*
- Sustainable agriculture for land conservation: Strip cropping, Contour ploughing, summer fallow, crop rotation.
- Conservation of water resources: drip and sprinkle irrigation
- Encouraging use of perianal crop because it need less water and less period for harvest.
- Integrated pest management: the method is based on life cycle of pest and their interaction with environment. Scientific methods are developed to control pest in the farm.

Environmental Problems Associated With Industries

- ❑ Industrial activity comes under secondary sector. It produces goods in an economy.
- ❑ It is major source of employment
- ❑ All countries economy is based on industrial sector
- ❑ Other economic (tertiary and primary) sectors are directly or indirectly depends on industrial sector
- ❑ Environmental problems associated with industrial sector: Pollution (Air, Water, Soil, Noise), Global warming, Acid Rain, Ozone layer depletion.



Pollution

- *Pollution: undesirable changes in our surrounding that have harmful effect on plant, animal and human being.*
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- *Environmental Pollution: undesirable changes in physical, chemical or biological characteristics of any component of environment which can cause harmful effect on life or property.*

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Air pollution

- *Air pollution: due to human activities there is imbalance in the proportion of the gases this can cause undesirable effect on man and his environment resulted in air pollution.*
- Major Air Pollutant:
 1. Sulfur dioxide: Produced by volcano and industrial activities, responsible for acid rain
 2. Nitrogen oxide: expelled from high temperature combustion
 3. Carbon monoxide: toxic gas released from incomplete combustion
 4. Volatile organic compound: Majorly Methane gas which is responsible for global warming.
 5. Particulate: tiny particle in form of solid and liquid released from various activities.
 6. CFC (Chlorofluorocarbon) : produced by AC, spray, refrigerator, responsible for ozone layer depletion



Solution to Air Pollution

1. Use public mode of transportation
2. Switch off electronic equipment when it have no use
3. Use 3R: reduce, Recycle and recycle: It can save lot of energy consumption
4. Use energy efficient devices like CFL bulb
5. Emphasis on clean energy like wind energy, solar energy, biofuel.



Water Pollution

- ***Water pollution: when pollutant are directly or indirectly discharge in to water bodies without adequate treatment to remove harmful compound .***
- Water pollution affects on major water bodies like river, lake, sea, pond etc.

Effects of water Pollution:

1. Death of aquatic and marine animals like fish, crabs, bird, sea gulls, dolphin etc.
2. If pollutant like mercury and lead enter in water once it will accumulated in animals and birds bodies for long period of time and it will pass to next animal in food chain.
3. Heavy metal like mercury, lead, cadmium cause various types of diseases like Minamata disease which make a person permanently paralyzed.
4. Itai – Itai is another disease found in japan will effect on kidney, lungs and pancreas.
5. Arsenic pollution in west Bengal causing various types of abonormilities
6. Nitrate in water bodies is reason of blue baby syndrome



Acid Rain

- Acid Rain: Any form precipitation with acidic components such as sulphuric or nitric acid that fall to the ground from atmosphere in wet or dry form. This can be include rain, snow, fog, hail is acidic.
- Acid: Nitrogen oxides, sulfur dioxide,
- Acid Deposition:
 1. Wet deposition: acid fall on the ground in form of rain, fog, snow in wet form.
 2. Dry deposition: In desert area.



Causes of Acid Rain

- **Natural Causes:**

- Volcanic emission, wildfire, lightning strike (Nitric acid)

- Man Made source:

major deposition sulphur dioxide

and oxide of nitrogen from the combustion of coal, oil and natural gases

- **Effects of Acid Rain:**

- Make water toxic and effect on aquatic animals

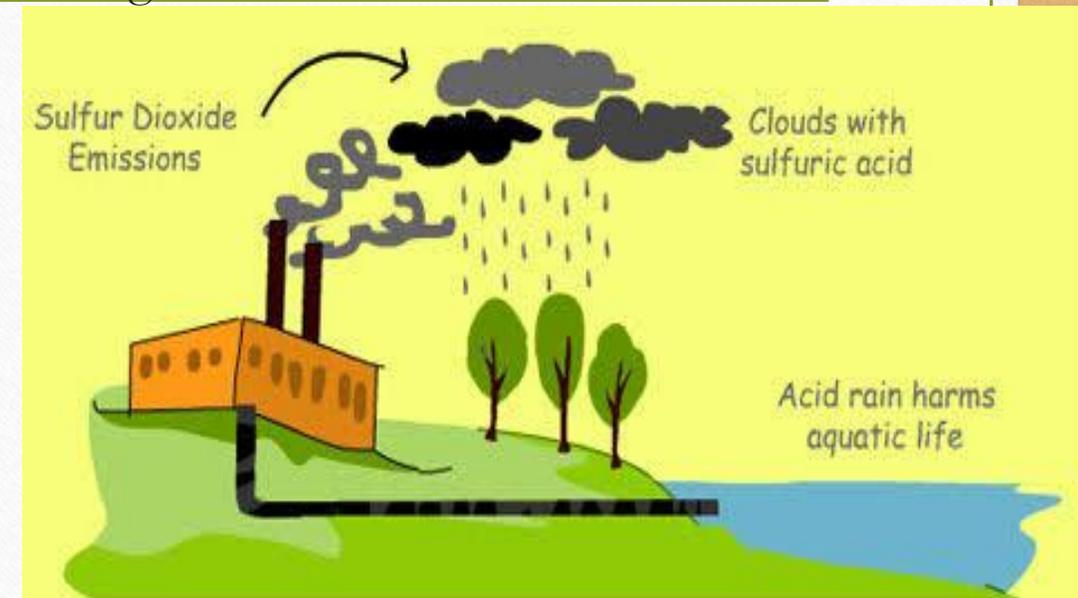
- Bioaccumulation of acidic water

- tree's leaves, woods and roots are harmed by the toxic acid

- Effect on monuments and buildings

- **Method to curb acid Rain: :**

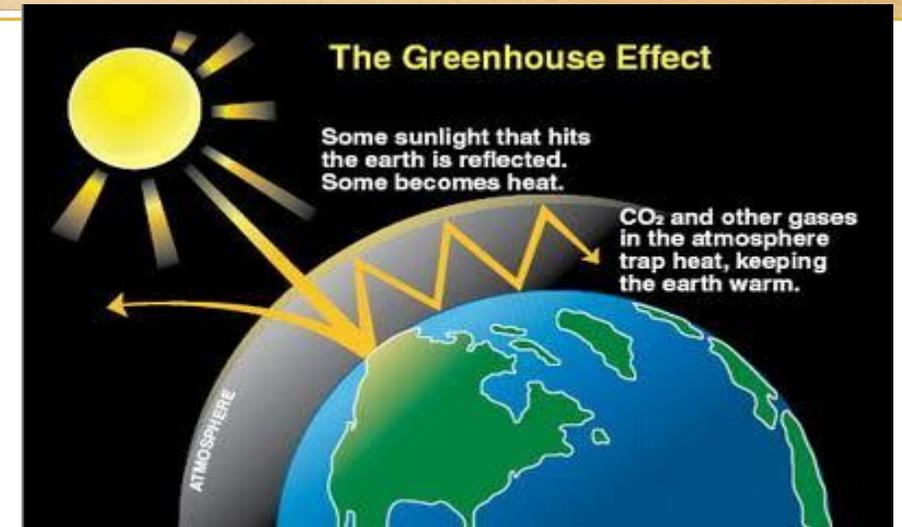
- Control on fossil fuel, cleaning industries smoke tanks, using clean energy, saving energy, using public transports.



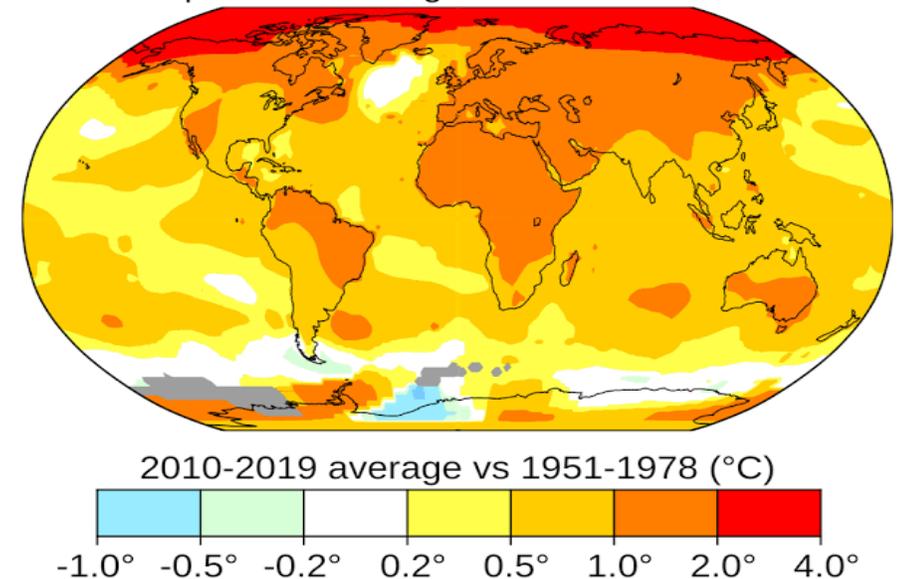
Global Warming

❖ Green House Effect: Atmospheric Constituents such as water vapour, clouds, carbon dioxide, methane, nitrous oxide and chlorofluorocarbon trap a certain kind of heat called infrared radiation near the earth surface which trap heat that would otherwise escape from the earth causing the Green House Gas Effect.

❖ Global warming: carbon dioxide and other green house gases trap the long wave radiation in to the earth atmosphere and thereby resulting in rise of global temperature this phenomena is known as Global warming.



Temperature Change in the Last 50 Years



GLOBAL WARMING

- Nature keeps carbon dioxide in control naturally, carbon dioxide generated by breathing process of animals and other natural activities like volcano, is consumed by trees in photosynthesis process.
- ***Reasons of Global Warming: Increase in use of fossil and fuel, more domesticated animals, expansion of agriculture and deforestation.***

Results of global warming:

1. Extreme weather condition: drought, flood, cyclone, storms, irregular rainfall
2. Biological effect: Species extinction
3. Submergences of low laying area due to melting of snow and rising sea level : Islands like Maldives and Andaman , Coastal regions like Bangladesh
4. Change in Agriculture pattern causing food shortage
5. New disease will rise
6. Rising temperature will destroy aquatic food chain.



All countries have to reduce Green House Gas emission

OZONE LAYER DEPLETION

- **Ozone layer:** It is a deep layer in stratosphere that contain three oxygen atoms. Extent: 26Km to 28 Km on tropic, 12Km to 20 Km on pole
- **Function of Ozone Layer:** Protect Earth from Ultra-violet rays, absorb 97-99% of ultraviolet rays that sun emits.

Hole of ozone layer: ozone level varies as per height and climate but there was considerable depletion at upper latitude Arctic and Antarctic. The hole size is about the size of America.

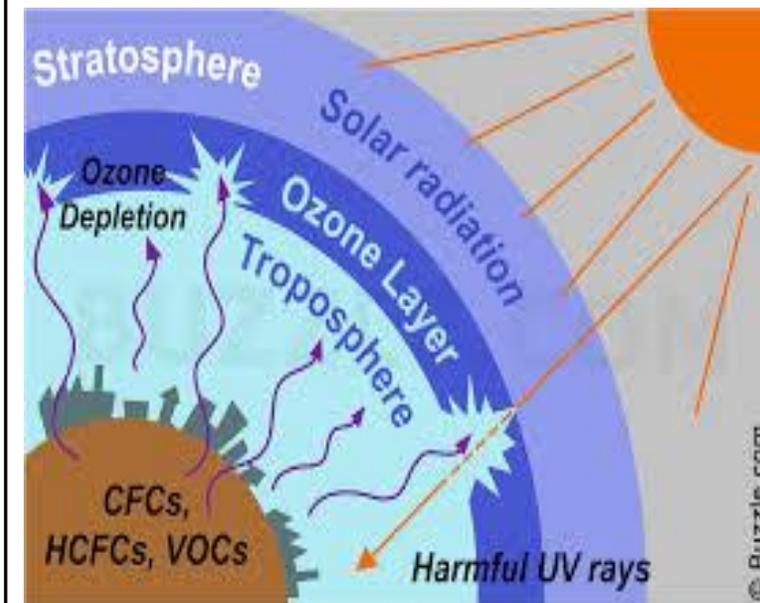
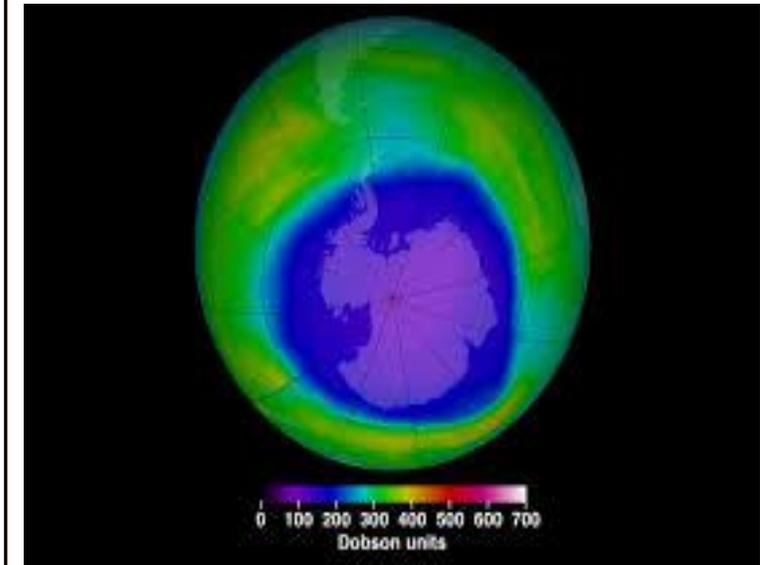
Causes of ozone depletion:

Gases: Chlorofluorocarbon (CFC), Halon, carbon tetrachloride, HCFC, aerosols

The chlorine react with oxygen and break the ozone atoms, one chlorine atom can destroy thousand ozone atom. US and Europe has banned CFC

Effects of ozone depletion: Human: skin cancer, eye damage, Plants : biological cycle and development, increase diseases

Water Ecosystem: orientation and motility of phytoplankton's result in loss of marine life, development of fish, crab, and other animals, reproductive capacity, food chain



Sustainable Industrial Practices

- **Green Business and Green Consumerism:**

The word green is symbol of eco-friendly policies, practices and product.

“Green business is an enterprise that has no negative impact on global or local environment, community, society or economy, it strive to meet economic need of nation.”

Criteria of Green Business:

1. Incorporated Principals of sustainability
2. Supply environmental friendly products and services
3. Innovative practices
4. Enduring commitment to environment

Examples: Organic farming, Eco-friendly statues, degradable plastic bags, any recyclable material, modern eco-friendly machinery, energy saving electronic equipment's etc.

Goal of Green Consumerism: sustainable consumption on earth besides demands for consumption, safety, health by considering need of future generation.



Corporate Social Responsibility (CSR)

- *Corporate Social Responsibility (CSR): A commitment to developing policies that integrate responsible practice in to daily business operation and to reporting on progress made towards implementing the practices.*

- Its is self regularity mechanism ensure active compliance with sprit of law and ethical standard.

- *Company express the responsibilities by :*

- Waste and pollution reduction process
- Education and social program
- Earing adequate to the employee



QUESTION BANK

- Describe major types of agriculture in detail.
- what is malnutrition? Explain its causes and effects
- What is land degradation? Write its effect on agriculture productivity.
- Write a detail note on environmental pollution by Industrial sector.
- Describe food security and its need in detail.
- What is global warming? Explain its effect on various factors.
- write a note on environmental problems in agriculture sector.
- What is acid rain? describe its causes and effects.
- Elaborate need of sustainable industrial development, explain with various examples.
- What is corporate social responsibility? Explain in detail.
- Write effects and causes of global warming in detail.