

SUBJECT: AGRICULTURAL SCIENCE

CLASS: SS2

WEEK: 7 AND 8

TOPIC: DISEASES OF CROPS

A crop is a plant cultivated by man for a specific purpose .A plant disease is a deviation of the plant from the normal state of health presenting outwards visible signs. Diseases are caused by pathogens and enhanced by physiological factors.

CAUSES OF DISEASE

Plant disease is caused by pathogens. Pathogens are diseases- causing organisms which passes through a regular cycle of development and reproduction. Examples of pathogens that cause plant disease are viruses, bacteria, fungi, parasitic worms, and rarely protozoa. Some of these pathogens are carried by vectors and other agents. Physiological factors such as nutrients deficiency in the soil, heat, presence of inorganic salt in the soil and moisture contents have a major role to play in influencing plants susceptibility to diseases.

GENERAL EFFECTS OF DISEASES ON CROP PRODUCTION

- (1) Diseases generally reduce the yield or productivity of crops.
- (2) They can kill or cause death of a whole plant.
- (3) Shedding of leaves, flowers and fruits.
- (4) They also reduce the quality of crops.
- (5) They cause reduction in the income level of the farmers.
- (6) They render vegetables and fruits unattractive and unpalatable.

IMPORTANT DISEASES OF MAJOR CROPS

NAME OF DISEASES	CAUSAL ORGANISM	METHOD OF TRANSMISSION	SYMPTOM AND ECONOMICS IMPORTANCE	PREVENTION AND CONTROL MEASURES
CEREALS				
Maize smut	Fungus(ustilagomaydos)	Air borne(fungus spores deposited on fruits)	Reduced yield, Galls on leaves and tarsals which later turns black.	-Seed treatment, destroy diseased plant, use resistant varieties.
Rice blight blast	Fungus piricularia oryzae	Air borne(spores on leaves)	Reduced yield, Red spots on leaves which turn grey or brown.	Use clean seeds, use resistant varieties, avoid heavy use of

				nitrogen fertilizers.
Maize Rust	Fungus puccinia polysora	Air borne	Red spots on leaves, reduced yield, death of the crops	Early planting, crop rotation, use of resistant varieties.
LEGUMES				
Cercopora a leaf spot of cowpea	Fungus	Wind	Chlorosis, falling or dropping of leaves, reddish brown spots on leaves	Spray with fungicides, crop rotation, plant resistant varieties.
Fusarium wilt	Fungus	Soil borne disease	It causes abnormalities in crops	Spray with fungicides e.g. Bordeaux mixtures.
Rosette disease of groundnut	Virus	By piercing and sucking (aphids)	Wilting and death of plants, stunted plants with curled leaves, shortening of the internodes, yellowing of leaves.	Early planting, crop rotation, use of insecticides, use of resistant varieties, uproot and burn infected plants.
ROOTS AND TUBERS				
Cassava mosaic	Virus	Through insects, infected plant cuttings	Stem/leaf distortion, stunted plants, reduction in yield, mottling of leaves.	Use of disease free stems cuttings, use resistant varieties, uproot and burn infected plants, spray with insecticides, farm sanitation.
Leaf Blight of cassava	Bacteria xanthomonas manihotis	Insect, rain splashing infected cuttings	Wilting of plants, reduced yield, die-back of stems, falling off of leaves.	Use of resistant varieties, use disease free cuttings, Early planting, crop rotation.
Yam dry rot	Nematodes	Insects(Air borne)	Browning of yam tissue	Application of Aldrin dust and chlorine dust

BERVERAGES				
Cocoa black pod disease	Fungus	Rain splash, insects.	Brown spots on pods, rotting of pods, low yield, and entire pod turns black.	Remove and destroy infected pods, regular weeding, spray with fungicides, avoid overcrowding of cocoa plants.
Cocoa myrids(capsids)	Fungus	Insects	Brown leaf, death of leaves.	Spray fungicides.
Coffee leaf rust	Fungus	By wind, by rain splash	Yellowing or brown leaf spots, reduced of leaves, orange powdery mass on the leaf	Plants resistants' varieties.
FRUITS				
Gummosis(collar disease)	Fungus((phytophthra citrophthora)	Air borne and soil borne disease	Shrink leaves, death of trees, the bark is water soaked and peels off.	Application of resistant varieties, burning the affected tree after cuttings.
Die Backs	Nematodes	Soil borne disease	Slow growing rate, low yield, death of trees.	Fumigating the soil with nematocides, planting of resistant varieties.
STORED PRODUCE	Fungi(aspergillus spp)	Through soil and air	Moulds on stored produce	Treatment of seeds with fungicides

GENERAL CONTROL OF CROP PLANT DISEASES

- (1) Cultural control method
- (2) Biological control methods
- (3) Chemical control methods

CULTURAL CONTROL METHODS: This involves the use of crops rotations , resistant varieties, tillage practices, regular weeding, fallowing, timeliness of planting , pruning, uprooting and burning of infected crops, soil treatment or sterilization, riguing or uprooting of infected crops, maintenance of farm hygiene, timeliness of harvesting etc.to control or prevent diseases.(regular weeding of farm).

CHEMICAL CONTROL: This involves the use of chemicals such as fungicides, nematicides, insecticides to dust or spray plants and materials in order to prevent or control of plants diseases.

BIOLOGICAL CONTROL: This involves the use of natural enemies of the disease to reduce or totally eliminate the disease.

QUARANTINE: QUARANTINE practice is a biological control measure where imported planting materials or crops are kept aside for the purpose of examination before being allowed to enter the country for agricultural purposes. The diseases and pest free planting materials or crops distributed to farmers while the infected ones are discarded.

EFFECTS OF BIOLOGICAL CONTROL METHODS

- (1) The animals may later constitute another problem to the farmers.
- (2) The methods may increase the cost of farm produce.
- (3) Other pest or disease pathogen may develop.

ASSIGNMENT

- (1) State five ways by which disease spread on a crop farm
- (2) State 3 effects of using chemicals and cultural methods to control pest.