**M.Sc. (Ag) Previous year- II semester**

**Plant Breeding and Genetics**

***Name of Subject: GP 510- Breeding for biotic and abiotic stress resistance***

**Unit I- Lecture-5: *Major Diseases of Economically Important Crops***

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**Major Diseases of Economically Important Crops**

The plants are very important for whole animal kingdom especially for man, directly or indirectly. Plants provide food, fuel, fiber, furniture and shelter. Among the enemies of plants, diseases are most important and significant to human beings. Plant diseases several times caused hunger and even death from starvation. Plant diseases causes’ economic loss, increase in price of products, and destroy the beauty of environment of forests.

The kind and amount of losses vary with the plant or plant, the pathogen, the locality of the environment, the control measures adapted and interaction of these factors. The losses may range from little to 100 percent. The plant diseases causes financial losses by increasing cost of cultivation and reduction in production causes increase in price.

Important diseases which cause several losses in more than one country are: Cereal rusts, cereal smuts, ergot of rice and wheat, downy mildew of pearl millet, late blight of potato, brown spot of rice, southern corn leaf blight, powdery mildew of grapes, downy mildew of grapes, downy mildew of tobacco, chestnut blight, Dutch elm disease, coffee rust, banana leaf spot or sigatoka disease, rubber leaf blight, sugarcane mosaic, sugar beet yellows, citrus quick decline, swollen shot of cocoa, plum pox, barley yellow dwarf, citrus canker, fire blight of pome fruits, peach yellows, pearl decline, root knot, sugarcane cyst nematode, downy mildew of corn and sorghum, soybean rust, pod rot of cocoa, sugarcane rust, African cassava mosaic, streak disease of maize, *Hoja blanka* or white tip of rice, bacterial wilt of banana, lethal yellowing of coconut palms, cadang- cadang disease of coconut, burrowing nematode diseases.

**Key diseases of different crops:**

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| Crop | Diseases |
| Rice | Tungro, Bacterial wilt (blight), blast, brown spot (*Helmenthosporium leaf spot* (new name-*Drechscleral oryzae* )) sheath blights, false smut |
| Wheat | Rust, Smut, Karnal bunt, Ergot, Foliar blights, Nematode pests |
| Barley | Yellow dwarf rust |
| Pearl millet | Downy mildew, Ergot, Smut |
| Sorghum | Grain mould, Grain smut, Long smut |
| Corn | Stalk rot (fungal and bacterial), Southern corn leaf blight |
| Pigeon pea | Sterility mosaic, Phytopthora, Stem blight, Fuserium wilt |
| Chickpea | Ascochyta blight, Wilt, Sclerotium rot |
| Mung | Yellow mosaic, Powdery mildew |
| Urd | Yellow mosaic, Powdery mildew |
| Soybean | Rust, Yellow mosaic, Root rot, Blights |
| Pea | Powdery mildew |
| Pear | Pear Declino |
| Tea | Blister blight |
| Coconut | Root wilt, Phytopthora bud rot, Ganoderma wilt |
| Areca nut | Colletotrichum fruit rot |
| Sugar beet | Cyst nematode |
| Sugarcane | Red rot, Smut, Wilt, Mosaic |
| Cotton | New cotton wilt |
| Coffee | Dieback, rust\* (Since 1870-80 in South- East Asia, 1870 in Brazil) |
| Rubber | Phytopthora leaf fall, Pink disease |
| Jute | Macrophomina stalk rot, Bacterial wilt |
| Black pepper | Phytopthora nut fall, Phytopthora wilt, Nematode pests |
| Tobacco | Leaf curl, Phytopthora black leg, Bacterial wilt, Downey mildew\* (1850-60 Europe, US) |
| Potato | Virus disease, Bacterial wilt, Late blight, Nematode pests |
| Ground nut | Aspergillus root rot, Rust, Tikka disease, Rossette, Bud necrosis |
| Mustard | White rust, Alternaria blight |
| Peach | Peach yellows |
| Mango | Mango malformation, Powdery mildew, Diplodia stem and other rots of fruits |
| Grape | Powdery mildew, Downey mildew, |
| Banana | Bunchy top, Bacterial wilt, Nematode pests, Leaf spot, Sigatoka disease |
| Citrus | Canker, Die back (quick decline), Phytopthora foot rot, Nematode pests |
| Guava | Wilt |
| Cocoa | Swollen rot |
| Apple | Scab, Powdery mildew |
| Tapioca | Mosaic |
| Zinger | Rhizome rot |
| Cardamom | Katte disease |
| Brinjal | Little leaf (*Phomopsis blight*), Bacterial wilt |
| Okra | Yellow vein mosaic |
| Cauliflower & Cabbage | Black rot, Sclerotium rot, Curd rot |
| Tomato | Leaf curl complex (virus), Bacterial wilt |

In India wheat rust causes annual losses up to Rs. 40 million. In the epidemic year there was loss of Rs. 500 million. In the year 1956-57 yield of wheat in Bihar state reduced from 900 kg/ha to 50 kg/ha. Similarly loose smut causes annual loss of about 3% every year. If seed treatment is not proper it may cause huge loss.