

Hello everyone, the title of the unit is microbes.

Model name will be economic importance of viruses and the model number is 8.

So what is the basic outline, you will get to know what are viruses and their economic importance.

From here you will learn the definition of virus and what are their economic importance in life.

So starting with what is a virus?

Virus are various minute small particles which can infect a live host, that can be plants, animals, bacteria including human beings.

The structure of the virus:-

It will have a protein coat or envelope which is called as a capsid, and in that it will have nucleic acid which will be either DNA or RNA.

So now we will see the economic importance of viruses:-

So firstly we will see what are the positive aspects:-

The viruses will help in the eradication of crop pest.

Viruses are very specific to specific insects. So this specificity of the viruses are used for the eradication of pests through the crops.

The viruses can be naturally available on the plants, that is, on the leaves, stem, roots or they can be present in the soil.

And they even can be commercially prepared. A dilute solution of virus are made and this solution will be sprayed on the particular parts of the plant that are infected with the crop pests. So when the pest will ingest this virus the virus, will enter inside the body of the pest. They will reproduce inside and this will lead in the death of the pest.

So second is the control green algal bloom.

So what is an algal bloom? It is nothing but the cyanobacteria which are very harmful as they produce some toxins which when are ingested by the humans or animals led to their death.

So viruses which attack the cyanobacteria are called as Sinophages. These pages are very important to eradicate the bacteria which are present in the polluted water. So viruses help in cleaning of water bodies.

Then third is use in the vaccine production.

Viruses are used in the production of vaccines which controls certain diseases like smallpox, polio, jaundice etc.

There are three types of vaccines.

Firstly, it is attenuated vaccines. Live but weakened viruses are injected into the body of the host. This will not form any diseases inside their body.

Example:- Chicken pox.

Then Secondly is inactivated or killed viruses.

So here the virus is killed. Viruses are directly injected inside the body of the host.

Example is polio.

And Thirdly, it is subunits. Here, the entire virus is not used, in fact here the subunits, that is, small units of the particular virus, are used.

Example is influenza..

So what a vaccine will do when is given inside the body of the host?

The antibodies will find it as a foreign antigen and they will produce antibodies which will destroy the viruses.

So this will form a memory inside the host antibodies which will help to prevent any further infection.

Next, it is used in genetic engineering technology.

The viruses are used as genetic vectors.

So what are vectors? Vectors are the carriers which will carry a particular gene of interest inside the body of the host cells.

Used in viral therapy.

Here the genetically modified viruses are used to treat different diseases.

For example, oncogenic viruses. These viruses are used to treat cancer cells. These viruses will particularly attack only the cancer cells and destroy them.

Use of Bacteriophages.

So what are bacteriophages?

They're particularly the viruses which will infect the bacteria. So these bacteriophages are used in genetic engineering and genetic research.

Mode of infection.

Particularly, firstly the virus will find the host, that is, the bacteria. It will get attached to it. Then it will penetrate its DNA into the body of the host, where it will multiply.

Then next is the DNA experiments.

Here 2 scientists, Hershey and Chase found that DNA was the genetic material and they found it with the help of the bacteriophages. They did different experiments with the bacteriophages and found that DNA was the genetic material responsible.

Then now we will see their negative aspects.

How they are harmful.

So the viruses will form various diseases inside the body of the hosts like plants, animals and human beings.

So in crop plants this will damage various plant parts like leaves, roots, fruits, flowers, roots etc. and this will lead to economic losses as they will reduce the quality and quantity of the products.

And loss on commercial scale.

The phages will kill the beneficial microbes which are present in the antibiotics and milk products.

So this will create a loss on the commercial scale.

Thank you.