

Bt401 Addition 1 (12 jan 2022)

Current Paper warrior group of Zoologist

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1) What is a National Strategy for PGRFA?

A National Strategy for PGRFA is the blueprint for the management of a country's PGRFA as a continuum of interventions in order to achieve clearly defined time bound goals.

A well-designed National Strategy needs to be tailored to the particular circumstances and needs of the country,

- should be amenable to review and updating as country situations change.
- The National Strategy for PGRFA should also be complementary to other national, regional and global conservation strategies or initiatives.

2) Why we need to preserve Aquatic Genetic resources?

If human fail to preserve aquatic genetic resources, it will cost in diminished quality of life”

Crustaceans, mussels and other seafood belong to the most important sources of protein for human consumption worldwide. Fishing industry plays a major role in socioeconomic terms. Developing countries local fishing and the related branches of production guarantee the income of a large part of coastal communities.

3) Transfer of DNA in bacteria horizontally?

There are three ways for bacteria to transfer their DNA horizontally

Conjugation: The transfer of DNA directly from one cell to another through cell-cell contact often involving plasmids

Transformation: Bacteria are capable of taking up DNA directly from their environment and incorporating it into their genomes known as natural transformation

Transduction

Transduction is the transfer of DNA from one cell to another by a virus.

4) Vertical gene Transfer?

The transfer of genes from parents to offspring. In vertical gene transfer, the transfer of genetic material is from parents to offspring. It may be through sexual or asexual reproduction. Acquisition of DNA through horizontal gene transfer is distinguished from the transmission of genetic material from parents to offspring during reproduction, which is known as vertical gene transfer.

5) Grading up?

Breeding of animals of two different breeds where the animals of an indigenous breed/genetic group are mated by an improved pure breed for several generations towards attaining the superior traits of the improved breed. Grading up is continuous use of purebred sires of the same breed in a grade herd. By fifth generation, the graded animals may reach almost purebred levels.

6) Allopatric speciation?

“Gene flow blocked by physical barriers results in Allopatric speciation”

It is geographical isolation that doesn't allow population of the same species to exchange genetic material. Physical barriers to gene flow both “natural” and “artificial”

7) Inbreeding depression?

Inbreeding depression is the reduced biological fitness in a given population as a result of inbreeding, or breeding of related individuals. In a small population, mating between relatives are common. This inbreeding may lower the

population's ability to survive and reproduce, a phenomenon called inbreeding depression.

8)Biometric gene environment interaction?

The biometric (or statistical) conception has its origins in research programs that seek to measure the relative proportions of genetic and environmental contributions to phenotypic variation within populations. Biometric interaction is relevant in the context of research on individual differences rather than in the context of the development of a particular organism.

9)Richness Genetic Resources of Microorganism?

Numbers of species described and currently accepted in most groups of microorganisms worldwide are respectively 143,000 & 18,500. Almost 120 new species of bacteria and 1,500 new species of fungi are added to science each year. This clearly demonstrates that knowledge of these groups is grossly inadequate.

10)Causes of changes in Gene pool?

The allele frequency in a population's gene pool can be affected by evolutionary mechanisms, such as;

- Mutation • Gene flow • Inbreeding • Natural selection, • Founder effect
- Random genetic drift.

11) How antibiotic work?

“Antibiotic is chemical substance produced by microorganisms that can kill or inhibit the growth of other microorganisms”

Plant Genetic resources or Germplasm of a crop consist of 5 types of material?

- Land races • Obsolete varieties • Varieties in cultivation • Breeding lines • Wild form and wild relatives

12)Aquatic Genetic Resources and example?

Aquatic genetic resources include all genetic resources living in water

It include; Fish, Cyclostomes, Mussels, Decapods, Marine mammals , Aquatic plants , All other water dwelling organisms

13)The Global Strategy for Plant Conservation (GSPC)?

The Global Strategy for Plant Conservation (GSPC) is a program of the UN's Convention on Biological Diversity founded in 1999. It is a Plan to Save the World's Plant Species - grew out of the Convention on Biological Diversity and is being fed into government policy around the world.

Vision of GSPC : “Without plants, there is no life

14)Extinct species?

“A species of plant or animal that is no longer living.” e.g. Passenger Pigeon, white Rhino

15)Genetic Diversity?

“The variation in the amount of genetic information within and among individuals of a population, a species, an assemblage, or a community

pakistan is the sixth largest producer of Kinow (mandarin)

Marco Polo sheep (Ovis ammon)

Around 200 German immigrants settled in Pennsylvania within community marriages. Developed syndrome named Ellis-van Creveld syndrome.

Reproductive isolation is...

White rhinos are the second largest land mammal

16)Cryopreservation various methods of storage?

Cryo is Greek word. (krayos – frost). It literally means preservation in “frozen state.”

Cryo-preservation or cryo-conservation is a process where organelles, cells, tissues, extracellular matrix, organs or any other biological constructs susceptible to damage caused by unregulated

Methodologies

There are various methods of storage :

1. Cryopreservation - generally involves storage in liquid nitrogen.
2. Cold storage - it involves storage in low and non freezing temperature.
3. Low pressure – it involves partially reducing the atmospheric pressure of surrounding.
4. Low oxygen storage - it involves reducing the oxygen level but maintaining the pressure.

17) Define food security

conservation of plant genetic resources and animal genetic resources which are necessary for life known as food security.

18) Define sympatric speciation?

Sympatric speciation is speciation that occurs when two groups of the same species live in the same geographic location, but they evolve differently until they can no longer interbreed and are considered different species. This is often result of Reproductive isolation

19) How extinction is affected by medical study?

Many different species have unique bodily processes that can cure human diseases. e.g. the toxins produced by dart-poison frogs in the rain forest have yielded information about how alkaloid compounds behave in living organisms. Scientists also study bears for clues about how they recycle blood toxins during hibernation to find potential solutions to kidney disorders. Plants from forests are useful for medicinal purposes.

20) Why do we need to conserve plant genetic resources?

conservation of plant genetic resources is necessary for food security and agro-biodiversity • Biodiversity provides a valuable source of compounds to the medical, food and crop protection industries. • Maintenance of ecosystem • Genetic resources need to be conserved so that they may be used in crop research and be used as sources of genes for crop improvement.

21)Elaborate disadvantages & advantages of outbreeding?

Advantages of Out breeding:

- Out breeding often produces offspring of superior quality because it increases homozygosity (the occurrence of two alleles for the same trait at corresponding positions on homologous chromosomes) • Sharply reduce the risk of deleterious recessive genes being expressed • One of the benefits of out breeding is less chance of genetic abnormalities • The ability to make a breed stronger

Disadvantages of Out breeding:

- Introduction of new genes into population • Animal discomfort: accidentally produce traits that are damaging to the health of the animal

22)Steps of conservation of PGR?

Following are steps for the Conservation of plant genetic resources

- Selection of target taxa
- Project commission
- Eco geographic survey/preliminary survey mission
- Conservation objectives
- Field exploration
- Conservation strategies
- Conserved product deposition and dissemination
- Characterization/ Evaluation

- PGR utilization
- Utilization products

23)Name the four main pillars of food? 2 marks

The four pillars of food security are availability, access, utilization and stability.

24)Define migration? 2 marks

Migration is a behavioral adaptation that helps animal's survival.

How anthropogenic activities affect migration? 3 marks

- Barriers (fences, dams & skyscrapers)
- Water, air craft and fishes practices
- Telegraphic wires, towers and light houses
- Illegal hunting

25)What are land races? 3 marks

A landrace is a local variety of a domesticated plant species which has developed largely adaptation to the natural and cultural environment in which it lives. It differs from a cultivar which has been selectively bred to conform to a particular standard of characteristics. Landrace populations are often variable in appearance, but they can be identified by their appearance and have a certain genetic.

26)How climate changes affect extinction?? 5 marks

Almost half of plant and animal species have experienced local extinctions due to climate change. Global warming could trigger not just local but global extinctions of animals and plants. Species already threatened by habitat destruction, pollution, alien invasion and overhunting are more vulnerable to climate change. Diversity

of species in any one ecosystem could be affected by rises in average temperatures or a shift of climate regime

27) Describe genetic stock in plants or general populations? 5 marks

Genetic stocks

Genetic stocks, broadly defined as plants or populations generated and/or selected for genetic studies, represent a unique and growing class of extremely valuable germplasm which, depending on crop, type of genetic stock and user community may represent genetic resources of either transient or long-lasting value.

Genetic stocks can be divided into three general groups:-

1. Cytological stocks
2. Mutants stock
3. Germplasm set

MCQS

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Marco Polo sheep (**Ovis ammon**)

Around 200 German immigrants settled in Pennsylvania within community marriages Developed syndrome named Ellis-van Creveld syndrome.

Reproductive isolation are **a collection** of evolutionary mechanisms

White rhinos are the **second largest** land mammal