Definitions and Concepts for Edexcel Biology IGCSE

Topic 5: Use of Biological Resources

Definitions marked by '' are for separate sciences only*

Food Production

Biological control of pests - The use of other species to kill pests e.g. ladybirds eating aphids.

***Interspecific predation** - An interspecific interaction in which an organism of one species kills an organism of a different species for food, e.g. fish preying on other fish of a different species. This can be reduced by separating fish of different species into tanks.

***Intraspecific predation** - An interspecific interaction in which an organism of one species kills an organism of the same species for food, e.g. fish preying on other fish on the same species. This is reduced by keeping fish of different ages and sizes (from the same species) in different tanks.

Lactobacillus - A bacterial species used to make yoghurt.

Pesticides - Chemicals used to kill pests, such as weeds (herbicides) and insects (insecticides).

Yeast - Fungi used in bread-making. They anaerobically respire and the carbon dioxide produced makes the bread rise, whilst the alcohol evaporates.

Selective Breeding

Selective breeding - The process by which humans artificially select organisms with desirable characteristics and breed them to produce offspring with desirable phenotypes. Selective breeding can be performed with both animals and plants.

Genetic Modification (Genetic Engineering)

GM crops - Crops that have had their genomes modified by the insertion of a desired gene from another organism. These crops can improve food production by having better yields and being resistant to pests.

Insulin - A hormone involved in the control of blood glucose concentration. Genetically modified bacteria grown in a fermenter can produce large amounts of insulin.

Ligase - An enzyme used to join pieces of DNA together. For example, joining the desired gene to a plasmid.

Plasmids - Loops of DNA found in the cytoplasm of prokaryotic cells. They can be used as vectors to transfer recombinant DNA into host cells.

Recombinant DNA - DNA created from joining the genetic material of two or more different organisms.

Restriction enzymes - Enzymes that cut DNA at specific regions to isolate a gene from the chromosome.

Transgenics - The process by which genetic material is transferred from one species into another.

Vector - A structure responsible for transferring DNA into a cell. Commonly used vectors include plasmids and viruses.

*Cloning

***Cloning** - The production of an organism genetically identical to another one e.g. Dolly the sheep.

***Diploid nucleus** - A nucleus that contains two sets of chromosomes. It is inserted into an enucleated egg cell during cloning.

***Explants** - Small samples from a parent plant that are used for micropropagation.

***Micropropagation** - The multiplication of plants using tissue culture methods. It can be used to produce large numbers of plants, all genetically identical, with desirable characteristics originating from the parent plant.

***Tissue culture** - A method of growing living tissue or cells in a suitable medium to produce clone plants.