Germplasm Theory

1. Prior to this Germplasm theory, "The Theory of Inheritance of acquired characters." was in use. It is the regarded as First theory of evolution. It was proposed by — — . Lamark, a french Biologist. (1744-1892)

2. In 1892 August Weismann indicated that, there is continuity of germplasm. Later on it is known as "Theory of Germplasm". It outrightly rejected the theory of inheritance of acquired characters proposed by Lamark.

A/c to this theory, every new individuals develop due to division of Zygote. The Zygote is formed by fusion of two compacting gametes (♂ & ♀ of same sps. or kind).

Conservation of Germ Plasm:

The natural flora & fauna is facing a threat of being lost due to → natural selection
→ Artificial selection
→ Loss of habitat
→ Change of climate
→ Human disturbance
→ Pollution
and many other causes.

The organism are natural boon to us & our planet, i.e. the earth and its life system. They may possess many characters, though which are not feling so useful at present time but become valuable in future. So there preservation is the duty of us, the human being.

Hence the preservation of germplasm of rare species, varieties is essential.

Methods of Germplasm Conservation

Conserving seeds and vegetative organs for propagation are the methods of passer preservation.

~~Meristem preservation/ pro~~ culture/

→ Meristem, propagation, ~~pd~~ tissue culture aids helps in getting disease free culture from even a diseased plant source. Maintaing its clone provides a series of disease free grem plasm of that variety or species. It certainly needs in-vitro culture & then transfering them to the field after a succeful seriesptests

→ Freeze preservation is a technique to preserve the germplasm at ultra low temperature, [i.e (−196°c). with the help of liquid nitrogen] specially for microbes. These are helpful in the field of enzyme, food, medicine and even animal husbandry.

It is a new, but less exploited field, though specimens covering virtually the entire phylogenetic spectra of higher and lower plants can be committed to ~~freeze~~ do so.

→ Quendra 1968 firstly reported the successful preservation of culture plant cells. After this a marked improvement has been made in this field.

→ The different organisms including parts of plants and even different plants show varriation in their sensitivity towards temperature. If an organism or the part of plant is more sensetive, then it must be ~~be is being treated~~ given special treatment i.e known as Pre-treatment.

→ This pretreatment is with certain chemicals known as Cryptotectants. e.g.

→ Dimethyl sulfoxide (DMSO)
→ Glycerol
→ Protein
→ ~~Pto~~ Polythene Glycol

→ In addition to these certain aminoacids and their derivatives e.g.

→ Spartate Lysine
→ Glycinebetaine,
→ ~~Pro~~ Threonine ~~hydroxyproline~~
→ Hydroxyproline

also show useful and valuable protective properties against freezing.

→ In 1980 Morris found that algae Euglena gracilis (As considered as animal also) was successfully preserved by Freeze Preser vation after treatment with Methanol. It show the Cryptogenic activity of methanol Methanol is easily and widely available chemical.

→ The rate of change of temperature from higher to lower causes a precise pattern of events in the specimen.

→ Hence the frozen, thawed and recovered cells are being tested to determine :—

i) The number of survivals,
ii) The survival state of total population
iii) Nature of Cryogenic injury at upper (External) level
iv) Pattern of recovery of growth
v) Storage of valuable gene genome.

→ Freeze preservation is an exellent storage method for some suspension cultures and relatively small pieces of calus, organism, explant or animals. But there are certain specific limitations to its use.

Conclusion:

There are several areas which require to explore and emphasise for further course of work. Valuable ~~inform~~ observations and informations have to be gathered for,

→ For Continuous study of chilling injury; its relation to osmotic stress and the promotion to healing in the tissues, or cells damaged by cold, may aid the development of appropriate supportive post thawing treatment.

→ Development of simple laboratory for routine preservation.

→ Organised method of catalouging of stored materials.

→ Continued awareness of process.

→ Training to the concerns.