**Tools of Plant Breeding lect 5**

**New tools of plant breeding include.**

**a) Mutation breeding
b) Polyploidy
c) Plant Biotechnology
d) In Vitro Techniques and
e) Genetic engineering**

**a) Mutation Breeding:**

**Mutation is a sudden heritable change in a characteristic of an organism and utilization of variation created by mutation in crop improvements is known as mutation breeding. Agents used for induction of mutation known as mutagens. It may be physical or chemical mutagens.**

**b) Polyploidy:**

**An individual with more than two sets of homologous chromosome or genome known as polyploidy. Changes in chromosome number may involve loss or gain of one of few chromosomes or the whole genome. Polyploidy may be induced spontaneously or can be induced artificially by using chemicals.**

**c) Plant Biotechnology:**

**Utilization of biological agents or their components for generation products for the welfare of mankind, known as biotechnology. Plant biotechnology is related to such activities other than conventional approaches. It aims at improving the genetic make up, phenotypic performance and multiplication of economical plants.**

**d) In Vitro Techniques:**

**It is the cultivation of plant organs, tissue or cell in test tube on artificial media. In certain situation conventional breeding methods are not efficient. In that situation these methods have been supplemented by in vitro techniques/ tissue culture to increase the efficiency of crop.**

**e) Genetic Engineering:**

**Isolation of the desired from an organize, its integration into a suitable vector and its introduction into another organism (host) with a view to obtain multiple copies (Replica) of the desire gene. The gene may remain in vector or may got integrated into the chromosome of the host later it produces transgenic plant.**