

MEETING REPORT - *Genetics of Cultivated Plants.*

Dr. Brenda Harold, lecturer in botany and plant genetics certainly shook the post-Christmas torpor out of us with her talk. She explained that the differences between cultivated and wild plants are due to characteristics controlled by their genes. Genes are located in chromosomes and one set is inherited from each parent. Humans have 23 chromosomes but some plants have as few as 7 although the genes may be larger. Genes can randomly mutate and cause changes, but most spontaneous mutations are harmful. Plants may reproduce sexually, producing seeds, but also asexually by runners, suckers and rhizomes. Cloning means that all individuals are identical, which also means they are all susceptible to the same diseases and cannot adapt. Uniformity is desirable in arable crops for harvesting by machine, so this is a problem. For wild plants such uniformity is undesirable. Ash Die-back disease is an example where resistant plants grow from spontaneous mutation and so recovery is possible.

Propagation of most cultivated plants is by seeds. F1 hybrid seeds are expensive because of the lengthy processes involved in taking in-bred pure lines which produce small weak plants. These are then further crossed in pairs to find a good combining ability that will maintain a pure line. These F1 hybrids produce large uniform, vigorous varieties, but will not breed true. You need to buy new seeds every year which is how the breeder recoups the cost.

Why don't bananas have seeds? They have been bred to have 3 chromosome sets, and so are sterile. Bananas with two chromosome sets rather resemble the insides of okra, not very appetizing! Bramleys also have 3 chromosome sets, so are sterile and you need two other fertile varieties nearby as Bramley pollen is ineffective. Some plants are the sum of all of the genes of both parents (allopolyploid) and did you know that Oilseed Rape is from a cross between turnip and kale in a medieval garden? Orchids are now relatively cheap, due to micropropagation introduced in the 1960s. Small samples of plant material are grown on a nutrient jelly, producing a clump of cells which will develop into new plants. Orchids will do this easily and it is cheap. Plug plants are probably produced in this way. Dr Harold explained how plants go to some lengths to avoid in-breeding, and that plants like holly have entirely male or female plants. We learnt a lot, but our tired brains really needed the Christmas cake provided by Margaret Dykes!