BREEDING WITH TISSUE CULTURE TECHNIC

Plant breeding is a slow process
The process leading to new varieties is started by selecting material with the desired properties and cross this.

Crossing is made by removing the anthers of the plant, which then becomes the mother plant and then add pollen from father plant.

It is then necessary to allow subsequent generations of self-pollination 6-8 times to get a uniform and stable off-spring. During the process, selection is made for desired properties.

To get a new variety approved the variety needs to pass a DUS test. DUS stands for:

- Distinctness
- Uniformity
- Stability

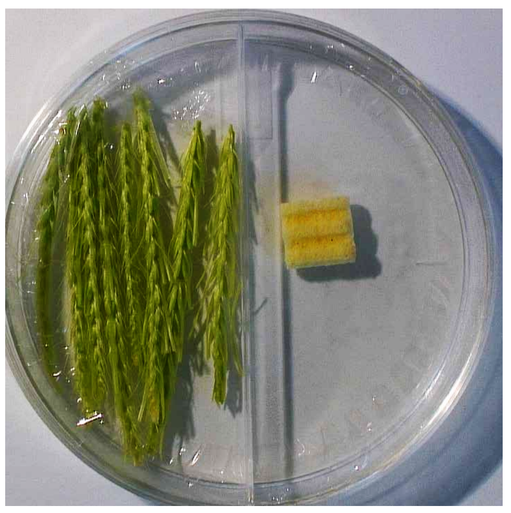
The process from cross to variety on the market takes 8-12 years for cereals.

By growing several generations per year by using both the northern and southern hemisphere or by using tissue culture technic the process can be decreased by 3-4 years.

DH production by micro spore culture

Immature pollen are isolated from the crossed material. These cells are grown in vitro with nutrient supplement. Plants from these cultures are called double haploids. The immature pollen cells are gametes with half chromosome number. This condition is unstable and the immature pollen cells will try to compensate by forming copies of existing chromosomes during growth. The final product will be with normal chromosome number with uniform and stabile offspring right after the process.

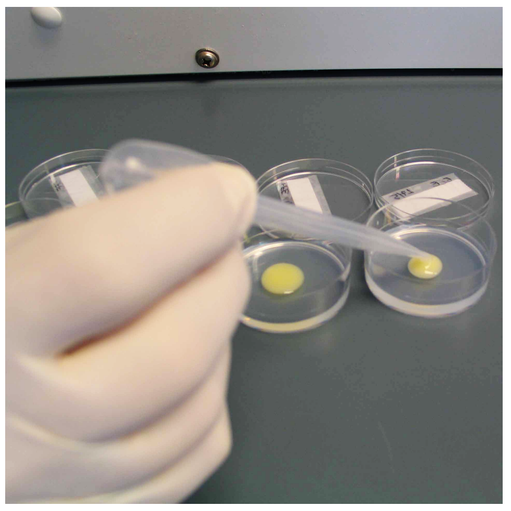
1 Young spikes with immature pollen are sterilised and isolated



2 The isolated spikes are cold treated

3 The cold teated spikes are blended to release micro spores

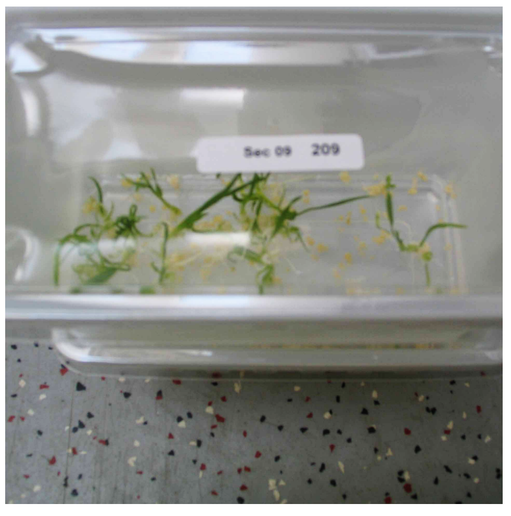
4 The immature pollen are purified by centrifugation



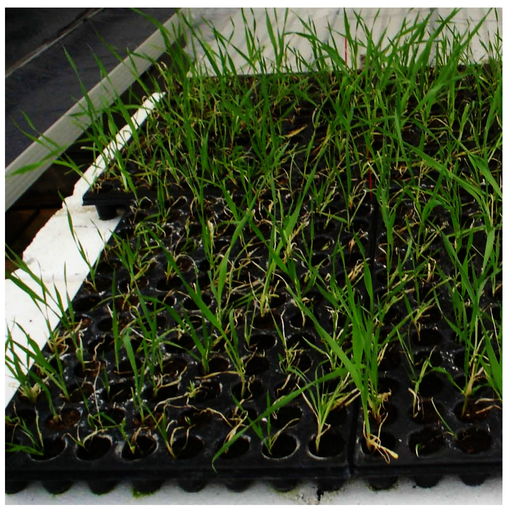
5 The purified pollen are put on growth substrate

6 Immature pollen in growth

7 Part of the immature pollen form embryoes



8 Part of the embryoes form plants



9 Plants are transferred to soil for forming seeds

Nordic Seed