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Flower Breeding in Practice©

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INTRODUCTION

F_1-breeding of seed-propagated species is an important method for breeding new cultivars. At Dæhnfeldt we have a number of breeding programmes in progress, but we frequently decide whether we are going to start new programmes. We get inspiration and ideas for new cultivars from many places: exhibitions, journeys, botanical gardens, catalogues, magazines, customers, and trend researchers. There is seldom lack of ideas but they have to be discussed thoroughly before decisions are made because breeding must be profitable. A number of questions are important:

- Do the species fit into our assortment?
- How big is the market? It can be very difficult to estimate for small or new crops, while the market for larger, well-known crops can be estimated from various statistics.
- How is the competition?
- Will we be alone with the new cultivars of the particular species or are we the seventeenth seed company with series of the species?
- What is the cost of producing seeds? It can be very difficult to estimate without practical experience and typically large seed productions will give cheaper seed than small productions. Further, seed production in foreign countries may give cheaper seed than production in Denmark.
- What will the price of the seed be?

F_1–BREEDING

When it has been decided to work with a new species, plant material must be collected. All accessible varieties and botanical species are procured. Information about the species, method of cultivation, etc., must also be procured. This information can be found, e.g., in books, plant clubs, on the Internet, and at specialists. Trial tests are made to see how the species behaves. The flower is examined and test pollinations are made. Some species will then be discarded, because they are too difficult to work with.

Then the hard work in the F_1-hybrid breeding comes. Crossings are made followed by selection of plants with the desired characteristics and inbreeding until the offspring has become sufficiently homogeneous to be called pure lines.

The pure lines are now crossed pairwise to produce new F_1-hybrids. The breeder decides from his experience which lines are to be crossed. In practice a lot more crossings are made than there ever will be varieties. The seed of the crossings are sown and the plants are assessed. The crossings which live up to the quality demands are selected as test varieties.

Our test varieties now go through a number of trials. First, a small production of seed of each test variety is made — typically 10 to 12 mother plants are pollinated. The produced seed is weighed and counted to get an idea of the ability to produce seed of the test variety. Seed quality is tested in the germination laboratory. The rest of the seed is used in various trial tests under greenhouse conditions or if relevant in the field, eventually under more southerly skies depending on the market. In some species the winter hardiness and fitness as perennials are also tested. Seed samples are sent to good customers in Denmark and abroad to test plant qualities under different growing conditions. These results are very important. At last we show the test varieties at our exhibitions, e.g., on our yearly Pack Trial in May in the Netherlands. This gives us the possibility to hear the opinion of many different customers.

After all these trials results are compared and discussed and only if the variety has been satisfactory under all conditions it will be introduced in the assortment.

COMMERCIAL SEED PRODUCTION

Commercial seed production is started. First the parental lines or clones are propagated. The parent plants are grown and mutations and other unwanted plants are removed to secure the best result in the hybrid seed. The hybrid seed is made by manual pollination, it ripens, is cleaned by machine or manually, and is packed.

At last we are ready for marketing. A product sheet of the variety is made, it gets into the catalogue and is presented in advertisements and at exhibitions. Plant breeding is a very practical but laborious business and a considerable element in flower breeding is the test work where we always make sure that only the very best is allowed to get through.