

FORTY YEARS OF TOMATO BREEDING IN A VEGETABLE SEED COMPANY

SCHOTTE T.

Breeding Strategy Lead Solanaceous Crops for Monsanto Vegetable Division based in Bergschenhoek, The Netherlands

In the presentation the scientific developments in genetics from Mendel till today will be linked to the development of commercial breeding activities. From the discovery of the structure of the DNA by Watson and Crick, via molecular markers for single traits, genetic transformation, sequencing, QTL mapping for complex traits till fingerprinting.

The history of the biggest vegetable breeding company in the world will be presented from an insiders point of view, spanning a period of over 40 years. Well known companies operating now under the name Monsanto Vegetable Division are a.o. Seminis (already a combination of Petoseeds, Asgrow, Royal Sluis and Bruinsma) since 2005, Western Seeds and Poloni since 2007, Peotec and De Ruiter Seeds since 2008. As an example the fast development of the De Ruiter Seeds company.

The developments in tomato breeding and production have been very large and are strongly connected; without good, resistant and adapted varieties the producers cannot get good yields and good quality. Breeding: from no major resistances in 1968 to hybrids with more than 10 resistances combined today. In some cases the possibility to grow tomatoes could be continued due to the timely introduction of a badly needed resistance.

Over this 40 year span we have seen dramatic changes in growing conditions and knowledge of plant physiology. Yields increased a lot, in some cases 4 fold, due to better varieties, the use of plastics, illumination, grafting and so on.

To become a successful breeder and consequently grow your company is not easy. There are a number of success factors to mention like good scientific knowledge, a strong motivation and winners mentality, a in-depth knowledge of the crop you work in (technology and the market), creativity, but also being a team player and able to “sell” your products to your own sales people.

The market trends to deal with in the future are different for the various international markets and market segments. Some will focus on increased yield, other more on nutrition and taste. The conversion from open pollinated varieties to hybrids will continue as well as the move from open field to protected cultivation (net>plastic>glass). New growing conditions like (semi-) closed greenhouses and plant factories will increase.

Issues like sustainable agriculture, food miles, pesticide free production, year round supply and increasing importance of the retail chain will be increasingly important.

Breeders will have even more tools than today when more markers will become available. Data management will be of utmost importance. The complexity of future breeding will not only require good breeding skills. Other professional skills to work in a multidisciplinary, international environment will be of equal importance. Identifying talents, giving them the education they need to develop into the breeder of the future is of utmost importance.