

## Seed Production in Horticulture

**Palle Sørensen**

Vikima Seed A/S, Industriparken 9, DK- 4960 Holeby

### THE DEVELOPMENT OF DANISH HORTICULTURAL SEED PRODUCTION

Danish seed production has existed for several hundred years. At first all growers supplied their own or were at least partly self-sufficient, then in the later part of the last century it changed. Commercial production started.

Market gardeners were the first to turn to commercial seed production, but production moved to agriculture at the start of this century. This occurred mainly because of growing competition.

Around World War I cabbage seed production was substantial. In 1919 the total seed production area was 2873 ha of this 1738 ha was used for cabbage seed. Most seed was exported to the U.S.A. and Germany. This seed production continued until the 1960s with shifts in the species produced. Some species were grown because they were traditionally grown rather than because of the favourable growing conditions. As vegetable production became more specialized the demand rose for more efficient seed production in the developed countries of the world. There was a demand for seeds with better physical and genetic properties. Machines for precision sowing and the establishment of special nursery units enhanced this development.

Carrot seed, for example, used to be produced in this country. Production has ceased, not because of low yields or production costs but because seed quality was too poor. Seed lots with 75% to 80% germination rates just can't be sold. Carrot seeds are now mainly produced in the U.S.A. and France.

When Denmark joined the EEC, the seed production industry received unfair competition. Suddenly, all agricultural crops were financially supported. This meant seed companies had a difficult time getting contracts for vegetable seeds. Because of this, seed production area was reduced by more than half. During the 1970s some production returned partly because of the dollar's exchange rate but also because Dutch seed companies chose Denmark as the production country for their new spinach hybrids.

### SEED PRODUCTION TODAY

Today the global vegetable breeding is concentrated with a few firms. Production, however, is carried out in many countries and by both large or small production firms.

There are a number of reasons for this spreading of production, mainly risk minimizing, harvest time (northern or southern hemisphere), climates, grower's know-how, security, labour force, price, etc.

In Denmark seed production covers 2000 ha of which 2/3 is used for *Spinacia oleracea* (spinach) seeds and the production of hybrids, spinach accounts for 80% of this.

Other important seeds are *Brassica rapa* Pekinensis Group, *Chrysanthemum coronarium*, *Scorzonera hispanica*, *Allium schoenoprasum*, *Anthriscus cerefolium*, and *Thymus vulgaris*. All these species produce high quality seed at a competitive

price. In addition, a number of annual flower seed crops are grown in Denmark.

Since the first production of hybrid spinach in the early 1970s, hybrid production has expanded to *B. oleracea* Botrytis Group, *B. rapa*, *Raphanus sativus*, *B. rapa* Pekniensis Group, and other oriental annual cabbage species.

### THE ORGANIZATION OF SEED PRODUCTION

Seed production is on a contract basis between seed companies and growers. The seed company provides the basic/variety seed for the specific contracted production, acreage, and production price are agreed to in the same contract along with quality specifications such as:

- Minimum germination
- Maximum water content
- Minimum purity
- Maximum amount of weed or other seeds
- Minimum spacing for seed areas with the same crop.

Planning is essential if good results are to be achieved by the grower. Because seed production is an exclusive agreement between grower and seed company, supervision is provided by seed company advisers.

### HORTICULTURAL SEED PRODUCTION IN THE FUTURE

We are continually striving to produce better quality seeds, how far we can get is impossible to say but the ultimate goal is a seed lot with 100% germination, physical and genetic purity at 100%, and 100% soundness and uniformity.

We will probably never achieve the above goals with all species but with some we are getting close, i.e., lettuce.

A great challenge facing us is seed production in greenhouses. This type of production isn't something new but the amount is rapidly increasing.

An advantage of greenhouse production is the ability to provide optimum climatic conditions. In this environment seeds free of fungal problems can be produced and unwanted crossing can be eliminated. In addition, the seed can be harvested when the water content and the stage of development are at their best possible levels.

Vegetable seed production won't disappear from the fields, but the growing practice will change. More species will be established from transplants instead of sown directly. When handled this way, the annual *Brassica* species start flowering earlier and more uniformly.

However, a dilemma for the producers of seed will be balancing the restricted use of herbicides with the demand for cleaner seed lots. Such challenges will stimulate the development of new ways to grow plants.