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Doris Fleischer, Executive Secretary  
655 Broadway, Denver, Colorado

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## Floriculture in Holland

by

W.D. Holley

Horticulture attains its maximum importance in Holland. The value of the nursery, bulb and flower industries as well as greenhouse grown fruits and vegetables is so important to the Dutch economy that money is appropriated freely by the government for teaching, research and extension in this field.

The facilities for plant research centered around Wageningen are probably second to none in the world. There are many institutes covering all phases of agricultural research. While I was able to visit only two of these, I did get a bird's eye view of several others. Their plant breeding institute has an excellent phytotron, and much controlled greenhouse environment is available at this and the Plant Pathology Institute. The Dutch teaching and extension programs were explained to me along with the manner in which they get the information from the research programs to their commercial industries. To say that I was impressed with the Dutch facilities and the number of personnel working on horticultural problems would be putting it mildly. The scope of their work is of the broadest nature.

At the Plant Breeding Institute one of the projects most interesting was their

tests with rose understocks. Five varieties of roses were being grown on the following understocks: *Rosa canina*, *R. rubignosa*, Pfander's *canina*, *R. inermis*, Schmidt's *canina* Ideal, *R. multiflora*, *R. rubignosa* selection Van de Laan. Multiflora has produced the most vigor and the poorest flower color. Many garden and greenhouse roses are grown on selections of *Rosa canina*. Most of the rose understocks are grown from seed, which should reduce the amount of virus disease normally found in vegetatively propagated understocks.

French marigolds were being used as a cover crop to reduce nematode populations. Whether marigolds actually leave something in the soil that is toxic to nematodes, or whether nematodes just do not multiply on marigolds was not made clear. In some instances marigolds were actually interplanted with another crop after it had become well started.

Orange calendula was being selected for its content of a pigment which is used in cosmetics. The flowers are harvested and dried and the chemical extracted. Dwarf red barberry is being selected especially for color and shape of plants.

Prof. Zeilinga of the Plant Breeding Institute is doing some fine work with  $F_1$

Hybrid *semperflorens* begonias. He has catalogued most standard varieties as either diploid or tetraploid. Triploid hybrids between these two types are sterile, and many are outstanding over either parent. The triploids are free flowering and the flowers last longer. *Begonia semperflorens* is one of the most popular garden and house plants in much of Europe.

Several experimental substations are located throughout Holland in areas of specialized crops. The station at Aalsmeer, near the City of Amsterdam, specialized in greenhouse floriculture under the direction of Dr. Wasser, who also teaches part time at the Agricultural College in Wageningen. The Proefstation at Aalsmeer has a full staff of research and extension men who serve both the concentrated flower growing area nearby and the rest of the state. Prof. Scholten of the Aalsmeer station was my gracious host and guide during the several days I was in this area.

The flower auctions were started in Aalsmeer around 1910-1915. A large concentration of glasshouses in this area and an international airport are conducive to the fast movement of flower crops. Export buyers usually live nearby and are in the markets in large numbers. They buy flowers or plants in early morning, pack them for shipment and have them in most of the cities of Europe within a few hours. The gross sales in the two auctions at present are around 12 to 13 million dollars annually.

Carnations and roses were the main crops in the markets during early July, with a considerable variety of miscellaneous cut flowers also in evidence. Year around chrysanthemums have not caught on to any extent, however. Pink Sensation, a sport of Delight, Baccara and Montezuma were very popular rose varieties. Nymph was the most popular baby rose. Most Holland roses are grown directly in the ground, usually with a minimum of support. Various strains of *Rosa canina* are most popular as understocks, although Baccara is being grown more and more on indica major. The new yellow rose, Dr. Verhage, has been developed by Mr. G. Verbeek, a commercial rose breeder in Aalsmeer. This rose was much sought in the markets and will no doubt be available in this country soon as Carelton Rose Nurseries is testing it.

Carnations were available in wide variety at reasonably good prices for July. Yellow and Tangerine were bringing about double the prices of other colors at this time of year. Disease free planting stock is available from two or three Dutch firms. Prof. Scholten and Miss Quak at Wageningen have helped a great deal to bring this about.

Hilverda & Co. of Aalsmeer sells about 3 to 4 million cuttings a year mostly in Holland and Germany. With the help of the staff at the Proefstation, they have very clean stock. After sales taper off in late spring the mother plants are allowed to grow up during summer and are pinched high. Heel cuttings are then removed with the node as laterals develop to the desired size. This method helps them to get more fall and winter cuttings when light is extremely unfavorable. They grow mother blocks for two years before renewal.

Producers of planting stock are subjected to rigid inspection service in Holland. Inspectors with legal authority must approve any cuttings or plants before a grower can sell them. Sanitation and other pathological regulations are defined. The use of water from canals is forbidden growers who sell planting stock, since this water contains bacteria, fungi, and probably various nematodes. Growers of potted plants or cut flowers use canal water and dump drainage water back in the canals.

### Pot Plants

Although I did not visit plant growers in Holland, I saw their fine products in the Aalsmeer markets. I was particularly impressed by the wide variety of plants available, many of which I saw in quantity for the first time. An unusual pot plant in the early July market was *Nertera depressa*, called coral moss. This is a very flat little plant with orange berries, which I was told is strictly a summer plant. *Rochea* (*Crassula*) *coccinea* was available here as well as in Scandinavia. This plant is probably daylength sensitive and is usually in the markets from May to July, being started the year before and grown cold. It is actually a tender perennial and very colorful.

*Campanula isophylla* (called blue or white Star of Bethlehem in New England)

was one of the finest plants in the markets. This plant is a tender perennial, easily grown from cuttings, or seed, if obtainable. It makes an excellent year around house plant in a cool sunny window and has always been popular in New England. In my estimation, this is one of the plants which should be grown more for the florist trade.

Beautiful Achimenes were available and reportedly were increasing in popularity. These are in the gloxinia family, growing from small, scaly rhizomes, or from seed. Several different Passifloras, especially *P. coerulea*, were in the market. These are normally grown from cuttings, but can be grown from seed, especially to obtain select stock plants. *Platycerium* (staghorn fern) is increasing in popularity along with the general line of green plants. Collections of flowering and green plants were being sold by the flat to fill the needs of smaller shopkeepers.

Growth of the flower producing areas of Holland was very rapid between 1910 and 1930. Overproduction in 1930 led to strict control over expansion. To produce flowers a grower must have a license which costs around 32 cents per square foot, if he can find one for sale. Occasionally there is an allowance for a small percentage of expansion. Normally, the license is sold with the land, pretty much as a water right is handled in Colorado. Since there are quite a few hundreds of acres of glass in Holland, this control is absolutely essential for preventing chaos. If a few hundred acres of tomatoes are diverted to flower crops, the market structure would be destroyed.

Since they require much less superstructure, most Dutch greenhouses are narrow structures with little head room. A few larger greenhouses are now being built, however, almost all building mate-

rials are imported. Due to the nature of the ground in the low country, greenhouses and houses are built on top of piles which may be driven into the ground 50 feet or more.

The main soil base available in northeastern Holland is a sort of muck or rotted peat with some sand in it. For greenhouse soils they mix this soil base with sphagnum, peat, sand, and manure in various proportions.

### Reclaiming land from the sea

Reclaiming land from the sea has gone on for hundreds of years and is still very much in evidence. A dune area along the west coast provides a natural dike about 50 or more feet high. Most of the land immediately east of these dunes, comprising perhaps a third of Holland is below sea level. This former sea was shallow hence adapted to reclamation.

Dikes are built around an area first, called a polser, then the salt water is pumped out. After this, rain water and the use of fresh water in the area gradually reduces the salt content of the soil. Sedges are the first crop grown on the salty ground; presently they are sown by airplane. These sedges root deeply and start building structure into the soil. As soon as good growth is obtained the land is plowed deeply and the sedges turned under. The next crop is some sort of crucifer (mustard family) for its oil bearing seed. Eventually the salt content is low enough for grass and other crops.

A causeway was built across the upper part of the Zuider Zee in the 1930's as a dam against salt water. Since that time water has been pumped out being replaced with fresh water. Now the Zuider Zee is fresh water and many polsers are in the process of being reclaimed along the edges of this shallow inland sea.

### STATISTICS ON THE HOLLAND FLOWER INDUSTRY

Source-- Drs. C. D. Scheer, Directie van de Tuinbouw, Ministry of Agriculture and Fisheries, The Hague. Bulletin of October 1959.

525 acres under glass in production of flowers and potted plants. Most of this area is around Aalsmeer and near Rotterdam.

1500 acres of open ground in flower production other than seeds and bulbs.