

THE DUTCH VEGETABLE GREENHOUSE INDUSTRY

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Holland has almost 6,000 enterprises which produce vegetables under glass. These holdings cover an area of about 11,500 acres. Over 7,500 acres are located in the western part of Holland with another 2,500 concentrated in south Holland. The Dutch export was about \$13.3 million, although not more than 5 to 6% of the working population remains in the agricultural industry. By far reaching specialization, mechanization, automation and innovation, a high productivity level has been reached. Main vegetable crops include tomato, cucumber, radish and pepper which account for 80% of total vegetable output. The remaining 20% ranges across a large number of species. New crops being tried include Iceberg lettuce, winter radish, Chinese cabbage, fennel, courgette, broccoli and garden radish. Almost half of the Dutch production is exported, with the principal markets being West German, Great Britain, France and Scandinavia. The volume of domestic consumption, expressed as a percentage of total production averages 94% for the EEC as a whole whereas the figure for Holland is al-

most 200%. Specialization of greenhouse vegetable production usually means one main crop, followed by one or more secondary crops. In 1960, the average harvest per sq.ft. for cucumbers (Jan 1 to July 1) was 5.5 lbs, and for tomatoes (Jan 1 to Sept 1) was 1.8 lbs. By 1980, yields had increased to 8.8 and 2.7 lbs respectively.

By 1981, energy accounted for 30% of the total production cost. However, intensive energy saving measures and special breeding indicates that energy requirements will have been reduced by 50% in a few years time.

Agricultural research is concentrated at Wageningen which has about 30 institutes, each engaged with a certain aspect of agriculture and horticulture. There are institutes which specialize in breeding, mechanization, disease control, marketing, processing, etc. Practical research for glass-house horticulture is conducted at the research station at Naaldwijk, and at experimental gardens in four different re-

gions. The practical research is half financed by the industry, which has a large voice in determining research program content. Total cost for research on vegetables is about 1.4% of the product value. The advisory service (extension) is decentralized. There are 10 regional offices for horticulture where extension personnel maintain direct contact with the growers.

Most of the training is at the Wageningen Agricultural University with a student population of about 6,000. There are also three Horticultural Colleges located at Den Bosch, Utrecht and Ede. To improve skill and knowledge, a large number of growers have small horticultural study groups

with strong ties to organizations, and the commodity board for fruit and vegetables establishes quality standards and implements the EEC policy. There are three farmer and grower organizations, with the differences between them largely of religious origin.

Marketing is totally concentrated at auctions. Supply and demand are totally focused at a single point. Growers belonging to associations sell their entire product at the auction markets, paying a membership fee and a percentage of their turnover. At predetermined minimum prices (always below production cost) the product is removed and the grower paid a withdrawal price.