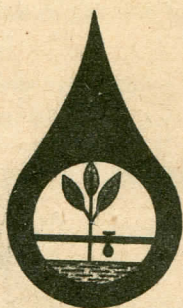


**PROCEEDINGS OF THE SYMPOSIUM ON DRIP IRRIGATION IN
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VEGETABLE CROP PRODUCTION IN POLAND: PRESENT STATE AND TRENDS

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Vegetable production in Poland, including field, under glass and plastics covers 1.4 % of the entire land area on which plants are cultivated, or 1.0 % of the total land area in agricultural use. The amount of vegetables produced accounts for 6.5 % of the total amount of plant crops and 12.0 % of the final total amount of plant crops. Thus, in our country, vegetable production plays an important role in plant crop production.

A total of 270 thousand ha is used for vegetable production including the following under glass or plastic:

1544 ha in high greenhouses

381 ha in hot-beds

2000 ha under plastic

About 4500 thousand tons of vegetables are harvested yearly, including about 150 thousand tons produced under glass and plastic. The per capita vegetable production was 130 kg including 4.2 kg of vegetables from greenhouse and plastic production.

Vegetable yields vary greatly from year to year. The average value for the last 3 years was 4749 thousand tons.

Cabbage, carrots and beets, onions, tomatoes and cucumbers are still the most commonly cultivated vegetables; they account for 84.2 % of the total vegetable yield and 75.5 % of the land area.

About 25 other vegetable species are cultivated in Poland but they account for only about 16 % of the total vegetable yield and 25 % of the land area. Thus, there is a relatively poor selection of vegetables produced on a large scale, which in turn means that there is not much variety in the vegetables consumed.

Vegetables are usually cultivated on very small plots in Poland. About 2.5 million private farms engage in vegetable production. Of this, 84 % or about 2 million farms grow vegetables on an area smaller than 1000 m²; 11 % of them on an area between 100 and 2500 m². Only 4% of all private farms produce vegetables on more than 2500 m². This is about 98 thousand farms. The largest vegetable fields are found in the Warszawa, Gdańsk, Szczecin, Bydgoszcz, Poznań and Łódź regions.

Most farms producing vegetables cover a total area of 2 to 5 ha, or 0.5 to 2 ha near cities. Ninety-three percent of all vegetables are produced on private farms, 7 % on state-owned farms and production co-operatives. While private farms play a decisive role in supplying the market with vegetables from field production, state owned farms are the most important producers of vegetables in protected spaces,

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particularly early vegetables. Thirty percent of the area in greenhouses belongs to state-owned enterprises and production cooperatives. All vegetable breeding and seed production is under the state's jurisdiction.

Thirty three thousand private farms conduct vegetable production in greenhouses and heated plastic houses whose area ranges from 200 m² to 2 ha. State-owned and cooperative greenhouses range from 5 to 36 ha in size. In the last 6 years the area of greenhouses has grown significantly as a result of the construction of greenhouse complexes. Farms have also broadened their field production, developing specialized methods for mass production on large areas.

In general, vegetables are produced in small amounts on small farms, with relatively low profitability and high variations in the quality of the products. Thus this is a labor-consuming production, based on manual labor and thus with low profits and high variations in crop quality.

The present structure and level of consumption as well as the sum of money spent on vegetables, differ between city and country. In the country, most of the population produces its own supply of vegetables.

Studies show that on farms where financial records are kept, consumption of products produced there account for over 87 % of the total vegetable consumption on these farms. In recent years only 13 % of the additional kg of vegetables have been bought. Although the rural population consumes relatively large amounts of vegetables, the selection is more one-sided than that in the cities. Studies show that 80 % of the vegetables eaten are cabbage, onions, carrots, beets and cucumbers.

The selection of vegetables consumed in cities also varies with the season, but less so than in the country, due to the higher consumption of vegetables from the group „others”, processed vegetables and early vegetables grown in the greenhouse. According to studies of family budgets conducted in 1979, the urban population spent an average of 1101 zl on vegetables; this figure ranged from 649 to 1684 zl per capita according to income groups.

The present total vegetable consumption in Poland does not differ significantly from that in most European countries. However, fundamental differences in the structure and distribution of vegetable consumption during the year do exist.

Purchases and sales in our country are handled by cooperative and state organizations. Almost 1/3 of the total production of 1.5 million tons is bought by horticultural cooperatives /70 % of all wholesale purchases/, agricultural cooperatives and the government processing industries. Certain amounts are sold directly by the producers on the market of larger and smaller towns. The remaining part of the vegetables produced is consumed by the rural population producing it.

The wholesale of the most common vegetables /cabbage, carrots and beets/ accounts for approximately 40 % of the total, onions 16 %, cucumbers and tomatoes about 40 %. The remainder is divided among approximately twenty other vegetables. Purchases are subject to great seasonal changes. Sixty percent of annual purchases are made in the three months from September to November. About 55 % of the goods purchases wholesale are intended for the domestic market, 33 % processed by industry; and 5 % exported. Wholesale purchases are subject to planning and primarily secured by contracting.

The increase in the wealth of our society is bringing about changes in the consumption habits even now. The demand for vegetables from the „others” group is increasing, and the consumption of the most common vegetables is decreasing.

Government plans call for the field production of 5 million tons of vegetables to cover domestic needs and exports. Both a change in the selection of species produced and an increase in the amount of certain vegetables produced are foreseen.

On account of the need for modernizing vegetable production, introducing mechanization and thereby increasing work efficiency, it is becoming necessary to concentrate and specialize.

The production plans presented above and the figures contained in the national program for the improvement of vegetable production were calculated by a specially created group of experts. This program takes the current needs of food consumption in our country and the developing trends in this field, indicating the future pattern of consumption. One of the most important of these indicators is the increase in incomes during the last ten years. Even this growth rate is expected to increase in the near future. This naturally has led and will continue to lead, to further changes in the vegetable consumption in the direction of more expensive and better tasting vegetables; to the number of vegetable species consumed by the population of towns and industrial areas will also increase as these people become more wealthy. The consumption of early vegetables forced in greenhouse and all kinds of frozen products will also increase. Thus there will be a trend towards more even nutrition during the year. In recent years there has been a depletion of the labor supply in horticultural production as the population has been increasingly employed in industry and services. This trend will continue in the next few years, making it necessary to substitute mechanical labor for manual labor and rapidly mechanizing the entire vegetable production in the country. There is also a trend towards increasing the area of plantings and of individual farms. Small scale farms are being transformed into large-scale mass production farms. Production is clearly becoming more specialized and concentrated. Very small horticultural enterprises are ceasing vegetable production which is becoming more the sphere state-owned or cooperative enterprises and large specialized private farms working together under various forms of cooperation.

The rate of these changes makes it possible to assume that by 1990, 30 to 40 % of the total vegetable field production will come from mass-producing farms organized into state or cooperatively run horticultural complexes. This will be a very profitable mass production, based on the most modern cultivation techniques and totally mechanized. The remaining 60 % of the production will come from large specialized private farms conducting mass production on large land areas. These farms will also be mechanized. The number of these farms operating cooperatively will increase continually from the present several thousand to 70-80 thousand. Only that production which cannot be mechanized will remain in the hands of small producers.

In general, it can be stated that vegetable production in Poland is changing from a labor-consuming stage to a capital-consuming stage, from small scale to large scale specialized production concentrated in selected regions for cultivation. The state and strong, large, integrated private farms are making large investments in means of mass

production. As a result of these changes, labor efficiency and land productivity are constantly growing. In this changing structure, the role and importance of service in production are increasing. These services are provided either within cooperatively run enterprises or by organizations operating in rural areas such as Horticultural Cooperatives, Farmers Cooperative Organizations or by the state-owned fruit and vegetable processing industry.

The modernization and progress in vegetable production is also connected with the development of the processing industry. The rapid development of this industry after the war has become even faster in the last few years. Rapid changes in sales and purchases will also have to occur; they must be adapted both to receiving large, uniform batches of goods and to producing improved prepackaged vegetables in unit packages.

In closing this discussion of the present state and trends in Polish vegetable production I would like to draw attention to the increasing role of international cooperation in our national economy. There is an increase in our imports of production means in the form of machines, tools, entire complexes and chemical compounds, as well as fresh and processed vegetables. Polish exports of vegetable products are also increasing. To the famous Polish onion, carrots, canned peas, pickles and asparagus; have now been added many processed vegetables, particularly in frozen form. The mutual exchanges of goods are accompanied more and more often by exchanges of scientific ideas which are based on the relatively high level of horticultural science, which is the basis for development, and extension services.