

SOUČASNÝ STAV PRODUKCE EKOLOGICKÉ ZELENINY V POLSKU

Production of organic vegetables in Poland - state of the art

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Summary: The article presents the problem of organic vegetable production on the background of conventional production in Poland in relation to the importance of vegetable produce in EU. During last four years there have been noticed a gradual decrease of organic cultivation of vegetables unlike to a long time trend of progressive growth of conventional production. In 2002 the area of organic vegetables covered 739 ha and in 2005 reduced to 445 ha. The reasons of the situation in relation to international literature and the author studies has been discussed.

Key words: *vegetables, organic farming, yield*

Souhrn: Článek uvádí problémy ekologické produkce zeleniny na pozadí konvenční produkce v Polsku ve vztahu k důležitosti produkce zeleniny v EU. Během posledních čtyř let byly tři poznamenány pozvolným poklesem ekologické produkce zeleniny narozdíl od dlouhodobého trendu progresivního růstu konvenční produkce. V roce 2002 byla plocha ekologického zemědělství 739 ha, zatímco v roce 2005 se snížila na 445 ha. Důvody tohoto stavu jsou diskutovány se zahraniční literaturou a autory.

Klíčová slova: *zelenina, ekologické zemědělství, výnos*

The importance of vegetable production for the country

Vegetable production is an important scope of the Polish economy. According to Polish statistics in 2005 vegetable production made 11.8 % of the total value of plant production from the area about 2 % of the total sowing. Poland produced 4 785 thousand tones of field vegetables on the area of 222.1 thousand hectares and 673 thousand tones on 5 429 hectares of glasshouses (12). Poland has been known for years in EU for the biggest production of white head cabbage, carrot, onion, cucumber (in 2005 respectively –1320, 929, 714 and 257 thousand tones). Since 2002 the area of field vegetables gradually increased. On the international market a positive ratio of export to import have been maintained. In 2005 we exported 894 thousand tones of vegetables (about 52 % of fresh vegetables, 37 % of frozen products and 11 % of canned, pickled and dried vegetables excluding mushrooms) Nosecka 2006.

In EU the vegetable production for the last 6 years has been more or less stable, although a slide

decreasing tendency of the cultivation area was observed. In 2005 the total production of 25 EU members was 64.3 million tones, among of which Polish products shared 5.6 mln t (8.7 %). In 2006 the total production of vegetables in EU decreased by 9.0 % down to 59 million tones. The reduction of harvest was caused by unfavourable weather conditions almost in all EU member states (long, frosty winter, cold spring, a drought in June and July, heavy rains in August). Besides in some countries like Spain and Italy there was a limited area of tomatoes because of the reduction of subsidies to processing tomatoes.

In 2006 in Poland the harvest of field vegetables and potatoes is by 14 % lower than in the year before. The most dramatic reduction of yield was noted for leguminous (20-30 % lower) and for tomato, onion and spinach by 10 % lower. There is predicted that the consumption of vegetables will be reduced by 2-3 % down to 67 kg *per capita* (excluding potatoes).

Organic vegetables –state of the art

In Poland during last few years the interest of organic farming has been increasing rapidly. In 2005 there was 7183 organic farms registered on the area of 167 740 ha (both certified and under conversion). In 2006 there will be about 10 thousand organic farmers (11). The eager farmers are not a specialist of vegetable production. Very often they have nothing to do with horticulture. They require additional education and encouragement to undertake the specialisation. Most often organic farms go animal husbandry or grow cereals. In the total cultivation structure in organic farms the highest area is covered by pastures (51 %), cereals (43.6 %), fruits 4.2% and vegetables only 0.3 %.

Conventional production of vegetables has been gradually increasing from 171.4 thousand hectares in 2002 to 222.1 thousand hectares in 2005. In organic farming there was just an opposite trend. The area of organic vegetables has been reduced from 739 to 445.2 hectares, which makes respectively 1.69 to 0.27 % of total organic cultivation area.

The analysis undertaken in Research Institute of Vegetable Crops at Skierniewice revealed a big problem in this sphere. Among 1657 examined organic farms 972 showed no evidence of vegetable cultivation. In 685 remaining organic farms about 80 % produced vegetables on the area smaller than 1 hectare. That

means the majority of farms cultivated vegetables only for domestic needs or for a small local market only.

There are several reasons of a little interest in organic vegetable production, namely:

1. Difficulties in cultivation
2. High quality demands
3. Restrictions in a selling premium
4. Poor marketing

Vegetable production is more risky and more labour-consuming than other kinds of organic production. It comprises a large range of species and cultivars of extreme requirements. Some can be directly sown and others need transplants. Unlike perennial plantations, vegetable field must be started every year

Organic vegetable yielding

A high and good quality yield is required for the success of organic production. In the general opinion the yield of organic vegetables is on average by 30 % lower than from conventional production. One of the most common limits is a shortage of nitrogen fertilisers. In Poland on the list of 50 fertilisers permitted for organic production there is no nitrogen fertilisers.

A farmer relay on organic matter construction in the soil thus improving its fertility. Organic matter after humification and mineralization can be a source of nitrogen. Insufficient nutrient approach is a basic reason of lower yielding. In the research of Mac Rae et al. (2006) during the first years of conversion organic vegetables yield by 40 % lower than conventional ones. As the soil fertility and biodiversity built up the difference reduced to 20 %. It was also true for tomatoes

Quality of organic vegetables

There is little evidence about technological quality such as size, shape, colour, firmness, shelf life. Igbokwe et al. (2003) and Szafirowska (2007) noticed more small tomato fruits from organic method than conventional, mainly because of insufficient nitrogen supply. Organic cucumber, pepper and tomatoes showed better plant and fruit vigour than conventional. One of the reasons was a bigger plant distance, which reduced disease spread (Szafirowska 2007).

Conclusion

Problems in organic vegetable production in Poland can be solved together by the government, research, industry and farmers. Program of rural development for 2007-2013 predicts higher subsidies for organic vegetables as well as promotion of organic products. Lately the number of organic processing plants increased from 55 in 2004 to 99 in 2005. In the area

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from the beginning, which means more costs of cultivation set up, more risk during plant emergence, higher costs of transplants production. Some species are easy, once over harvested, while others must be picked every day. Vegetable production requires a good soil culture, water availability, specific disease and pest management, a labour-consuming weed control. Each species needs a specific approach and treatment. The success is hidden in an extensive knowledge, good cultivation and well organised market.

The most common vegetable species grown organic are root vegetables, onion, some gourd family and legumes. Field tomatoes are very seldom cultivated because of *Phytophthora infestans* disease occurrence.

in the 8-year Clark's research (1999). During first 3 years the organic tomato produced lower yield than conventional, but by the end of the experiment organic tomatoes produced 80t/ha comparing to 68 t/ha of conventional. Parsons (2002) analysing 14 vegetable species found that in Canada all examined species yielded worse in organic method. The worst results obtained for onion, cauliflower, red beet, lettuce. Organic vegetables manage better under unfavourable conditions than conventional ones (Ching 2001, Welsh 1999). Under Polish conditions Szafirowska (2007) found different response of cultivars to a growing method. Tomato cultivars of a high tolerance to *Phytophthora infestans* produced more fruits under organic conditions than conventional. The author also found a cherry type tomatoes suitable for organic farming.

Nutrition quality is the best discussed aspect in literature. Most often organic vegetables possess higher dry matter content, more vitamins and antioxidants and of course no pesticide residue. (Hallmann et al. 2005). It is likely because plants grown under sufficiency of mineral nutrients especially nitrogen, use them for protein development and other nitrogen content compounds. Instead those grown under organic fertilisation produce more carbon compounds like carbohydrates, organic acids, vitamins etc.

of research the main institution dealing with organic vegetable production is the Research Institute of Vegetable Crops at Skierniewice running a long-term research for the basic problems of organic vegetables. The experiment concern crop rotation, fertilisation, selection of cultivars and species, plant protection, weed control and nutrition value of organic vegetables.

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