

PRECIPITATION INFLUENCE ON EDIBLE OIL PRODUCTION FROM SUNFLOWER CROP IN CROATIA

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Introduction

Sunflower (*Helianthus annuus* L.) is the most important field crop for edible oil production in Croatia. However, growing area of sunflower (2.6% of arable land capacities in 2003) is inadequate for national need of consume oil. Significant increase of sunflower yields as well as harvested areas is connected with hybrid introducing in production 80's of the last century (Krizmanić *et al.*, 2004). Sunflower growing area in Croatia is mostly distributed in the eastern part of the Pannonian region (the eastern Croatia) mainly because of more favorable precipitation regime in comparison with the remaining part of the country. Sunflower is suitable crop for a semiarid climate considering crop yield and water-use efficiency (Anderson *et al.*, 2003), which has ability to deplete water from deeper soil depths (Stone *et al.*, 2002). Aim of this study was elaboration of precipitation influence on sunflower yields in Croatia.

Methods

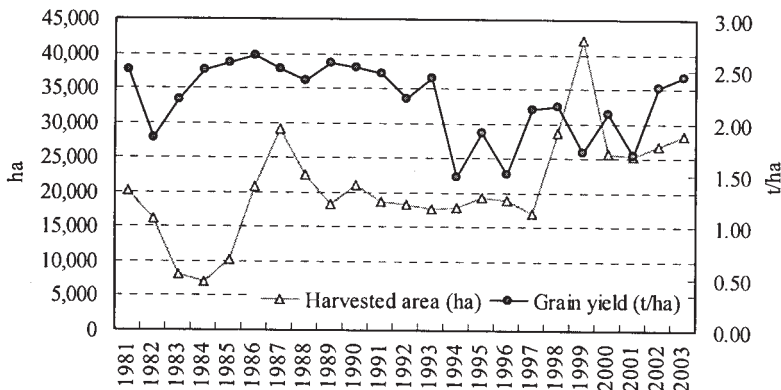
In this study, data of the State Bureau for Statistics (1981-2003) and internal data of the state farms "Belje" d.d. and "Hana" Našice were used as the source of harvested areas and grain yields data. Later data were not available due to restructure of state farms. The precipitation data for Beli Manastir were provided from the meteorological station Brestovac ("Belje" d.d.), and for Našice from the meteorological station Koška (1981-1990), and Lila (1996-2003).

Until end of 1992 the eastern Croatia region was territorially divided in 14 municipalities of total area 11090 km². Since 1992, according to the new territorial division, the eastern Croatia includes five counties (c) of total area 12452 km²: Virovitica-Podravina (VPc), Požeško-Slavonia (PSc), Brod-Posavina (BPc), Osijek-Baranya (OBc) and Vukovar-Sirmium (VSc).

Results and discussion

Eastern Croatia has very favorable agroecological conditions for sunflower growing, where is placed over 99% of sunflower production in the Republic Croatia. Sunflower harvested areas as well as grain yields had a large variation during the analyzed years (Figure 1).

Figure 1. Sunflower harvested areas and grain yields in the Republic of Croatia



By comparison of 5-year data, sunflower areas increasing continually (Table 1 and 2). In the municipality Beli Manastir are sown the largest areas of sunflower: 18.8% (1981-85), and 16.4% (1986-90). After forming of counties, the largest areas under sunflower were in Osijek-Baranya county: 56.9% (1996-00), and 53.5% (2001-03).

Table 1. Sunflower harvested areas and grain yields, 1981-1990

Sunflower harvested areas (SHA in ha) and yields (t/ha) in the region eastern Croatia, four municipalities of the region (Beli Manastir =BM, Osijek =OS, Đakovo =ĐA and Našice =NA: % = share of SHA in the region) and two state farms (Belje in BM and Hana in NA: % = share of SHA in municipality)														
Year	Eastern Croatia		Municipality of the eastern Croatia						State farm					
	ha	t/ha	BM		OS		ĐA		NA		Belje		Hana	
			%	t/h a	%	t/h a	%	t/h a	%	t/ha	%	t/h a	%	t/h a
1981	19962	2.5	17.0	3.0	13.1	2.8	18.8	2.1	14.5	2.5	76.1	3.1	37.8	3.1
1982	15795	1.9	16.7	2.5	15.2	2.3	16.2	1.5	14.6	1.7	71.1	2.5	36.5	1.7
1983	8108	2.2	19.4	2.7	19.6	2.8	11.8	1.9	16.2	1.7	92.9	2.7	45.8	1.8
1984	6982	2.5	22.1	3.0	21.6	2.7	11.3	2.3	16.7	2.3	99.0	3.1	43.6	2.7
1985	10162	2.6	22.7	3.1	18.0	2.8	10.2	2.5	14.7	2.2	75.7	3.2	47.2	2.3
Mean	12202	2.3	18.8	2.9	16.3	2.6	14.9	2.0	15.0	2.1	80.8	2.9	40.9	2.4
1986	20718	2.7	19.2	2.9	14.4	3.1	14.7	2.8	10.2	2.6	57.0	3.0	25.4	2.7
1987	28934	2.5	17.5	1.8	13.3	3.0	14.2	2.8	9.1	2.5	58.8	2.0	23.3	2.8
1988	22119	2.4	13.8	2.6	15.6	2.7	13.0	2.7	9.3	2.2	71.9	2.9	39.6	2.6
1989	18143	2.6	15.3	2.6	14.5	2.8	14.0	2.6	6.4	2.3	58.5	2.4	44.8	2.4
1990	20588	2.6	15.9	2.5	9.9	2.8	15.6	2.1	7.7	2.8	55.7	2.7	33.4	3.1
Mean	22100	2.5	16.4	2.4	13.5	2.9	14.3	2.6	8.6	2.5	60.0	2.6	31.6	2.7