AGRICULTURE

AREAS UNDER ORGANIC FARMING

Definition

The indicator is calculated as share (percentage) of area under organic farming (sum of existing areas under organic farming and areas in a process of conversion for organic farming) in the total area or total cultivable land area.

Units

The indicator is presented as sum of area under organic farming and area being converted for organic farming, measured in ha. Share of organic farming is given as a percentage of total utilized agricultural area.

Policy relevance of the indicator

List of relevant political documents

- National strategy with action plan for development of organic farming in the Republic of Macedonia 2008-2011
- Strategy for agriculture and rural development – condition and need to establish agro-environmental policy.
- The Strategy for compliance of the Macedonian agricultural and food sector with the EU Common agricultural policy – indicates the need to identify the regions suitable for organic farming and to comply with the European regulations.
- The Treaty with the World Trade Organization – improvement of the international food safety standards
- The Second National Environmental Action Plan – strives to include environmental issues directly in the agricultural development policy and to maintain the natural resources needed for sustainable development on high level. In accordance with this, a control and certification body for organic agricultural production, recognized by the EU has been defined and established.
- National strategy for biodiversity with Action Plan
- National strategy for sustainable development

Legal grounds

The framework for the organic farming is established by the Law on Organic Farming and regulations which are in a process of adoption; the Law on Stimulating Agriculture Development, Law on Environment and Law on Nature Protection.

The provisions of this Law have been harmonized with international and European ones, especially with EU Regulation No.2092/91, which is of particular importance in the context of future development of trade exchange in organic products with European countries.

Targets

In 2011, the organic cultivable land has a 2% share in the total cultivable land in Macedonia.

In 2011, while the wild collection area has a share of 5% in the total cultivable area in Macedonia.[1]

Клучно прашање за креирање на политиката

Дали уделот на органското обработливо земјиште во однос на вкупното обработливо земјиште е во пораст?

Клучна порака

Во периодот од 2005 до 2011 година површините со органско земјоделско производство и бројот на органски оператори е во постојан пораст, со што трендот на органско производство е во постојан пораст во Република Македонија.

Во 2011 година површините со органско земјоделско производство пораснале на 6.580,92 хектари и во однос на вкупната обработлива површина органското производство учествува со 1,288%, што значи дека сеуште не е постигната целта од 2%, во однос на вкупната земјоделска површина изнесува 0,588%. Бројот на сертифицирани органски оператори пораснал од 50 во 2005 на 780 во 2011 година.

1 National Strategy and Action Plan for organic agriculture in the Republic of Macedonia 2008-2011 http://www.mzsv.gov.mk/files/NSAP%20Mkd.pdf

Figure 1. Area with organic agricultural production

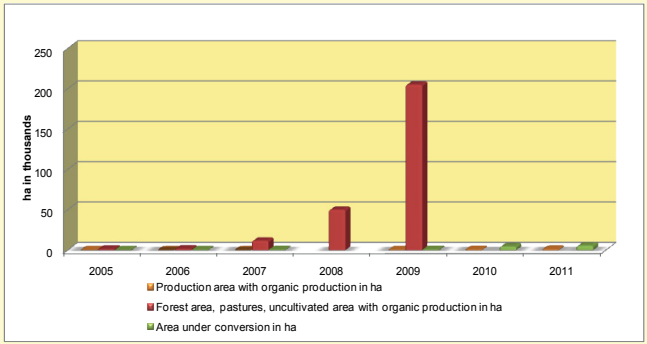


Figure 2. Share of area with organic agricultural production in cultivable and total agricultural area.

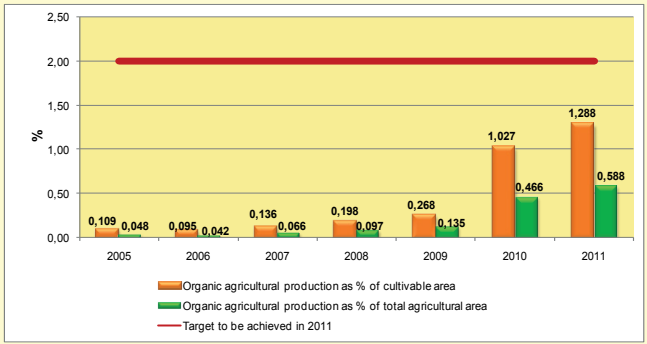


Figure 3.Vegetable organic production in 2011 in ha

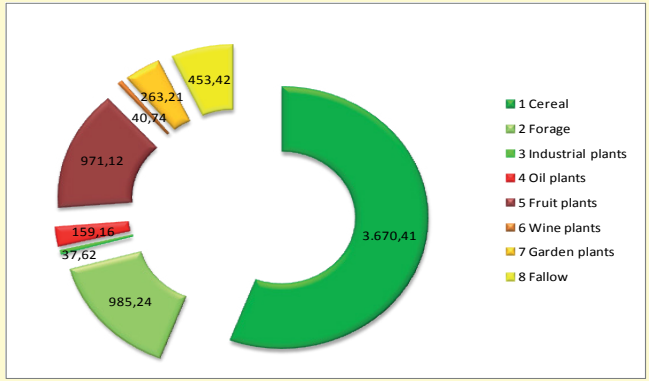
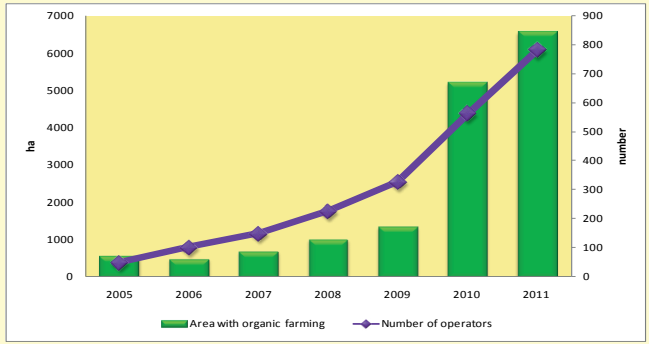


Figure 4. Ratio between the number of operators and the area under organic agricultural production



Assessment

In the period 2005-2011, the production areas with organic farming have increased from 266 ha to 1007,26 ha subsequently. There is also an increase in areas under conversion from 327 to 5573,66 ha.

The share of organic farming areas in the total cultivable area has grown from 0,109% in 2005 to 1,288% in 2011. This growth is insignificant given that, according to the National strategy for organic production, the target for 2 % share of organic cultivable area should be achieved in Macedonia.

It can be noted from Figure 3 that cereals are the main organic culture in Macedonia in 2011, with share of 55,77%, followed by forage with 14,97 % share, while the industrial cultures have the smallest share with 0,57 % of the overall certified areas.

The number of certified organic operators in the period 2005-2011 has grown proportionally with the growth of the area under organic agricultural farming (figure 4).

Methodology

The method of the European Environmental Agency.

The indicator is presented as sum of area under organic farming and area being converted for organic farming, divided by the total cultivable land area or total agricultural area. This value is multiplied by 100 in order to present the value in percentage.

Data specification

Title of the indicator	Data Source	Reporting responsibilities
Areas under organic farming	– Statistical Yearbook, State Statistical Office – Ministry of Agriculture, Forestry and Water Economy, Division of Organic farming.	– Annual report for quality of the environment in the Republic of Macedonia – Environmental statistics – European Environment Agency

Data coverage:

Table 1: Total cultivable area and total agricultural area

	2005	2006	2007	2008	2009	2010	2011
Cultivable area in ha	546.000	537.000	526.000	521.000	513.000	509.000	511.000
Total agriculture area in ha	1.229.000	1.225.000	1.077.000	1.064.000	1.014.000	1.121.000	1.120.000

Table 2: Areas under organic agricultural production

	2005	2006	2007	2008	2009	2010	2011
Production area with organic production in ha	266	7	37		426	719,5	1007,26
Forest area, pastures, uncultivated area with organic production in ha	1.300	1.592	11.775	50.000	204.956		
Area under conversion in ha	327	503	677		947	4505,5	5573,66
As % of the cultivable area	0,109	0,095	0,136	0,198	0,268	1,027	1,288
As % of the total agricultural area	0,048	0,042	0,066	0,097	0,135	0,466	0,588

Table 3: Organic vegetable production in ha

	type/culture	2009	2010	2011
1	Cereal	667,87	2.999,8	3.670,41
2	Forage	183,09	994,6	985,24
3	Industrial plants	43,63	32,1	37,62
4	Oil plants	63,78	47,4	159,16
5	Fruit plants	211,03	334,2	971,12
6	Wine plants	60,17	244,3	40,74
7	Garden plants	142,86	199,9	263,21
8	Fallow		372,7	453,42

Table 4: Number of operators and area under organic farming in ha

	Number of operators	Area with organic farming
2005	50	592,54
2006	102	509,42
2007	150	714,47
2008	226	1029
2009	327	1.372,43
2010	562	5225
2011	780	6.580,92

General metadata

Code	Title of the indicator	Compliance with CSI/ EEA or other indicators		Classification by DPSIR	Type	Linkage with area	Frequency of publication
МК НИ 026	Area under organic farming	CSI 026	Area under organic farming	R	A	– agriculture – biological diversity	Annually

MINERAL FERTILIZER CONSUMPTION

Definition

Mineral fertilizers are substances containing chemical elements required for plants growth, especially nitrogen, phosphorus and potassium.

This indicator shows the consumption of mineral fertilizers in the Republic of Macedonia, by presenting total amounts in tonnes consumed substances, and their application per hectare cultivated land area.

Units

- Total amounts in tonnes consumed mineral fertilizers, and their application per hectare cultivated land area(kg/ha).

Policy relevance of the indicator

List of relevant policy documents:

The Second National Environmental Action Plan (NEAP 2) specifies the measure for rationale use of natural resources, as well as controlled use of mineral fertilizers. The same document also specifies the measure for establishment of monitoring and information system for soil, to monitor the mineral fertilizers consumption.

Legal grounds

The Law on Agricultural Landspecifies the measures for improved agricultural land fertility through undertaking of agrotechnical measures, one of them being fertilizers application, i.e. use of mineral fertilizers. It is specified that agriculturallandprotection against pollution and contamination is performed by prohibition, restriction and prevention of direct input of harmful matters in soil, input of harmful matters through water and air and undertaking of other measures for its productivity maintenance and improvement. It is also specified that, for the purpose of agricultural land protection against pollution and contamination, the provisions contained in the regulations on environment and nature protection and improvement shall apply accordingly.

The Law on Fertilizers Use regulates the manner of fertilizers use.

The Law on Nature Protection, in its Article 4, specifies the goals of protection, including preservation and recovery of existing biological and landscape diversity in a state of natural balance and prevention of harmful activities and nature disruption.

Targets

No specific targets.

Key policy issue

What is the trend in the amount of used mineral fertilizers in agriculture?

Key message

Mineral fertilizer consumption in agriculture noted a falling trend in the period from 2002to 2011. Consumption of nitrogen mineral fertilizers dropped by 57.79%.Consumption of phosphorous fertilizers dropped by 100%.Consumption of combined mineral fertilizers dropped by 80.32% between 2002 and 2009, while the total consumption of mineral fertilizers dropped by 53.19%. Consumption of potassium fertilizers dropped by 98.11% by 2005, followed by increase again in the period from 2005 and 2009 and then drop again by 2011.

Figure 1.Consumption of mineral fertilizers

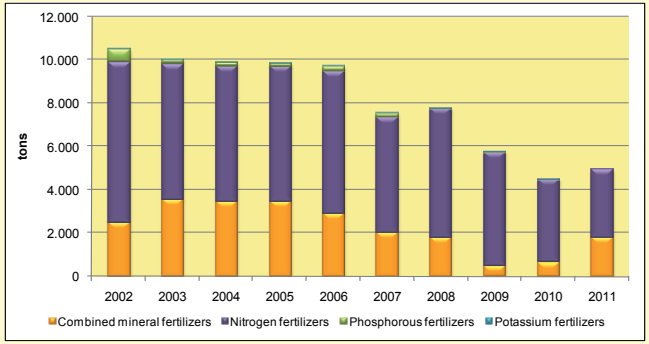
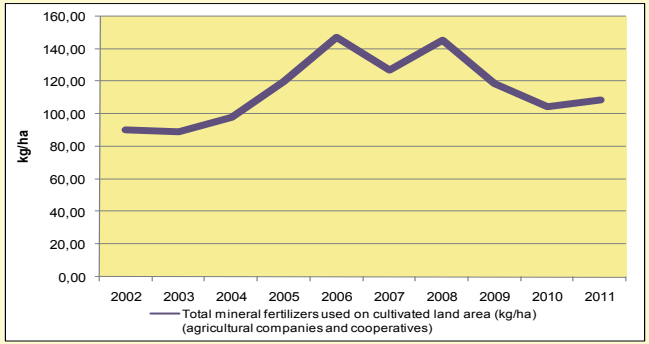


Figure 2. Use of mineral fertilizers on cultivated land area (kg/ha)by agricultural cooperatives and agricultural companies))



Assessment

In the period 2002 to 2011, consumption of mineral fertilizers in agriculture dropped from 10.593tons to 4.958tons of fertilizers; the quantity of mineral resources used on cultivated land area (of agricultural companies and cooperatives) expressed in kilograms per hectare increased between 2002 and 2009, from 90.34 kg/hato 118.76 kg/ha, which is a rise by 31.45 %, and in the period from 2009 to 2011 it dropped by 8.21%.

It is difficult to connect the trend in reduction in mineral fertilizers consumption directly with the impact on the quality of the environment. The ultimate effect on the quality of environment depends to a great extent on other factors, such as use of organic fertilizer, yield from crops, soil types, management of agricultural farms, etc.

Methodology

- Methodology for the indicator calculation

Consumption of individual groups of mineral fertilizers as combined mineral fertilizers, nitrogen fertilizers, phosphorous fertilizers, potassium fertilizers, as well as total mineral fertilizers per hectare utilized agricultural area is obtained by dividing the total quantity of consumed group of mineral fertilizers in kg by the total utilized agricultural area presented in ha..

Data specification

Title of the indicator	Source	Reporting obligation
Mineral fertilizer consumption	– Statistical Yearbooks, State Statistical Office	

Data coverage:

Table 1: Mineral fertilizers consumption* (in tons)

	Combined mineral fertilizers	Nitrogen fertilizers	Phosphorous fertilizers	Potassium fertilizers	Total mineral fertilizers
2002					
2003	3.588	6.250	234	2	10.074
2004	3.498	6.217	213	3	9.931
2005	3.488	6.200	211	1	9.900
2006	2.935	6.537	230	44	9.746
2007	2.077	5.293	189	10	7.569
2008	1.820	5.957	1	12	7.790
2009	499	5.242	1	40	5.782
2010	681	3.819	7	3	4.510
2011	1.841	3.117	0	0	4.958

*Data on mineral fertilizers consumption concerns quantity of fertilizers used in agricultural companies and cooperatives

Table 2: Total utilized agricultural area in thousand hectares (ha)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total cultivated agricultural area in thousand ha(agricultural companies and cooperatives)	117	113	101	83	66	60	54	49	43	45

Table 3: Mineral fertilizers consumed per cultivated land area (kg/ha)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
'Total mineral fertilizers used on cultivated land area*	90,34	89,17	98,32	119,99	147,24	127,17	145,24	118,76	104,74	109,00

*Data on mineral fertilizers consumption concerns quantity of fertilizers used in agricultural companies and cooperatives

General metadata

Code	Title of the indicator	Compliancewith CSI/EEA or other indicators		Classification by DPSIR	Type	Linkage with area	Frequency of publication
MKNI 08	Mineral fertilizer consumption	IRENA 08	Mineral fertiliser consumption	D		– Agriculture	Annually

CONSUMPTION OF PESTICIDES

Definition

Plants protection products or pesticides are chemical substances which restrain diseases and pests in plants. Thisindicatorshows the quantities of pesticides used for plants protection, such as fungicides, herbicides, insecticides and category of total including, apart from the mentioned ones, other plant protection products.

Units

- Total quantities of used substances in tones, share of different groups of pesticides, as well as their application per hectare utilized agricultural area (kg/ha).

Policy relevance of the indicator

List of relevant policy documents:

The Second National Environmental Action Plan (NEAP 2) specifies the measure for rationale use of natural resources, as well as controlled use of pesticides, i.e. plant protection products. The same document also specifies the measure for establishment of monitoring and information system for soil, to monitor the pesticides consumption.

Legal grounds

The Law on Agricultural Land specifies the measures for improved agricultural land fertility through undertaking of agro-technical measures, hydro-amelioration, agramelioration and anti-errosion measures.

The Law on Nature Protection specifies the goals of protection, including preservation and recovery of existing biological and landscape diversity in a state of natural balance and prevention of harmful activities and nature disruption.

TheLawonPlantsProtectionregulates the protection of plants against diseases, pests and weeds, as well as use of plant protection products.

The Law on Plant Protection Products regulates approval, placement on the market, use and control of active substances that are products; maximum level of residues, equipment for products application; exchange of information related to products, products production, records keeping of legal and natural persons involved in production and placement of products on the market, conditions for authorization by authorities responsible for implementation, monitoring and control of this law.

The Law on Plant Health regulates the health of plants, measures and obligations concerning occurrence of harmful organisms in plants, plant products and other articles and objects, prevention of their inlet and spread, measures for control, biological measures for plant protection, access to and exchange of information and information system, costs and compensations, responsibilities of competent authorities, authorized services, authorities and bodies in the area of plants health and it also regulates other issues in the area of plants health.

Targets

No specific targets.

Key policy issue

Has the use of pesticides in agriculture increased in quantity?

Key message

Application of pesticides in agriculture, including all-plant protection products, like fungicides, herbicides, insecticides and total quantity shows at rend of reduction in quantity consumed in the period between 2002 and 2008, and then increase again from 2008 to 2011.

The application of fungicides reduced by 2008 by 39.82%, and from 2008 to 2011 it increased by 16.17%. Application of herbicides reduced by 87.67%, application of insecticides reduced by 57.40%, while the total use of pesticides by 2008 in agriculture reduced by 63.67%, and from 2008 to 2011 the total use of pesticides noted gradual increase by 25.84%.

Figure 1.Use of plant protection products

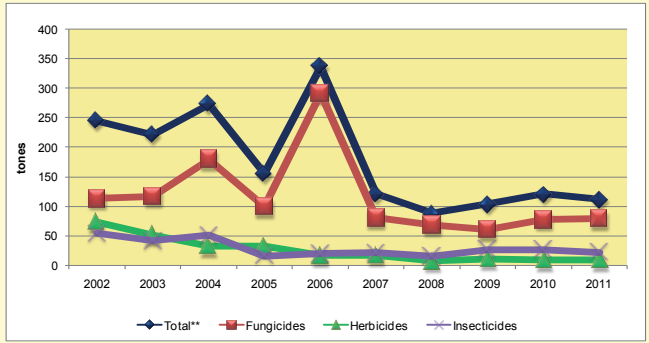


Figure 2.Share of plant protection products in percentage

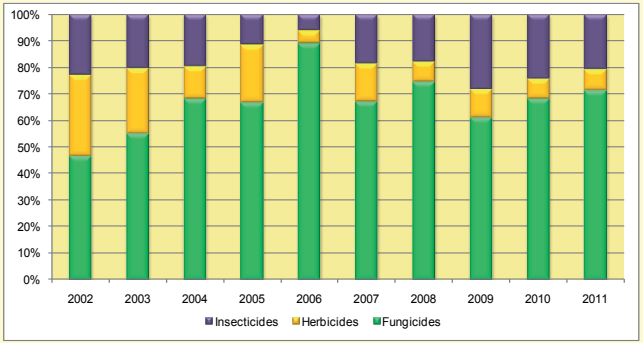
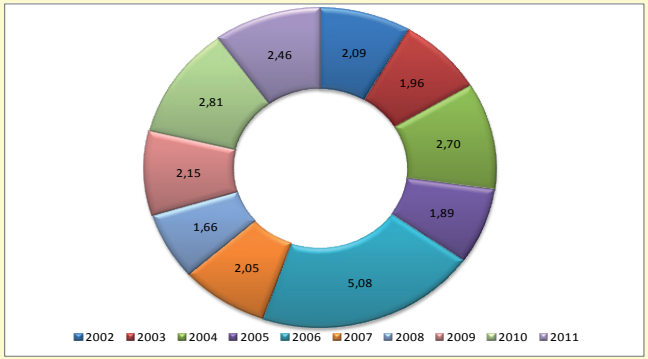


Figure 3.Total plant protection products used on the total cultivable land (kg/ha) (from agricultural companies and agricultural cooperatives)



Assessment

In the period 2002 to 2008, use of pesticides in agriculture dropped from 245 to 89 tons, and then increased again by 2011. With regard to the share of plant protection products, in the period 2002to 2011, fungicides noted highest share. In 2011, fungicides were the most used with 70.53%, then insecticides with 20.53% and herbicides with 8%.

The total amount of plant protection products used on the total cultivable land in agricultural companies and agricultural cooperatives expressed in kg/ha, increased from 2.09 to 2.46 kg/ha, which is an increase by17.70 %.

Methodology

- Methodology for the indicator calculation

The share of different pesticide groups as fungicides, herbicides and insecticides is obtained when the quantity of each group is divided by the total quantity of consumed pesticides, and then the value obtained is multiplied by 100. Theapplicationofindividualgroupperhectareutilized agricultural area isobtained when the total quantity of consumed pesticides expressed in kgis divided by the total utilized agricultural area (agricultural companies and agricultural cooperatives) in

the Republic of Macedonia expressed in ha.

Data specification

Title of the indicator	Source	Reporting obligation
Consumption of pesticides	– Statistical Yearbooks, State Statistical Office	

Data coverage:

Table 1: Total utilized agricultural area in thousand hectares (ha)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total utilized agricultural area in thousand ha (agricultural companies and agricultural cooperatives)	117	113	101	83	66	60	54	49	43	45

Table 2: Consumedplant protection products *

Total**	Fungicides	Herbicides	Insecticides	Инсектициди
2002	245	113	73	54
2003	222	116	52	42
2004	273	179	32	51
2005	156	99	33	17
2006	336	291	16	20
2007	122	80	17	22
2008	89	68	7	16
2009	104	60	11	27
2010	121	77	9	27
2011	112	79	9	23

*Data on consumed plant protection products refer to quantities consumed by agricultural companies and agricultural cooperatives

**The category total, apart from mentioned fungicides, herbicides and insecticides includes other plant protection products as well.

Table 3: Total pesticides consumed per total utilized agricultural area (kg/ha)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total pesticides consumed per total utilized agricultural area (kg/ha)(agricultural companies and agricultural cooperatives)	2,09	1,96	2,70	1,89	5,08	2,05	1,66	2,15	2,81	2,46

General metadata

Code	Title of the indicator	Compliancewith CSI/EEA or other indicators		Classification by DPSIR	Type	Linkage with area	Frequency of publication
MKNI 09	Consumption of pesticides	IRENA 09	Consumption of pesticides	D		– Agriculture	Annually