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Ministria e Bujqësisë, Pylltarisë dhe Zhvillimit Rural
Ministarstvo Poljoprivrede, Šumarstva i Ruralnog Razvoja
Ministry of Agriculture, Forestry and Rural Developement

ECONOMIC CATALOGUE FOR AGRICULTURAL PRODUCTS 2018

February 2019

Economic Catalogue for Agricultural Products 2018

Ministry of Agriculture, Forestry and Rural Development

February, 2019

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Introduction

This Economic Catalogue for Agricultural Products 2018 has been prepared by the Department of Economic Analysis and Agricultural Statistics, which is responsible for processing, analysing and publishing data on the profitability of agricultural crops. The third edition of this catalogue contains data on the cost of production of agriculture crops such as: wheat, corn (with and without irrigation), silage corn (with and without irrigation), apples, strawberries, raspberries, grapes, peppers, onions, tomatoes (in traditional and standard greenhouse) and cucumber (in traditional and standard greenhouse).

Through the data contained in this catalogue, farmers may be notified more regarding the profitability of various crops by considering the basic price or yield, also by applying various scenarios, where, depending on the scenario, gross margins and net income for a certain crop can be reached.

To better analyse business performance and identify fields that need improvement, this catalogue presents price and yield at break-even. When drafting this catalogue, data of individual farmers were used, and meetings with groups of farmers and field experts were held. Prices were obtained from various sources, such as: Kosovo Agency of Statistics, Market Information System, Department of Winery and Vineyards, and in certain cases farmers and field experts were also contacted. The used prices for production cost in this catalogue are prices in the farm, while regarding machinery, in cases when we have fuel costs, the machinery is owned by the owner, while in other cases when the work is performed by someone else, then that is considered as a service. Other data in the catalogue such as key sector indicators, agricultural production and direct payments presented in this publication has been referred to the Kosovo Agency of Statistics and Agency for Agriculture Development.

The catalogue aims at assisting farmers in planning and management of their agriculture activities, by providing detailed information on various agriculture crops.

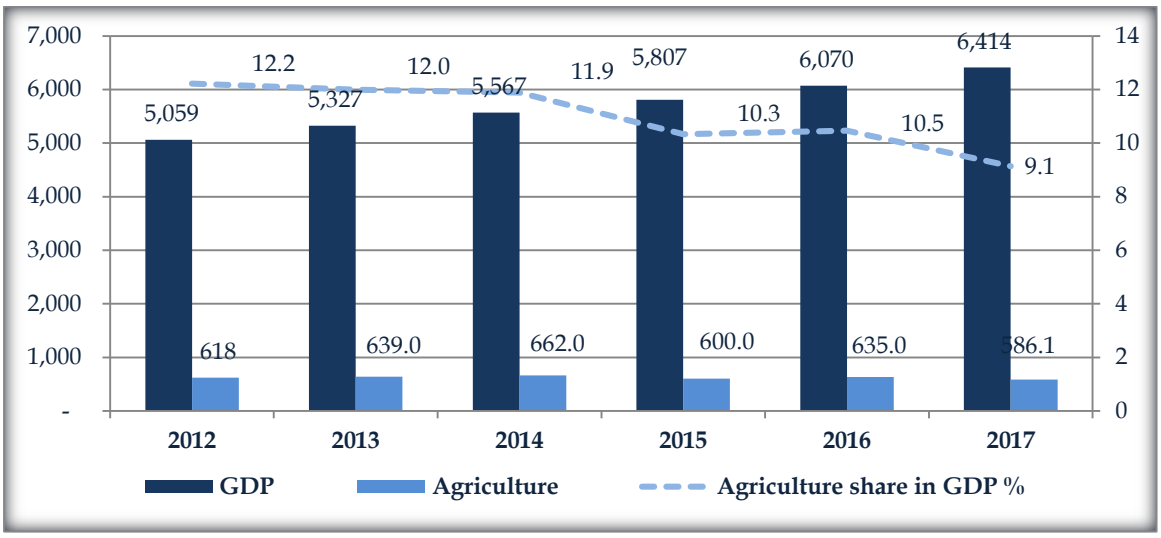
Delvina Hana Bakija

Acting Director of the Department of Economic Analysis and Agricultural Statistics

1 General information

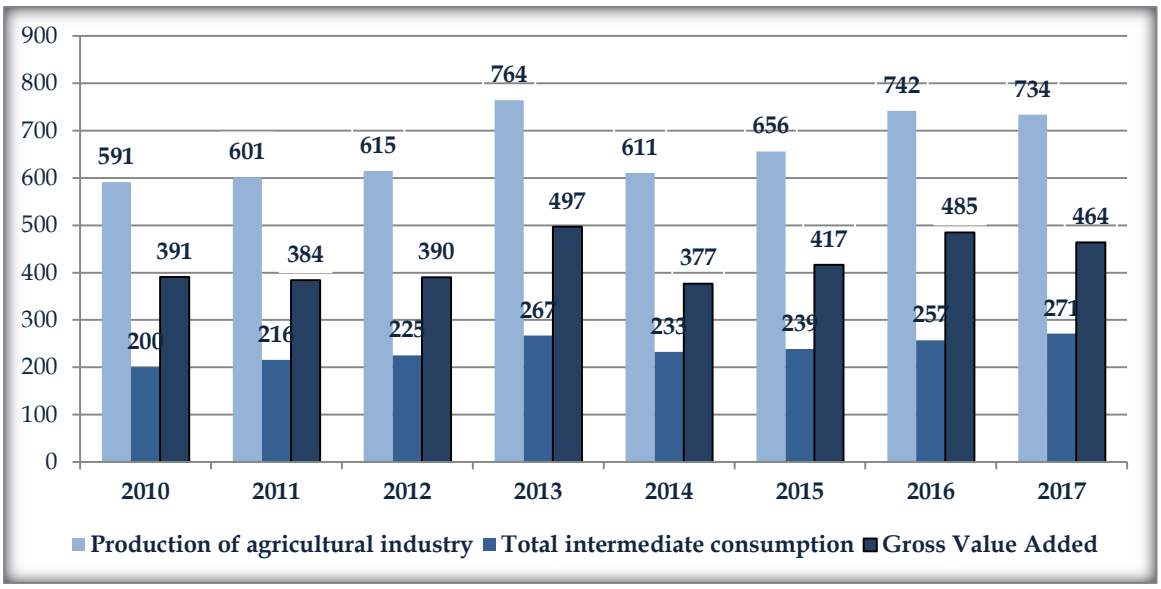
1.1 Key indicators for agriculture sector

Figure 1: The share of agriculture in Gross Domestic Product, 2012-2017



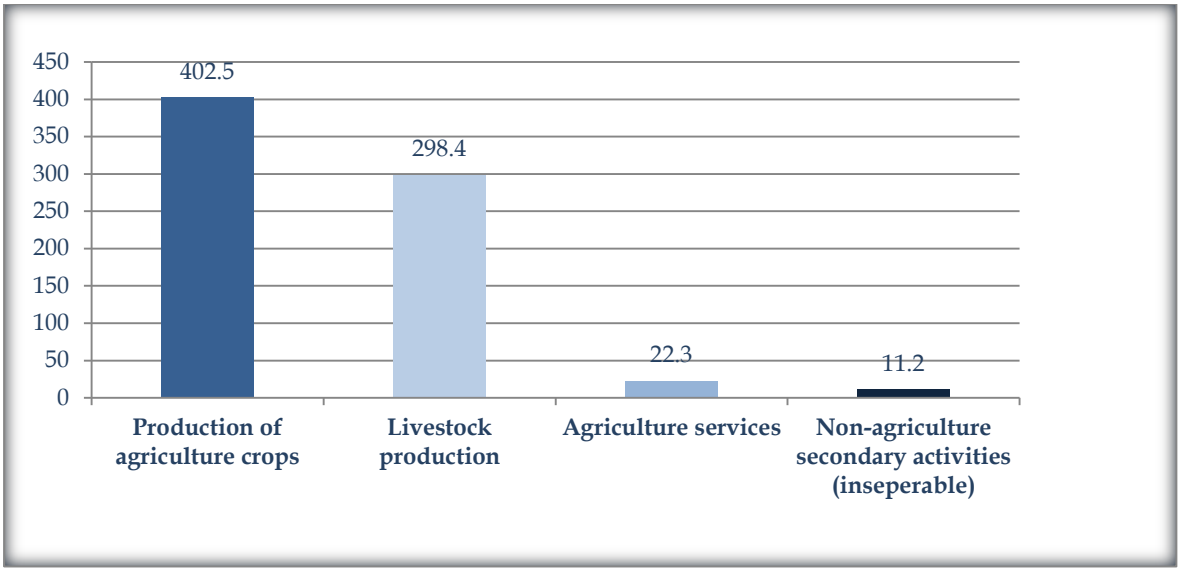
Source: KAS, processing by the DEAAS – MAFRD

Figure 2: Intermediate consumption, agricultural output and gross value added 2010-2017, in € mil.



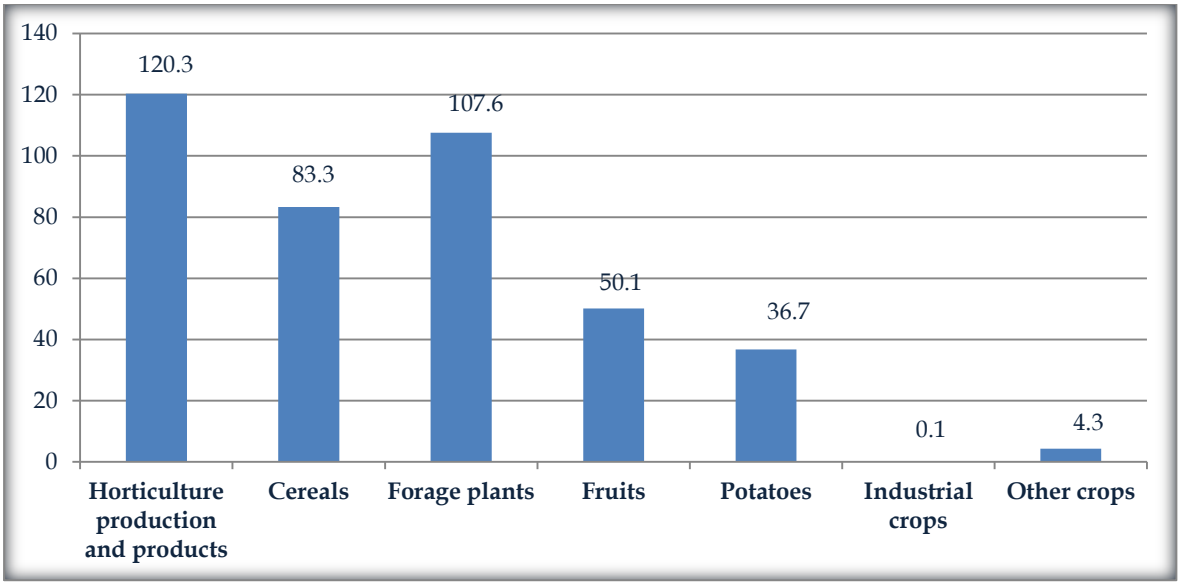
Source: KAS, Economic Accounts for Agriculture 2017, processed by DEAAS - MAFRD

Figure 3: Total production of agricultural industry in € mil., 2017, values at current prices



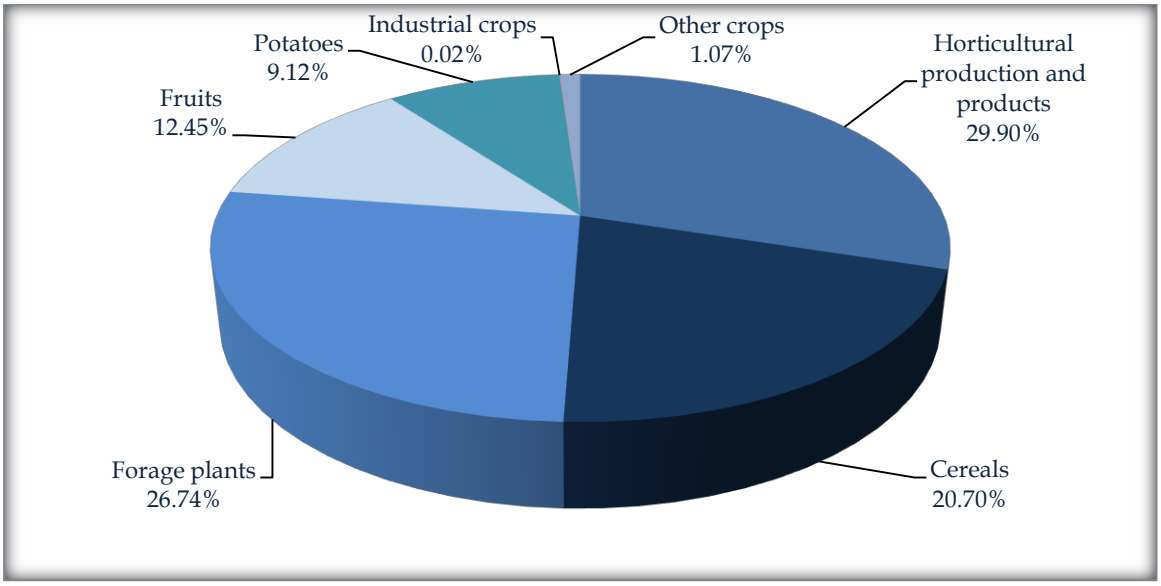
Source: KAS, Economic Accounts for Agriculture 2017, processed by DEAAS - MAFRD

Figure 4: Agriculture crop production by category in € mil, 2017 value at production price



Source: KAS, Economic Accounts for Agriculture 2017, processed by DEAAS – MAFRD

Figure 5: Share of crops by category, 2017



Source: KAS, Economic Accounts for Agriculture 2017, processed by DEAAS - MAFRD

Table 1: Annual price index of agricultural inputs 2015 - 2017 (2015 = 100)

Description	2015	2016	2017	Difference 2017/2016 in %
GOODS AND SERVICES CURRENTLY CONSUMED IN AGRICULTURE (INPUT 1)	100	98.1	95.4	-2.8
SEEDS AND PLANTING MATERIAL	100	98.9	87.2	-11.8
ENERGY; LUBRICANTS	100	93.7	100.9	7.7
Electricity	100	98.8	106.1	7.4
Fuel	100	92.3	100.2	8.6
Lubricant	100	93.8	92.6	-1.3
FERTILIZERS AND SOIL IMPROVERS	100	97.6	89.5	-8.3
Straight fertilizers	100	93.9	87.7	-6.6
Compound fertilizers	100	99.7	90.6	-9.1
PLANT PROTECTION PRODUCTS AND PESTICIDES	100	104.2	103.8	-0.4
VETERINARY EXPENSES	100	98.7	98	-0.7
ANIMAL FEED MATERIAL	100	109.5	103.7	-5.3
Straight food material	100	111.5	103.4	-7.3
Compound food material	100	97.9	104.9	7.2
MAINTENANCE OF MATERIALS	100	100.1	99.9	-0.2
MAINTENANCE OF BUILDINGS	100	98.2	98.8	0.6
OTHER GOODS AND SERVICES	100	100	100.8	0.8
GOODS AND SERVICES CONTRIBUTING TO AGRICULTURAL INVESTMENTS (INPUT 2)	100	102.2	103.2	1
TRACTORS	100	106.9	107.7	0.7
OTHER	100	98.1	99.3	1.2
GENERAL INPUT (INPUT 1 + INPUT 2)	100	100	98.9	-1.1

Source: KAS (Input Price Index and Prices in Agriculture), processed by DEAAS – MAFRD

1.2 Agricultural production and direct payments

1.2.1 Cereals

Table 2: Surface and cereal production, 2012-2017

Crop	2012	2013	2014	2015	2016	2017	Difference 2017/2016 in%
Surface			**ha**				
Cereals	137,215	141,912	131,949	134,886	134,571	120,746	-10
Wheat	102,918	101,846	90,728	89,942	89,122	80,519	-10
Corn	31,181	36,122	35,038	41,492	41,524	35,951	-13
Barley	568	1,363	1,487	1,141	1,196	1,605	34
Rye	253	235	588	396	415	318	-23
Oat	2,294	2,346	3,940	1,790	2,156	2,320	8
Other grain cereals	-	-	168	125	157	33	-79
Production			**t**				
Cereals	438,792	540,136	463,581	443,584	562,899	477,880	-15
Wheat	345,027	391,727	331,296	304,443	365,651	320,136	-12
Corn	86,304	136,633	116,209	131,486	186,592	147,200	-21
Barley	1,808	4,415	4,716	3,061	3,669	4,687	28
Rye	740	571	1,521	809	991	866	-13
Oat	4,913	6,790	9,840	3,415	5,428	4,862	-10
Other grain cereals				371	568	129	-77

Source: KAS – Agricultural Household Survey ('12,'13,'15,'16,'17); Agriculture Census ('14)

Table 3: Direct payments for cereals, 2012-2017

		2012	2013	2014	2015	2016	2017	Difference 2017/2016 in %
Wheat	Number of applicants	9,604	11,758	11,871	11,032	11,864	9,709	-18
	Number of beneficiaries	8,841	10,686	10,579	10,298	11,602	9,216	-21
	Number of ha paid	37,951	46,594	44,442	42,780	50,180	38,542	-23
	Payment per ha	100	125	125	150	150	150	-
	Total amount paid	3,795,094	5,824,268	5,555,218	6,417,047	7,526,999	5,781,300	-23
Wheat seed	Number of applicants	10	27	16	17	25	11	-56
	Number of beneficiaries	10	27	16	11	25	11	-56
	Number of ha paid	250	850	511	344	803	508	-37
	Payment per ha	100	75	210	250	250	250	-
	Total amount paid	25,020	63,720	107,391	86,063	196,678	122,003	-38
Corn	Number of applicants	2,346	3,858	6,134	8,278	7,985	8,598	8
	Number of beneficiaries	2,209	3,626	5,413	7,574	7,763	8,231	6
	Number of ha paid	5,755	9,430	12,687	18,236	19,140	22,077	15
	Payment per ha	100	100	100	150	150	150	-
	Total amount paid	575,459	943,028	1,268,719	2,735,462	2,870,969	3,311,579	15

Source: Agency for Agricultural Development (AAD), processed by DEAAS – MAFRD

1.2.2 Vegetables

Table 4: Surface and vegetable production, 2012-2017

Crop	2012	2013	2014	2015	2016	2017	Difference 2017/2016 in %
Surface				**ha**			
Vegetables	14,557	16,356	15,854	14,656	17,395	15,513	-11
Potatoes	3,198	2,777	3,695	3,353	3,795	4,290	13
Tomatoes	1,271	950	558	791	866	862	0
Peppers	3,153	3,686	2,553	3,090	3,363	3,035	-10
Cucumbers	255	340	193	317	259	305	18
Mellon	847	827	781	781	1,127	1,201	7
Cabbage	568	851	556	594	807	917	14
Onion	881	1,060	1,041	1,079	1,228	1,465	19
Beans	2,954	3,648	3,959	2,945	3,317	3,406	3
Other vegetables	1,430	2,217	2,520	1,706	2,631	32	-99
Production				**t**			
Vegetables	163,146	235,326	221,330	246,096	335,467	301,459	-10
Potatoes	33,407	50,847	64,027	70,678	98,583	118,250	20
Tomatoes	13,693	17,291	17,386	24,333	27,215	24,698	-9
Peppers	50,744	72,928	57,921	55,469	68,849	62,934	-9
Cucumbers	5,239	8,975	5,428	17,365	10,428	10,204	-2
Mellon	17,080	17,641	16,669	17,404	29,997	28,740	-4
Cabbage	13,975	21,924	14,426	16,694	25,957	25,184	-3
Onion	8,601	15,308	12,812	13,795	19,814	22,436	13
Beans	3,723	5,892	5,831	9,018	10,267	8,687	-15
Other vegetables	16,684	24,520	26,831	21,339	44,357	326	-99

Source: KAS - Agricultural Household Survey ('12,'13,'15', 16,'17); Agriculture Census ('14);

Table 5: Direct payments for vegetables in open field, 2015-2017

		2015	2016	2017	Difference 2017/2016 In %
Vegetables in open field	Number of applicants	4,717	5,304	5,716	8
	Number of beneficiaries	4,268	5,188	5,550	7
	Number of ha paid	5,216	6,605	7,481	13
	Payment per ha	300	300	300	0
	Total amount paid	1,564,692	1,981,617	2,244,228	13

Source: Agency for Agricultural Development (AAD), processed by DEAAS – MAFRD

1.2.3 Orchards and Vineyards

Table 6: Surface and production of fruits and vineyards, 2012-2017

Crop	2012	2013	2014	2015	2016	2017	Difference 2017/2016 in %
Surface				ha			%
Fruits	7,082	8,342	6,921	7,998	8,785	8,788	0
Apple	1,725	2,024	1,973	1,972	2,076	2,155	4
Pear	326	561	210	367	416	456	10
Plum	1,404	1,843	699	1,518	1,518	1,524	0
Strawberry	52	148	201	203	175	175	0
Raspberry	0	23	141	324	797	1,231	54
Wine grape	2,517	2,408	2,420	2,321	2,348	2,400	2
Table grape	702	751	781	747	769	799	4
Other fruits	355	584	496	546	686	48	-93
Production				t			%
Fruits	59,633	76,702	45,873	70,096	78,502	47,227	-40
Apple	8,120	16,786	13,519	18,352	27,485	13,159	-52
Pear	1,562	4,259	1,363	3,189	3,966	2,083	-47
Plum	17,514	24,433	7,525	17,543	12,722	7,393	-42
Strawberry	275	465	965	1,498	1,328	1,328	0
Raspberry	1	105	529	1,748	6,250	7,747	24
Wine grape	22,656	20,473	15,101	18,426	16,800	12,177	-28
Table grape	7,026	7,137	4,869	6,996	6,866	3,187	-54
Other fruits	2,479	3,044	2,003	2,344	3,085	153	-95

Source: KAS - Agricultural Household Survey ('12,'13,'15,'16', '17); Census of Agriculture ('14);

Table 7: Direct payments for existing orchards and vineyards, 2014-2017

		2014	2015	2016	2017	Difference 2017/2016 in %
Vineyards	Number of applicants	2,995	2,914	2,980	2,969	0
	Number of beneficiaries	2,995	2,806	2,881	2,909	1
	Number of ha paid	2,435	2,456	2,473	2,508	1
	Payment per ha[1]	1000/300	1000/300	1000/400	1000/500	
	Total amount paid	2,290,783	2,046,167	2,117,978	2,266,235	7
Existing orchards	Number of applicants	-	1,796	2,908	4,358	50
	Number of beneficiaries	-	1,578	2,794	4,110	47
	Number of ha paid	-	1,731	2,780	3,999	44
	Payment per ha	-	400	400	400	
	Total amount paid	-	692,256	1,112,032	1,599,496	44

Source: Agency for Agricultural Development (AAD), processed by DEAAS - MAFRD

[1] Payment per hectare of the grape cultivated area varies depending on the area for which the farmer applies, up to 100 ha, payment is 1,000 €/ha, whereas, for every hectare over 100 ha, payment is lower, respectively as shown in the table.

2 Gross margin and net income

Given the fact that market competition is growing more and more, farmers need to plan and manage their business in order to know all the necessary indicators in terms of their business development.

A sustainable business of every sector, including the agricultural sector, should be based on reference calculations. The use of some reference calculations would help Kosovo producers to assess their position in relation to other producers, but also to see their cost of production in relation to the prices of the same products in the market, in order to make necessary changes so their products can be competitive in the market.

Gross margin enables profitability comparison of different crops that have common characteristics, such as: use of the same quality land and the same cultivation technology. It is an indicator that shows the cost of production used for decision making in the management of the farm. Farmers by taking into consideration gross margin can see on which points they can make changes in order to increase their profitability.

Definition of gross margin is quite simple; it represents the difference between revenues and variable costs. Given that calculation of gross margins does not take into consideration the fixed costs, it cannot be considered as profit, thus, to know the real profitability of agricultural production it is necessary to calculate the net profit.

Net profit gives a clear picture of the revenues that remain to a farmer from agricultural activity, as all costs are calculated, whether those variable, directly linked to the production level, or those fixed, that do not depend on the level of production.

The difference in using gross margin and net profit lies in the fact that in some cases a higher gross margin does not mean that the agricultural production is more profitable compared with other production, this is due to the fact that if for the cultivation of that production is needed more workforce and investment value is very high, despite of a high gross margin, the farmer will generate less net income compared to any agricultural product that has low gross margin, but which has much lower fixed expenditures.

The use of gross margin is very important but it should always be used along with the analysis of other financial indicators.

2.1 Wheat

2.1.1 Gross margin and net income per ha

Table 8: Wheat production cost

1. Calculation of cereals production cost 2018 1.1 Wheat Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Wheat	kg/ha	4,500.00	0.16	720.00
Straw	sheaves/ha	120.00	1.10	132.00
Total income				**852.00**
VARIABLE COSTS				
Inputs				
Seeds	kg/ha	300.00	0.46	138.00
NPK	kg/ha	350.00	0.38	133.00
NAG	kg/ha	350.00	0.30	105.00
Herbicides 1	l/ha	2.00	5.00	10.00
Herbicides 2	ml/ha	150.00	0.08	12.00
Bags	pieces	90.00	0.15	13.50
Total input				**411.50**
Machinery expenditures				
Ploughing	l/diesel	20.00	1.10	22.00
Seed preparation	l/diesel	10.00	1.10	11.00
Planting	l/diesel	8.00	1.10	8.80
Fertilization	l/diesel	8.00	1.10	8.80
Spraying	l/diesel	8.00	1.10	8.80
Harvesting	service	1.00	100.00	100.00
Transport to the stable	l/diesel	8.00	1.10	8.80
Maintenance	flat rate	-	-	75.00
Total machinery expenditures		-	-	**243.20**
Total variable costs				**654.70**
GROSS MARGIN				**197.30**
WORKFORCE				
Harrowing	p/d	1.00	15.00	15.00
Planting	p/d	0.50	15.00	7.50
Fertilization	p/d	0.75	15.00	11.25
Spraying	p/d	0.50	15.00	7.50
Transport to the warehouse	p/d	0.50	15.00	7.50
Total workforce expenditures				**48.75**
GROSS MARGIN BEFORE DEPRECIATION				**148.55**
Depreciation				111.06
NET INCOMES				**37.49**
Subsidies	€/ha			150.00
NET INCOMES + Subsidies				**187.49**

Source: MAFRD-DEAAS

Table 9: The impact of price and yield change in gross margin (wheat)

GROSS MARGIN			-20%	-10%	Scenario with basic yield	10%	20%
			3,600 kg	4,050 kg	4,500 kg	4,950 kg	5,400 kg
			96 sheaves	108 sheaves	120 sheaves	132 sheaves	144 sheaves
-20%	Wheat	0.13 €	-109.42	-41.26	26.90	95.06	163.22
	Straw	0.88 €					
-10%	Wheat	0.14 €	-41.26	35.42	112.10	188.78	265.46
	Straw	0.99 €					
Scenario with basic price	Wheat	0.16 €	26.90	112.10	**197.30**	282.50	367.70
	Straw	1.10 €					
10%	Wheat	0.18 €	95.06	188.78	282.50	376.22	469.94
	Straw	1.21 €					
20%	Wheat	0.19 €	163.22	265.46	367.70	469.94	572.18
	Straw	1.32 €					

Source: MAFRD-DEAAS

Table 10: The impact of price and yield change in net income (wheat)

NET INCOMES			-20%	-10%	Scenario with basic yield	10%	20%
			3,600 kg	4,050 kg	4,500 kg	4,950 kg	5,400 kg
			96 sheaves	108 sheaves	120 sheaves	132 sheaves	144 sheaves
-20%	Wheat	0.13 €	-269.23	-201.07	-132.91	-64.75	3.41
	Straw	0.88 €					
-10%	Wheat	0.14 €	-201.07	-124.39	-47.71	28.97	105.65
	Straw	0.99 €					
Scenario with basic price	Wheat	0.16 €	-132.91	-47.71	**37.49**	122.69	207.89
	Straw	1.10 €					
10%	Wheat	0.18 €	-16.00	77.72	171.44	265.16	358.88
	Straw	1.21 €					
20%	Wheat	0.19 €	3.41	105.65	207.89	310.13	412.37
	Straw	1.32 €					

Source: MAFRD-DEAAS

2.2 Grain corn

2.2.1 Gross margin and net income per ha, grain corn with irrigation

Table 11: Grain corn production cost with application of irrigation

1. Calculation of cereals production cost 2018 1.2.a Grain corn with irrigation Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Grain corn	kg/ha	7,800.00	0.25	1,950.00
Total income				**1,950.00**
VARIABLE COSTS				
Inputs				
Seeds	bags	0.82	23.90	19.60
NPK	kg/ha	325.00	0.38	123.50
Urea	kg/ha	100.00	0.35	35.00
NAG	kg/ha	200.00	0.30	60.00
Herbicides	l/ha	1.00	21.00	21.00
Irrigation	flat rate			100.00
Total input				**359.10**
Machinery expenditures				
Ploughing	l/diesel	20.00	1.10	22.00
Seed preparation	l/diesel	10.00	1.10	11.00
Planting	l/diesel	8.00	1.10	8.80
Fertilization	l/diesel	8.00	1.10	8.80
Spraying	l/diesel	8.00	1.10	8.80
Irrigation	l/diesel	48.00	1.10	52.80
Harvesting	service	1.00	130.00	130.00
Transport to the stable	l/diesel	8.00	1.10	8.80
Maintenance				43.45
Total machinery expenditures				**294.45**
Total variable costs				**653.55**
GROSS MARGIN				**1,296.45**
WORKFORCE				
Harrowing	p/d	1.00	15.00	15.00
Planting	p/d	0.50	15.00	7.50
Fertilization	p/d	0.50	15.00	7.50
Spraying	p/d	0.50	15.00	7.50
Irrigation	p/d	12.00	15.00	180.00
Transport to the stable	p/d	0.50	15.00	7.50
Desiccation	p/d	1.00	15.00	15.00
Total workforce expenditures				**240.00**
GROSS MARGIN BEFORE DEPRECIATION				**1,056.45**
Depreciation				106.19
NET INCOMES				**950.26**
Subsidies	€/ha			150.00
NET INCOMES + Subsidies				**1,100.26**

Source: MAFRD-DEAAS

Table 12: The impact of price and yield change in gross margin (grain corn with irrigation)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		6,240 kg	**7,020 kg**	**7,800 kg**	**8,580 kg**	**9,360 kg**
-20%	**0.20 €**	594.45	750.45	906.45	1,062.45	1,218.45
-10%	**0.23 €**	750.45	925.95	1,101.45	1,276.95	1,452.45
Scenario with basic price	**0.25 €**	906.45	1,101.45	**1,296.45**	1,491.45	1,686.45
10%	**0.28 €**	1,062.45	1,276.95	1,491.45	1,705.95	1,920.45
20%	**0.30 €**	1,218.45	1,452.45	1,686.45	1,920.45	2,154.45

Source: MAFRD-DEAAS

Table 13: The impact of price and yield change in net income (grain corn with irrigation)

NET INCOMES		-20%	-10%	Scenario with basic yield	10%	20%
		6,240 kg	**7,020 kg**	**7,800 kg**	**8,580 kg**	**9,360 kg**
-20%	**0.20 €**	248.26	404.26	560.26	716.26	1,022.26
-10%	**0.23 €**	404.26	579.76	755.26	930.76	1,106.26
Scenario with basic price	**0.25 €**	560.26	755.26	**950.26**	1,145.26	1,340.26
10%	**0.28 €**	716.26	930.76	1,145.26	1,359.76	1,574.26
20%	**0.30 €**	872.26	1,106.26	1,340.26	1,574.26	1,808.26

Source: MAFRD-DEAAS

2.2.2 Gross margin and net income per ha, grain corn without irrigation

Table 14: Grain corn production cost without application of irrigation

1. Calculation of cereals production cost 2018 1.2.b Grain corn without irrigation Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Grain corn	kg/ha	4,600.00	0.25	1,150.00
Total income				**1,150.00**
VARIABLE COSTS				
Inputs				
Seeds	bags	0.82	23.90	19.60
NPK	kg/ha	325.00	0.38	123.50
Urea	kg/ha	100.00	0.35	35.00
NAG	kg/ha	200.00	0.30	60.00
Herbicides	l/ha	1.00	21.00	21.00
Irrigation	flat rate			
Total input				**259.10**
Machinery expenditures				
Ploughing	l/diesel	20.00	1.10	22.00
Seed preparation	l/diesel	10.00	1.10	11.00
Planting	l/diesel	8.00	1.10	8.80
Fertilization	l/diesel	8.00	1.10	8.80
Spraying	l/diesel	8.00	1.10	8.80
Irrigation	l/diesel			
Harvesting	service	1.00	130.00	130.00
Transport to the stable	l/diesel	8.00	1.10	8.80
Maintenance				18.45
Total machinery expenditures				**216.65**
Total variable costs				**475.75**
GROSS MARGIN				**674.25**
WORKFORCE				
Harrowing	p/d	1.00	15.00	15.00
Planting	p/d	0.50	15.00	7.50
Fertilization	p/d	0.50	15.00	7.50
Spraying	p/d	0.50	15.00	7.50
Transport to the stable	p/d	0.50	15.00	7.50
Desiccation	p/d	1.00	15.00	15.00
Total workforce expenditures		**4.00**		**60.00**
GROSS MARGIN BEFORE DEPRECIATION				**614.25**
Depreciation				98.19
NET INCOMES				**516.06**
Subsidies	€/ha			150.00
NET INCOMES + Subsidies				**666.06**

Source: MAFRD-DEAAS

Table 15: The impact of price and yield change in gross margin (grain corn without irrigation)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		3,680 kg	**4,140 kg**	**4,600 kg**	**5,060 kg**	**5,520 kg**
-20%	**0.20 €**	260.25	352.25	444.25	536.25	628.25
-10%	**0.23 €**	352.25	455.75	559.25	662.75	766.25
Scenario with basic price	**0.25 €**	444.25	559.25	**674.25**	789.25	904.25
10%	**0.28 €**	536.25	662.75	789.25	915.75	1,042.25
20%	**0.30 €**	628.25	766.25	904.25	1,042.25	1,180.25

Source: MAFRD-DEAAS

Table 16: The impact of price and yield change in net income (grain corn without irrigation)

NET INCOMES		-20%	-10%	Scenario with basic yield	10%	20%
		3,680 kg	**4,140 kg**	**4,600 kg**	**5,060 kg**	**5,520 kg**
-20%	**0.20 €**	102.06	194.06	286.06	378.06	470.06
-10%	**0.23 €**	194.06	297.56	401.06	504.56	608.06
Scenario with basic price	**0.25 €**	286.06	401.06	**516.06**	631.06	746.06
10%	**0.28 €**	378.06	504.56	631.06	757.56	884.06
20%	**0.30 €**	470.06	608.06	746.06	884.06	1,022.06

Source: MAFRD-DEAAS

2.3 Corn silage

2.3.1 Gross margin and net income per ha, corn silage with irrigation

Table 17: Corn silage production cost with application of irrigation

1. Calculation of cereals production cost 2018 1.2.c Corn silage with irrigation Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Corn silage	kg/ha	46,000.00	0.10	4,600.00
Total income				**4,600.00**
VARIABLE COSTS				
Inputs				
Seeds	bags	2.50	23.90	59.75
NPK	kg/ha	325.00	0.38	123.50
Urea	kg/ha	100.00	0.35	35.00
NAG	kg/ha	200.00	0.30	60.00
Herbicides	l/ha	1.50	21.00	31.50
Plastic foil	flat rate			20.00
Irrigation	flat rate			100.00
Total input				**429.75**
Machinery expenditures				
Ploughing	l/diesel	20.00	1.10	22.00
Seed preparation	l/diesel	10.00	1.10	11.00
Planting	l/diesel	8.00	1.10	8.80
Fertilization	l/diesel	8.00	1.10	8.80
Spraying	l/diesel	8.00	1.10	8.80
Irrigation	l/diesel	48.00	1.10	52.80
Harvesting	service	1.00	120.00	120.00
Transport to the stable	service	1.00	40.00	40.00
Maintenance	flat rate			42.12
Total machinery expenditures				**314.32**
Total variable costs				**744.07**
GROSS MARGIN				**3,855.93**
WORKFORCE				
Harrowing	p/d	0.50	15.00	7.50
Planting	p/d	0.25	15.00	3.75
Fertilization	p/d	0.50	15.00	7.50
Spraying	p/d	0.25	15.00	3.75
Irrigation	p/d	12.00	15.00	180.00
Desiccation	p/d	2.00	15.00	30.00
Total workforce expenditures				**232.50**
GROSS MARGIN BEFORE DEPRECIATION				**3,623.43**
Depreciation				151.19
NET INCOMES				**3,472.24**
Subsidies	€/ha			150.00
NET INCOMES + Subsidies				**3,622.24**

Source: MAFRD-DEAAS

Table 18: The impact of price and yield change in gross margin (corn silage with irrigation)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		36,800 kg	**41,400 kg**	**46,000 kg**	**50,600 kg**	**55,200 kg**
-20%	**0.08 €**	2,199.93	2,567.93	2,935.93	3,303.93	3,671.93
-10%	**0.09 €**	2,567.93	2,981.93	3,395.93	3,809.93	4,223.93
Scenario with basic price	**0.10 €**	2,935.93	3,395.93	**3,855.93**	4,315.93	4,775.93
10%	**0.11 €**	3,303.93	3,809.93	4,315.93	4,821.93	5,327.93
20%	**0.12 €**	3,671.93	4,223.93	4,775.93	5,327.93	5,879.93

Source: MAFRD-DEAAS

Table 19: The impact of price and yield change in net income (corn silage with irrigation)

NET INCOMES		-20%	-10%	Scenario with basic yield	10%	20%
		36,800 kg	**41,400 kg**	**46,000 kg**	**50,600 kg**	**55,200 kg**
-20%	**0.08 €**	1,816.24	2,184.24	2,552.24	2,920.24	3,288.24
-10%	**0.09 €**	2,184.24	2,598.24	3,012.24	3,426.24	3,840.24
Scenario with basic price	**0.10 €**	2,552.24	3,012.24	**3,472.24**	3,932.24	4,392.24
10%	**0.11 €**	2,920.24	3,426.24	3,932.24	4,438.24	4,944.24
20%	**0.12 €**	3,288.24	3,840.24	4,392.24	4,944.24	5,496.24

Source: MAFRD-DEAAS

2.3.2 Gross margin and net income per ha, corn silage without irrigation

Table 20: Corn silage production cost without application of irrigation

1. Calculation of cereals production cost 2018 1.2.d Corn silage without irrigation Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Corn silage	kg/ha	35,000.00	0.10	3,500.00
Total income				**3,500.00**
VARIABLE COSTS				
Inputs				
Seeds	bags	2.50	23.90	59.75
NPK	kg/ha	325.00	0.38	123.50
Urea	kg/ha	100.00	0.35	35.00
NAG	kg/ha	200.00	0.30	60.00
Herbicides	l/ha	1.50	21.00	31.50
Plastic foil	flat rate			20.00
Total input				**329.75**
Machinery expenditures				
Ploughing	l/diesel	20.00	1.10	22.00
Seed preparation	l/diesel	10.00	1.10	11.00
Planting	l/diesel	8.00	1.10	8.80
Fertilization	l/diesel	8.00	1.10	8.80
Spraying	l/diesel	8.00	1.10	8.80
Harvesting	service	1.00	120.00	120.00
Transport to the stable	service	1.00	40.00	40.00
Maintenance	flat rate			17.45
Total machinery expenditures				**236.85**
Total variable costs				**566.60**
GROSS MARGIN				**2,933.40**
WORKFORCE				
Harrowing	p/d	0.50	15.00	7.50
Planting	p/d	0.25	15.00	3.75
Fertilization	p/d	0.50	15.00	7.50
Spraying	p/d	0.25	15.00	3.75
Desiccation	p/d	2.00	15.00	30.00
Total workforce expenditures				**52.50**
GROSS MARGIN BEFORE DEPRECIATION				**2,880.90**
Depreciation				**143.19**
NET INCOMES				**2,737.71**
Subsidies	€/ha			**150.00**
NET INCOMES + Subsidies				**2,887.71**

Source: MAFRD-DEAAS

Table 21: The impact of price and yield change in gross margin (corn silage without irrigation)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		28,000 kg	31,500 kg	35,000 kg	38,500 kg	42,000 kg
-20%	0.08 €	1,673.40	1,953.40	2,233.40	2,513.40	2,793.40
-10%	0.09 €	1,953.40	2,268.40	2,583.40	2,898.40	3,213.40
Scenario with basic price	0.10 €	2,233.40	2,583.40	**2,933.40**	3,283.40	3,633.40
10%	0.11 €	2,513.40	2,898.40	3,283.40	3,668.40	4,053.40
20%	0.12 €	2,793.40	3,213.40	3,633.40	4,053.40	4,473.40

Source: MAFRD-DEAAS

Table 22: The impact of price and yield change in net income (corn silage without irrigation)

NET INCOMES		-20%	-10%	Scenario with basic yield	10%	20%
		28,000 kg	31,500 kg	35,000 kg	38,500 kg	42,000 kg
-20%	0.08 €	1,477.71	1,757.71	2,037.71	2,317.71	2,597.71
-10%	0.09 €	1,757.71	2,072.71	2,387.71	2,702.71	3,017.71
Scenario with basic price	0.10 €	2,037.71	2,387.71	**2,737.71**	3,087.71	3,437.71
10%	0.11 €	2,317.71	2,702.71	3,087.71	3,472.71	3,857.71
20%	0.12 €	2,597.71	3,017.71	3,437.71	3,857.71	4,277.71

Source: MAFRD-DEAAS

2.4 Apple

2.4.1 Gross margin and net income per ha

Table 23: Apple production cost

2. Calculation of perennial crops production cost 2018 2.1 Apple Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Apple	kg/ha	30,000.00[2]	0.40	12,000.00
Total incomes				12,000.00
VARIABLE COSTS				
Inputs				
Organic fertilizer	t/ha	60.00	5.50	330.00
Mineral fertilizer	kg/ha	825.00	0.50	412.50
Pesticides	kg/ha	14.00	50.00	700.00
Other expenditures	flat rate			50.00
Total inputs				1,492.50
Machinery expenditures				
Cultivations	service	3.00	30.00	90.00
Spraying (6 times)	service	6.00	30.00	180.00
Other works	flat rate			100.00
Total machinery expenditures				370.00
Marketing expenditures				
Boxes	piece	1,500.00	0.40	600.00
Transport	service	10.00	50.00	500.00
Total marketing expenditures				**1,100.00**
Total variable expenditures				**2,962.50**
GROSS MARGIN				**9,037.50**
WORKFORCE				
Pruning	piece per tree	1,600.00	1.00	1,600.00
Organic fertilizer	p/d	8.00	15.00	120.00
Fertilization	p/d	2.00	15.00	30.00
Irrigation	p/d	2.00	15.00	30.00
Spraying	p/d	14.00	15.00	210.00
Weed removal	p/d	6.00	15.00	90.00
Picking	p/d	60.00	15.00	900.00
Other Works	p/d	2.00	15.00	30.00
Total workforce expenditures				**3,010.00**
GROSS MARGIN BEFORE DEPRICIATION				**6,027.50**
Depreciation				640.32
NET INCOME				**5,387.18**
Subsidies	€/ha			400.00
NET INCOME + Subsidies				**5,787.18**

Source: MAFRD - DEAAS

[2] The yield of 30,000 kg/ha, refers to 2018, as this document is published on an annual basis and reflects the state of all inputs for a given calendar year, the changes may vary from year to year depending on the circumstances.

Table 24: The impact of price and yield change in gross margin (apple)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		24,000 kg	**27,000 kg**	**30,000 kg**	**33,000 kg**	**36,000 kg**
-20%	**0.32 €**	4,937.50	5,737.50	6,637.50	7,437.50	8,337.50
-10%	**0.36 €**	5,897.50	6,817.50	7,837.50	8,757.50	9,777.50
Scenario with basic price	**0.40 €**	6,857.50	7,897.50	**9,037.50**	10,077.50	11,217.50
10%	**0.44 €**	7,817.50	8,977.50	10,237.50	11,397.50	12,657.50
20%	**0.48 €**	8,777.50	10,057.50	11,437.50	12,717.50	14,097.50

Source: MAFRD - DEAAS

Table 25: The impact of price and yield change in net income (apple)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		24,000 kg	**27,000 kg**	**30,000 kg**	**33,000 kg**	**36,000 kg**
-20%	**0.32 €**	1,467.18	2,177.18	2,987.18	3,697.18	4,507.18
-10%	**0.36 €**	2,427.18	3,257.18	4,187.18	5,017.18	5,947.18
Scenario with basic price	**0.40 €**	3,387.18	4,337.18	**5,387.18**	6,337.18	7,387.18
10%	**0.44 €**	4,347.18	5,417.18	6,587.18	7,657.18	8,827.18
20%	**0.48 €**	5,307.18	6,497.18	7,787.18	8,977.18	10,267.18

Source: MAFRD - DEAAS

2.5 Strawberry

2.5.1 Gross margin and net income per 10 Ares

Table 26: Strawberry production cost

2. Calculation of perennial crops production cost 2018 2.2 Strawberry in open field Area 10 Ares, average for three years				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Strawberry	kg	2,666.67	1.70	4,533.33
Total incomes				**4,533.33**
VARIABLE COSTS				
Inputs				
Fungicides	ml	300.00	0.01	2.40
Insecticides	ml	400.00	0.03	12.00
Cristal fertilizers	bags	2.00	33.00	66.00
Fuel	l/diesel	11.67	1.10	12.83
Total inputs				**93.23**
Marketing expenditures				
Primary packaging - crates	piece	592.59	0.38	225.19
Boxes - baskets 0.5 kg	piece	5,333.33	0.06	320.00
Transport	l/diesel	120.00	1.10	132.00
Total marketing expenditures				**677.19**
Total variable expenditures				**770.42**
GROSS MARGIN				**3,762.91**
WORKFORCE				
Cleaning of old leaves and pruning	p/d	1.33	15.00	20.00
Protection against diseases and pests	p/d	0.25	15.00	3.75
Mechanical elimination of weeds from strawberry holes	p/d	2.00	15.00	30.00
Drip irrigation	p/d	1.00	15.00	15.00
Picking	p/d	21.50	15.00	322.50
Transport	p/d	11.25	15.00	168.75
Total workforce expenditures				**560.00**
GROSS MARGIN BEFORE DEPRECIATION				**3,202.91**
Depreciation				444.92
NET INCOMES				**2,757.99**

Source: MAFRD-DEAAS

Table 27: The impact of price and yield change in gross margin (strawberry)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		2,133 kg	**2,400 kg**	**2,667 kg**	**2,933 kg**	**3,200 kg**
-20%	**1.36 €**	2,239.95	2,548.10	2,856.25	3,164.40	3,472.54
-10%	**1.53 €**	2,602.62	2,956.10	3,309.58	3,663.06	4,016.54
Scenario with basic price	**1.70 €**	2,965.29	3,364.10	**3,762.91**	4,161.73	4,560.54
10%	**1.87 €**	3,327.95	3,772.10	4,216.25	4,660.40	5,104.54
20%	**2.04 €**	3,690.62	4,180.10	4,669.58	5,159.06	5,648.54

Source: MAFRD-DEAAS

Table 28: The impact of price and yield change in net income (strawberry)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		2,133 kg	**2,400 kg**	**2,667 kg**	**2,933 kg**	**3,200 kg**
-20%	**1.36 €**	1,299.53	1,575.43	1,851.33	2,127.22	2,403.12
-10%	**1.53 €**	1,662.20	1,983.43	2,304.66	2,625.89	2,947.12
Scenario with basic price	**1.70 €**	2,024.86	2,391.43	**2,757.99**	3,124.56	3,491.12
10%	**1.87 €**	2,387.53	2,799.43	3,211.33	3,623.22	4,035.12
20%	**2.04 €**	2,750.20	3,207.43	3,664.66	4,121.89	4,579.12

Source: MAFRD-DEAAS

2.6 Raspberry

2.6.1 Gross margin and net income per ha

Table 29: Raspberry production cost

2. Calculation of perennial crops production cost 2018 2.3 Raspberry in open field Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Raspberries on the market	kg	150.00	1.35	202.50
Raspberries at collection point	kg	2,850.00[3]	0.75	2,137.50
Total incomes				**2,340.00**
VARIABLE COSTS				
Inputs				
Organic fertilizer	tons	40.00	20.00	800
Mineral fertilizer NPK	kg	250.00	0.38	95
Irrigation	flat rate			100
Protective preparations	flat rate			200
Foliar fertilizer (2 times)	flat rate			200
Crystalline fertilizer	flat rate			250
Plastic baskets	piece	600	0.07	42
Total inputs				**1,687.00**
Machinery expenditures				
Transport	flat rate			150.00
Total machinery expenditures				**150.00**
Total variable expenditures				**1,873.00**
GROSS MARGIN				**503.00**
WORKFORCE				
Ploughing (2 times)	p/d	50.00	15.00	750.00
Mowing the grass between rows	p/d	4.00	15.00	60.00
Irrigation	p/d	7.50	15.00	112.50
Picking	kg	3000	0.3	900.00
Transport to the collection point	p/d	11.25	15.00	168.75
Pruning	p/d	10.00	15.00	150.00
Total labour force expenditures				**2,141.25**
GROSS MARGIN BEFORE DEPRECIATION				**-1,638.25**
Depreciation				830.77
NET INCOMES				**-2,469.02**
Subsidies	€/ha			400.00
NET INCOMES + Subsidies				**-2,069.02**

Source: DEAAS – MAFRD

[3] Low raspberry yield for 2018 comes as a result of climatic conditions, high precipitation during vegetation. Under normal conditions, the Polka variety raspberry reaches a yield of 12,000 kg in a full year of production, and in such situation, if we refer to the prices presented on the table above, 1,700 € net income can be generated, excluding subsidies.

Table 30: The impact of price and yield change in gross margin (raspberry)

GROSS MARGIN			-20%	-10%	Scenario with basic yield	10%	20%
			2,400 kg	2,700 kg	3,000 kg	3,300 kg	3,600 kg
-20%	Raspberries on the market	1.08 €	-331.00	-148.00	35.00	218.00	401.00
	Raspberries at collection point	0.60 €					
-10%	Raspberries on the market	1.22 €	-143.80	62.60	269.00	475.40	681.80
	Raspberries at collection point	0.68 €					
Scenario with basic price	Raspberries on the market	1.35 €	43.40	273.20	**503.00**	732.80	962.60
	Raspberries at collection point	0.75 €					
10%	Raspberries on the market	1.49 €	230.60	483.80	737.00	990.20	1,243.40
	Raspberries at collection point	0.83 €					
20%	Raspberries on the market	1.62 €	417.80	694.40	971.00	1,247.60	1,524.20
	Raspberries at collection point	0.90 €					

Source: MAFRD-DEAAS

Table 31: The impact of price and yield change in net income (raspberry)

NET INCOME			-20%	-10%	Scenario with basic yield	10%	20%
			2,400 kg	2,700 kg	3,000 kg	3,300 kg	3,600 kg
-20%	Raspberries on the market	1.08 €	-3,123.02	- 3,030.02	- 2,937.02	- 2,844.02	-2,751.02
	Raspberries at collection point	0.60 €					
-10%	Raspberries on the market	1.22 €	-2,935.82	-2,819.42	-2,703.02	-2,586.62	-2,470.22
	Raspberries at collection point	0.68 €					
Scenario with basic price	Raspberries on the market	1.35 €	-2,748.62	-2,608.82	**-2,469.02**	-2,329.22	-2,189.42
	Raspberries at collection point	0.75 €					
10%	Raspberries on the market	1.49 €	-2,739.62	-2,598.69	- 2,457.77	-2,316.84	-2,175.92
	Raspberries at collection point	0.83 €					
20%	Raspberries on the market	1.62 €	-2,568.62	-2,406.32	-2,244.02	-2,081.72	-1,919.42
	Raspberries at collection point	0.90 €					

Source: MAFRD-DEAAS

2.7 Grape

2.7.1 Gross margin and net income per ha

Table 32: Table grape production cost

2. Calculation of perennial crops production cost 2018 2.4 Table grape Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Grape	kg	12,500.00	0.66	8,250.00
Total incomes				**8,250.00**
VARIABLE COSTS				
Inputs				
Strings	kg	6.50	6.15	39.98
NPK 5:20:30	kg	500.00	0.38	190.00
NAG	kg	200.00	0.30	60.00
Foliar fertilizer	kg	2.00	12.00	24.00
Preparations for protection	kg	25.30	50.00	1,265.00
Other expenditures	flat rate			20.00
Total inputs				**1,598.98**
Machinery expenditures				
Spring ploughing	service	1.00	110.00	110.00
Autumn ploughing	service	1.00	150.00	150.00
Cultivations (3 times)	service	3.00	80.00	240.00
Fertilization NPK	service	1.00	40.00	40.00
Supplemental fertilization NAG	service	1.00	30.00	30.00
Spraying (6 times)	service	6.00	25.00	150.00
Other works	service	15.00	60.00	900.00
Total machinery expenditures				**1,620.00**
Total variable expenditures				**3,218.98**
GROSS MARGIN				**5,031.03**
WORKFORCE				
Pruning	p/d	8.00	15.00	120.00
Cleaning of vines	p/d	3.00	15.00	45.00
System maintenance	p/d	1.00	15.00	15.00
Grape vine netting	p/d	6.00	15.00	90.00
Ploughing and harrowing (2 times)	p/d	8.00	15.00	120.00
Weed removal (2times)	p/d	6.00	15.00	90.00
Re netting (2 times)	p/d	4.00	15.00	60.00
Spraying	p/d	1.00	15.00	15.00
Harvesting	p/d	26.00	15.00	390.00
Transport of grape	p/d	4.00	15.00	60.00
Total workforce expenditures				**1,005.00**
GROSS MARGIN BEFORE DEPRECIATION				**4,026.03**
Depreciation				667.87
NET INCOMES				**3,358.16**

Subsidies (option 1)	€/ha	1,000.00
Subsidies (option2)	€/ha	300.00
NET INCOMES + Subsidies (option 1)		**4,358.16**
NET INCOMES + Subsidies (option 2)		**3,658.16**

Source: MAFRD-DEAAS

Table 33: The impact of price and yield change in gross margin (table grape)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		10,000 kg	**11,250 kg**	**12,500 kg**	**13,750 kg**	**15,000 kg**
-20%	**0.53 €**	2,061.03	2,721.03	3,381.03	4,041.03	4,701.03
-10%	**0.59 €**	2,721.03	3,463.53	4,206.03	4,948.53	5,691.03
Scenario with basic price	**0.66 €**	3,381.03	4,206.03	**5,031.03**	5,856.03	6,681.03
10%	**0.73 €**	4,041.03	4,948.53	5,856.03	6,763.53	7,671.03
20%	**0.79 €**	4,701.03	5,691.03	6,681.03	7,671.03	8,661.03

Source: MAFRD-DEAAS

Table 34: The impact of price and yield change in net income (table grape)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		10,000 kg	**11,250 kg**	**12,500 kg**	**13,750 kg**	**15,000 kg**
-20%	**0.53 €**	478.16	1,093.16	1,708.16	2,323.16	2,938.16
-10%	**0.59 €**	1,138.16	1,835.66	2,533.16	3,230.66	3,928.16
Scenario with basic price	**0.66 €**	1,798.16	2,578.16	**3,358.16**	4,138.16	4,918.16
10%	**0.73 €**	2,458.16	3,320.66	4,183.16	5,045.66	5,908.16
20%	**0.79 €**	3,118.16	4,063.16	5,008.16	5,953.16	6,898.16

Source: MAFRD-DEAAS

2.8 Pepper

2.8.1 Gross margin and net income per ha

Table 35: Pepper production cost

3. Calculation of vegetable production cost 2018 3.1 Pepper in open field (red pepper) Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Pepper	kg	32,000.00	0.40	12,800.00
Total incomes				**12,800.00**
VARIABLE COSTS				
Inputs				
Seedlings	piece	70,000.00	0.01	806.00
Organic fertilizer	kg	50,000.00	0.01	500.00
NPK 15:15:15	kg	1,000.00	0.38	380.00
Foliar fertilizer (vuksall)	litre	3.00	5.00	15.00
Fungicides	kg	4.50	18.00	81.00
Insecticides	litre	1.00	40.00	40.00
Herbicides	litre	4.00	8.00	32.00
Water	ha	1.00	150.00	150.00
Bags	piece	1,920.00	0.05	96.00
Boxes	piece	1,600.00	0.25	400.00
Total inputs				**2,500.00**
Machinery expenditures				
Fertilization	litre	40.00	1.10	44.00
Ploughing	litre	40.00	1.10	44.00
Tilling x 2	litre	40.00	1.10	44.00
Harrowing	litre	10.00	1.10	11.00
Works between rows with tiller	litre	30.00	1.10	33.00
Spraying	litre	5.00	1.10	5.10
Transport from the field to market	flat rate			300.00
Transport from the field to collecting point	flat rate			100.00
Maintenance	flat rate			150.00
Total machinery expenditures				**731.50**
Total variable expenditures				**3,231.50**
GROSS MARGIN				**9,568.50**
WORKFORCE				
Fertilization	p/d	10.00	15.00	150.00
Ploughing	p/d	1.00	15.00	15.00
Tilling and harrowing	p/d	1.50	15.00	22.50
Planting	p/d	30.00	15.00	450.00
Spraying	p/d	3.50	15.00	52.50
Irrigation	p/d	15.00	15.00	225.00
Harvesting (seasonal workers)	p/d	45.00	15.00	675.00
Transport to the market	p/d	15.00	15.00	225.00

Total workforce expenditures		**1,815.00**
GROSS MARGIN BEFORE DEPRECIATION		**7,753.50**
Depreciation		200.00
NET INCOME		**7,553.50**
Subsidies	€/ha	300.00
NET INCOMES + Subsidies		**7,853.50**

Source: MAFRD-DEAAS

Table 36: The impact of price and yield change in gross margin (peppers)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		25,600 kg	**28,800 kg**	**32,000 kg**	**35,200 kg**	**38,400 kg**
-20%	**0.32 €**	5,059.70	6,034.10	7,008.50	7,982.90	8,957.30
-10%	**0.36 €**	6,083.70	7,186.10	8,288.50	9,390.90	10,493.30
Scenario with basic price	**0.40 €**	7,107.70	8,338.10	**9,568.50**	10,798.90	12,029.30
10%	**0.44 €**	8,131.70	9,490.10	10,848.50	12,206.90	13,565.30
20%	**0.48 €**	9,155.70	10,642.10	12,128.50	13,614.90	15,101.30

Source: MAFRD-DEAAS

Table 37: The impact of price and yield change in net income (peppers)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		25,600 kg	**28,800 kg**	**32,000 kg**	**35,200 kg**	**38,400 kg**
-20%	**0.32 €**	3,224.70	4,109.10	4,993.50	5,877.90	6,762.30
-10%	**0.36 €**	4,248.70	5,261.10	6,273.50	7,285.90	8,298.30
Scenario with basic price	**0.40 €**	5,272.70	6,413.10	**7,553.50**	8,693.90	9,834.30
10%	**0.44 €**	6,296.70	7,565.10	8,833.50	10,101.90	11,370.30
20%	**0.48 €**	7,320.70	8,717.10	10,113.50	11,509.90	12,906.30

Source: MAFRD-DEAAS

2.9 Onion

2.9.1 Gross margin and net income per ha

Table 38: Onion production cost

3. Calculation of vegetable production cost, 2018 3.2 Onion in open field Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Onion	kg	20,000.00[4]	0.44	8,800.00
Total incomes				**8,800.00**
VARIABLE COSTS				
Inputs				
Scallion	kg	600.00	1.70	1,020.00
NPK 15:15:15	kg	800.00	0.38	304.00
NAG	kg	400.00	0.30	120.00
Total fungicides	kg			180.00
Total insecticides	litre	6.00	8.00	48.00
Total herbicides	litre	4.00	8.00	32.00
Water	ha	1.00	150.00	150.00
Box	piece	2,000.00	0.05	100.00
Total inputs				**1,954.00**
Machinery expenditures				
Ploughing	litre	40.00	1.10	44.00
Tilling x 2	litre	60.00	1.10	66.00
Harrowing	litre	10.00	1.10	11.00
Planting	operations	1.00	140.00	140.00
Transport from the field to market	litre	300.00	1.10	330.00
Maintenance	flat rate			150.00
Total machinery expenditures				**741.00**
Total variable expenditures				**2,695.00**
GROSS MARGIN				**6,105.00**
WORKFORCE				
Ploughing	p/d	0.50	15.00	7.50
Tilling and harrowing	p/d	1.00	15.00	15.00
Spraying	p/d	2.36	15.00	39.38
Irrigation	p/d	12.00	15.00	180.00
Harvesting (seasonal workers)	p/d	50.00	15.00	750.00
Transport to the market	p/d	7.00	15.00	105.00
Total workforce expenditures				**1,096.88**
GROSS MARGIN BEFORE DEPRECIATION				**5,885.63**
Depreciation				200.00
NET INCOME				**4,808.13**
Subsidies	€/ha			300.00
NET INCOME + Subsidies				**5,108.13**

Source: MAFRD-DEASS

[4] Low onion yield for 2018 comes as a result of climatic conditions such as high precipitation, which has caused onion decay, thus reflecting a yield decline.

Table 39: The impact of price and yield change in gross margin (onion)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		16,000 kg	**18,000 kg**	**20,000 kg**	**22,000 kg**	**24,000 kg**
-20%	**0.35 €**	2,957.00	3,651.00	4,345.00	5,039.00	5,733.00
-10%	**0.40 €**	3,661.00	4,443.00	5,225.00	6,007.00	6,789.00
Scenario with basic price	**0.44 €**	4,365.00	5,235.00	**6,105.00**	6,975.00	7,845.00
10%	**0.48 €**	5,069.00	6,027.00	6,985.00	7,943.00	8,901.00
20%	**0.53 €**	5,773.00	6,819.00	7,865.00	8,911.00	9,957.00

Source: MAFRD-DEASS

Table 40: The impact of price and yield change in net income (onion)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		16,000 kg	**18,000 kg**	**20,000 kg**	**22,000 kg**	**24,000 kg**
-20%	**0.35 €**	1,831.13	2,439.63	3,048.13	3,656.63	4,265.13
-10%	**0.40 €**	2,535.13	3,231.63	3,928.13	4,624.63	5,321.13
Scenario with basic price	**0.44 €**	3,239.13	4,023.63	**4,808.13**	5,592.63	6,377.13
10%	**0.48 €**	3,943.13	4,815.63	5,688.13	6,560.63	7,433.13
20%	**0.53 €**	4,647.13	5,607.63	6,568.13	7,528.63	8,489.13

Source: MAFRD-DEASS

2.10 Tomatoes

2.10.1 Gross margin and net income per 10 Ares in a traditional greenhouse

Table 41: Tomato production cost in a traditional greenhouse

3. Calculation of vegetable production cost, 2018 3.3.a Tomatoes in a traditional greenhouse Area 10 Ares				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Tomatoes	kg	13,000.00	0.35	4,550.00
Total incomes				**4,550.00**
VARIABLE COST				
Inputs				
Seedlings	piece	3,200.00	0.10	316.02
Organic fertiliser	kg	5,000.00	0.01	33.33
NPK 15:15:15	kg	75.00	0.38	28.50
NAG	kg	32.00	0.30	9.60
Protective preparation				21.01
Vitamins (Sall preparation)	litre	0.9	3	2.7
Water	flat rate			15.00
Support system (rope)	m	6,400.00	0.003	21.12
Packaging	piece	2,200.00	0.25	550.00
Total inputs				**997..29**
Machinery expenses				
Ploughing (by multi cultivator)	litre	10.00	1.10	11.00
Tilling x 2	litre	8.00	1.10	8.80
Harrowing	litre	4.00	1.10	4.40
Fertilisation	litre	15.00	1.10	16.50
Work between rows with multi cultivator	litre	8.00	1.10	8.80
Transport from the field to the market	flat rate			400.00
Maintenance	flat rare			25.00
Total machinery expenditures				**474.50**
Total variable expenditures				**1,471.79**
GROSS MARGIN				**3,078.21**
WORKFORCE				
Fertilisation	p/d	1.00	15.00	15.00
Ploughing (by multi cultivator)	p/d	0.50	15.00	7.50
Tilling	p/d	0.50	15.00	7.50
Planting	p/d	2.00	15.00	30.00
Spraying	p/d	3.75	15.00	56.25
Irrigation	p/d	3.75	15.00	56.25
Harvesting	p/d	15.00	15.00	225.00
Transport from the field to the market	p/d	15.00	15.00	225.00
Other measures of care during vegetation	p/d	37.50	15.00	562.50
Total workforce expenditures				**1,185.00**
GROSS MARGIN BEFORE DEPRECIATION				**1,893.21**
DEPRECIATION				366.10
NET INCOME				**1,527.12**

Source: MAFRD-DEASS

Table 42: The impact of price and yield change in the gross margin (tomatoes in traditional greenhouses)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		10,400 kg	**11,700 kg**	**13,000 kg**	**14,300 kg**	**15,600 kg**
-20%	**0.28 €**	1,550.21	1,859.21	2,168.21	2,477.21	2,786.21
-10%	**0.32 €**	1,914.21	2,268.71	2,623.21	2,977.71	3,332.21
Scenario with basic price	**0.35 €**	2,278.21	2,678.21	**3,078.21**	3,478.21	3,878.21
10%	**0.39 €**	2,642.21	3,087.71	3,533.21	3,978.71	4,424.21
20%	**0.42 €**	3,006.21	3,497.21	3,988.21	4,479.21	4,970.21

Source: MAFRD-DEASS

Table 43: The impact of price and yield change in the gross margin (tomatoes in traditional greenhouses)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		10,400 kg	**11,700 kg**	**13,000 kg**	**14,300 kg**	**15,600 kg**
-20%	**0.28 €**	89.12	353.12	617.12	881.12	1,145.12
-10%	**0.32 €**	453.12	762.62	1,072.12	1,381.62	1,691.12
Scenario with basic price	**0.35 €**	817.12	1,172.12	**1,527.12**	1,882.12	2,237.12
10%	**0.39 €**	1,181.12	1,581.62	1,982.12	2,382.62	2,783.12
20%	**0.42 €**	1,545.12	1,991.12	2,437.12	2,883.12	3,329.12

Source: MAFRD-DEASS

2.10.2 Gross margin and net income per 10 Ares in a standard greenhouse

Table 44: Tomato production cost in a standard greenhouse

3. Calculation of vegetable production cost, 2018 3.3.b Tomatoes in standard greenhouses Area 10 Ares				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Tomatoes	kg	18,000.00	0.35	6,300.00
Total incomes				**6,300.00**
VARIABLE COST				
Inputs				
Seedlings	piece	3,000.00	0.10	300.14
Organic fertiliser	kg	5,000.00	0.01	33.33
NPK 15:15:15	kg	75.00	0.38	28.50
Urea				
NAG	kg	30.00	0.30	9.00
Foliar feeding				
Protective preparations				21.01
Vitamins (Sall preparations)	litre	0.9	3	2.7
Water	flat rate	0	0	15
Supportive system (rope)	m	7,500	0.003	24.75
Packaging	piece	3,000	0.25	750
Total inputs				**1,184.43**
Machinery expenses				
Ploughing (by multi cultivator)	litre	10.00	1.10	11.00
Tilling x 2	litre	8.00	1.10	8.80
Harrowing	litre	4.00	1.10	4.40
Fertilisation	litre	15.00	1.10	16.50
Work between rows by multi cultivator	litre	8.00	1.10	8.80
Transport from the field to the market	flat rate			400.00
Maintenance	flat rate			25.00
Total machinery expenditures				**474.50**
Total variable expenditures				**1,658.93**
GROSS MARGIN				**4,641.07**
WORKFORCE				
Fertilisation	p/d	1.00	15.00	15.00
Ploughing (by multi cultivator)	p/d	0.50	15.00	7.50
Tilling	p/d	0.50	15.00	7.50
Planting	p/d	2.00	15.00	30.00
Spraying	p/d	3.75	15.00	56.25
Irrigation	p/d	3.75	15.00	56.25
Harvesting	p/d	20.00	15.00	300.00
Transport from the field to the market	p/d	20.00	15.00	300.00
Other measures of care during vegetation	p/d	37.50	15.00	562.50
Total workforce expenditures				**1,335.00**
ROSS MARGIN BEFORE DEPRECIATION				**3,306.07**
Depreciation[5]				490.05
NET INCOME				**2,816.02**

Source: MAFRD-DEASS

[5] Depreciation is calculated with 65% investment support in greenhouse establishment

Table 45: The impact of price and yield change in net income (tomatoes in standard greenhouses)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		14,400 kg	**16,200 kg**	**18,000 kg**	**19,800 kg**	**21,600 kg**
-20%	**0.28 €**	2,523.07	2,952.07	3,381.07	3,810.07	4,239.07
-10%	**0.32 €**	3,027.07	3,519.07	4,011.07	4,503.07	4,995.07
Scenario with basic price	**0.35 €**	3,531.07	4,086.07	**4,641.07**	5,196.07	5,751.07
10%	**0.39 €**	4,035.07	4,653.07	5,271.07	5,889.07	6,507.07
20%	**0.42 €**	4,539.07	5,220.07	5,901.07	6,582.07	7,263.07

Source: MAFRD-DEASS

Table 46: The impact of price and yield change in net income (tomatoes in standard greenhouses)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		14,400 kg	**16,200 kg**	**18,000 kg**	**19,800 kg**	**21,600 kg**
-20%	**0.28 €**	818.02	1,187.02	1,556.02	1,925.02	2,294.02
-10%	**0.32 €**	1,322.02	1,754.02	2,186.02	2,618.02	3,050.02
Scenario with basic price	**0.35 €**	1,826.02	2,321.02	**2,816.02**	3,311.02	3,806.02
10%	**0.39 €**	2,330.02	2,888.02	3,446.02	4,004.02	4,562.02
20%	**0.42 €**	2,834.02	3,455.02	4,076.02	4,697.02	5,318.02

Source: MAFRD-DEASS

2.11 Cucumber

2.11.1 Gross margin and net income per 10 Ares in a traditional greenhouse

Table 47: Cucumber production cost in traditional greenhouses

3. Calculation of vegetable production cost, 2018 3.4.a Cucumber in traditional greenhouses Area 10 Ares				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Cucumber	kg	14,500.00	0.25	3,625.00
Total incomes				**3,625.00**
VARIABLE COST				
Inputs				
Seedlings	piece	3,200.00	0.07	214.35
Organic fertilizer	kg	6,000.00	0.01	40.00
NPK 15:15:15	kg	100.00	0.38	38.00
NAG	kg	96.00	0.30	28.80
Protective preparations				61.67
Water	flat rate	0	0	15
Support system (rope)	m	6,400.00	0.003	21.12
Packaging	piece	1,290.00	0.20	258.00
Total inputs				**696.94**
Machinery expenses				
Ploughing (by multi cultivator)	litre	10.00	1.10	11.00
Tilling x 2	litre	8.00	1.10	8.80
Harrowing	litre	4.00	1.10	4.40
Fertilization	litre	15.00	1.10	16.50
Works between rows with multi cultivator	litre	8.00	1.10	8.80
Transport from the field to the market	flat rate			500.00
Maintenance	flat rate			25.00
Total machinery expenditures				**574.50**
Total variable expenditures				**1,271.44**
GROSS MARGIN				**2,353.56**
WORKFORCE				
Fertilization	p/d	1.00	15.00	15.00
Ploughing (by multi cultivator)	p/d	0.50	15.00	7.50
Tilling	p/d	0.50	15.00	7.50
Planting	p/d	2.00	15.00	30.00
Spraying	p/d	3.75	15.00	56.25
Irrigation	p/d	3.75	15.00	56.25
Harvesting	p/d	17.50	15.00	262.50
Transport from the field to the market	p/d	15.00	15.00	225.00
Other measures of care during vegetation	p/d	33.75	15.00	506.25
Total workforce expenditures				**1,166.25**
GROSS MARGIN BEFORE DEPRECIATION				**1187.31**
Depreciation				332.76
NET INCOME				**854.55**

Source: MBPZHR - DEAAS

Table 48: The impact of price and yield change in the gross margin (cucumber in traditional greenhouses)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		11,600 kg	**13,050 kg**	**14,500 kg**	**15,950 kg**	**17,400 kg**
-20%	**0.20 €**	1,104.16	1,366.36	1,628.56	1,890.76	2,152.96
-10%	**0.23 €**	1,394.16	1,692.61	1,991.06	2,289.51	2,587.96
Scenario with basic price	**0.25 €**	1,684.16	2,018.86	**2,353.56**	2,688.26	3,022.96
10%	**0.28 €**	1,974.16	2,345.11	2,716.06	3,087.01	3,457.96
20%	**0.30 €**	2,264.16	2,671.36	3,078.56	3,485.76	3,892.96

Source: MBPZHR - DEAAS

Table 49: The impact of price and yield change in the gross margin (cucumber in traditional greenhouses)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		11,600 kg	**13,050 kg**	**14,500 kg**	**15,950 kg**	**17,400 kg**
-20%	**0.20 €**	-297.35	-83.90	129.55	343.00	556.45
-10%	**0.23 €**	-7.35	242.35	492.05	741.75	991.45
Scenario with basic price	**0.25 €**	282.65	568.60	**854.55**	1,140.50	1,426.45
10%	**0.28 €**	572.65	894.85	1,217.05	1,539.25	1,861.45
20%	**0.30 €**	862.65	1,221.10	1,579.55	1,938.00	2,296.45

Source: MBPZHR - DEAAS

2.11.2 Gross margin and net income per 10 Ares in a standard greenhouse

Table 50: Cucumber production cost in standard greenhouses

3. Calculation of vegetable production cost, 2018 3.4.b Cucumber in standard greenhouses Area 10 Ares				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Cucumber	kg	20,000.00	0.25	5,000.00
Total incomes				**5,000.00**
VARIABLE COST				
Inputs				
Seedlings	piece	3,000.00	0.07	206.27
Organic fertiliser	kg	6,000.00	0.01	40.00
NPK 15:15:15	kg	100.00	0.38	38.00
NAG	kg	90.00	0.30	27.00
Protective preparations				66.67
Water	flat rate			15.00
Support system (rope)	m	7,500.00	0.003	24.75
Packaging	piece	1,900.00	0.20	380.00
Total inputs				**797.69**
Machinery expenses				
Ploughing (by multi cultivator)	litre	10.00	1.10	11.00
Tilling x 2	litre	8.00	1.10	8.80
Harrowing	litre	4.00	1.10	4.40
Fertilization	litre	15.00	1.10	16.50
Work between rows by multi cultivator	litre	8.00	1.10	8.80
Transport from the field to the market	flat rate			500.00
Maintenance	flat rate			25.00
Total machinery expenditures				**574.50**
Total variable expenditures				**1,372.19**
GROSS MARGIN				**3,627.81**
WORKFORCE				
Fertilization	p/d	1.00	15.00	15.00
Ploughing (by multi cultivator)	p/d	0.50	15.00	7.50
Tilling	p/d	0.50	15.00	7.50
Planting	p/d	2.00	15.00	30.00
Spraying	p/d	3.75	15.00	56.25
Irrigation	p/d	3.75	15.00	56.25
Harvesting	p/d	25.00	15.00	375.00
Transport from the field to the market	p/d	20.00	15.00	300.00
Other measures of care during vegetation	p/d	45.00	15.00	675.00
Total workforce expenditures				**1,522.50**
GROSS MARGIN BEFORE DEPRECIATION				**2,105.31**
Depreciation [6]				439.01
NET INCOME				**1,666.30**

Source: MAFRD-DEAAS

[6] Depreciation is calculated with 65% investment support in greenhouse establishment

Table 51: The impact of price and yield change in the gross margin (cucumber in standard greenhouses)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		16,000 kg	**18,000 kg**	**20,000 kg**	**22,000 kg**	**24,000 kg**
-20%	**0.20 €**	1,903.81	2,265.81	2,627.81	2,989.81	3,351.81
-10%	**0.23 €**	2,303.81	2,715.81	3,127.81	3,539.81	3,951.81
Scenario with basic price	**0.25 €**	2,703.81	3,165.81	**3,627.81**	4,089.81	4,551.81
10%	**0.28 €**	3,103.81	3,615.81	4,127.81	4,639.81	5,151.81
20%	**0.30 €**	3,503.81	4,065.81	4,627.81	5,189.81	5,751.81

Source: MAFRD-DEAAS

Table 52: The impact of price and yield change in the gross margin (cucumber in standard greenhouses)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		16,000 kg	**18,000 kg**	**20,000 kg**	**22,000 kg**	**24,000 kg**
-20%	**0.20 €**	77.30	371.80	666.30	960.80	1,255.30
-10%	**0.23 €**	477.30	821.80	1,166.30	1,510.80	1,855.30
Scenario with basic price	**0.25 €**	877.30	1,271.80	**1,666.30**	2,060.80	2,455.30
10%	**0.28 €**	1,277.30	1,721.80	2,166.30	2,610.80	3,055.30
20%	**0.30 €**	1,677.30	2,171.80	2,666.30	3,160.80	3,655.30

Source: MAFRD-DEAAS

3 Price and yield at breakeven point

Table 53: Prices and yields at breakeven point, in order to cover only the variable cost

Wheat (1ha)	
Base yield (kg)	4,500
Base price (€)	0.16
Price at breakeven point (€)	**0.16**
Yield at breakeven point (kg)	**4,397**

Corn grain with irrigation (1ha)	
Base yield (kg)	7,800
Base price (€)	0.25
Price at breakeven point (€)	**0.11**
Yield at breakeven point (kg)	**3,574**

Corn grain without irrigation (1 ha)	
Base yield (kg)	4,600
Base price (€)	0.25
Price at breakeven point (€)	**0.12**
Yield at breakeven point (kg)	**2,143**

Silage corn with irrigation (1ha)	
Base yield (kg)	46,000
Base price (€)	0.10
Price at breakeven point (€)	**0.02**
Yield at breakeven point (kg)	**9,766**

Silage corn without irrigation (1 ha)	
Base yield (kg)	35,000
Base price (€)	0.10
Price at breakeven point (€)	**0.02**
Yield at breakeven point (kg)	**6,191**

Apples (1ha)	
Base yield (kg)	30,000
Base price (€)	0.40
Price at breakeven point (€)	**0.20**
Yield at breakeven point (kg)	**14,931**

Strawberries (10 Ares)	
Base yield (kg)	2,667
Base price (€)	1.70
Price at breakeven point (€)	**0.50**
Yield at breakeven point (kg)	**782.66**

Raspberries (1ha)	
Base yield (kg)	3,000
Base price per raspberry on the market (€)	1.35
Base price per raspberry at collection point (€)	0.75
Price at breakeven point (€)[7]	**1.33**
Yield at breakeven point (kg)	**3,789**

Grape (1ha)	
Base yield (kg)	12,500
Base price (€)	0.66
Price at breakeven point (€)	**0.34**
Yield at breakeven point (kg)	**6,400**

Open field pepper (1 ha)	
Base yield (kg)	32,000
Base price (€)	0.40
Price at breakeven point (€)	**0.16**
Yield at breakeven point (kg)	**12,616**

[7] Price at the breakeven point implies the average price of raspberry in the market and at collection point.

Open field onion (1ha)	
Base yield (kg)	20,000
Base price (€)	0.44
Price at breakeven point (€)	**0.19**
Yield at breakeven point (kg)	**8,618**

Tomatoes in a traditional greenhouse (10 Ares)	
Base yield (kg)	13,000
Base price (€)	0.35
Price at breakeven point (€)	**0.20**
Yield at breakeven point (kg)	**7,591**

Tomatoes in a standard greenhouse (10 Ares)	
Base yield (kg)	18,000
Base price (€)	0.35
Price at breakeven point (€)	**0.17**
Yield at breakeven point (kg)	**8,554**

Cucumber in a traditional greenhouse (10 Ares)	
Base yield (kg)	13,500
Base price (€)	0.25
Price at breakeven point (€)	**0.18**
Yield at breakeven point (kg)	**9,671**

Cucumber in a standard greenhouse (10 Ares)	
Base yield (kg)	20,000
Base price (€)	0.25
Price at breakeven point (€)	**0.14**
Yield at breakeven point (kg)	**11,574**

4 Technical information

Table 54: Agro-technical measures on wheat

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Ploughing																								
Preparation for planting																								
Fertilization NPK																								
Planting																								
Re-fertilization (N2)																								
Spraying against weeds																								
Spraying against insects																								
Protection against diseases																								
Foliar fertilizer/feeding																								
Harvesting																								
Netting																								
Transport of wheat and straw																								

Source: DEAAS-MAFRD

Table 55: Agro-technical measures on corn

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Basic ploughing																								
Basic fertilization 50% NPK (before ploughing)																								
Basic fertilization 50% NPK																								
Preparation for planting																								
Planting (grain corn)																								
Protection against weeds*																								
Spraying against insects (as needed)																								
Re-fertilization (N2)																								
Foliar fertilizer/feeding																								
Harvesting																								
Planting (corn for silage)																								

Source: DEAAS-MAFRD; * Protection against weeds may be done before and after planting

Table 56: Agro-technical measures on apple

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Shearing																								
Protection																								
Basic feeding 7:20:18																								
Cristal feeding																								
Foliar feeding																								
Network covering																								
Green shearing																								
Mulching																								
Mowing																								
Protection against weeds																								
Irrigation as needed																								
Water drainage																								
Picking																								
Tightening of strings and netting																								
Removal of network																								

Source: MAFRD - DAESB

Table 57: Agro-technical measures on strawberry

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Planting																								
Shearing																								
Protection (akaricide)																								
Protection (insecticides and fungicides)																								
Feeding																								
Irrigation																								
Picking																								
Picking (in greenhouse)																								

Source: DEAAS-MAFRD

Table 58: Agro-technical measures on raspberries

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Use of pesticides																								
Organic fertilization																								
Basic ploughing 50 cm																								
Second ploughing 30 cm																								
Tilling																								
Planting of seedlings																								
Planting of grass (between rows)																								
Protection																								
Mineral fertilization (nitrogenous)																								
Cristal fertilization																								
Harvest of early cultivars																								
Harvest of polka cultivars																								
Shearing																								
Disinfection with preparations																								

Source: DEAAS-MAFRD

Table 59: Agro-technical measures on grape

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Shearing																								
Netting (porting)																								
Preparation for ploughing/tilling																								
Application of herbicides																								
Treatment with pesticides																								
Fertilization NPK																								
Weeding and shearing																								
Thinning of grape clusters																								
Grape harvest (vine grape)																								
Grape harvest (table grape)																								

Source: DEAAS-MAFRD

Table 60: Agro-technical measures on peppers

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Planting of seedlings (in modules)																								
Ploughing and land preparation																								
Basic fertilization																								
Planting in permanent place																								
Protection																								
Foliar fertilization																								
Cristal fertilization																								
Picking																								
Irrigation-as needed																								

Source: DEAAS-MAFRD

Table 61: Agro-technical measures on onion

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Basic ploughing																								
Planting of pearl onions																								
Fertilization NPK																								
Treatment from weeds																								
Protection (diseases and pests)																								
Foliar feeding																								
Irrigation																								
Protection against diseases																								
Picking																								

Source: DEAAS-MAFRD

Table 62: Agro-technical measures on tomatoes in greenhouse

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Land preparation																								
Organic fertilization																								
Basic fertilization																								
Planting of seedlings (in modules)																								
Covering of land with foil and planting in rows																								
Protection																								
Cristal feeding																								
Foliar feeding																								
Shearing																								
Netting of plants																								
Picking																								

Source: DEAAS-MAFRD

Table 63: Agro-technical measures on cucumbers in greenhouse

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Planting of seeds for seedling																								
Basic fertilization																								
Land preparation																								
Foil covering																								
Planting of seedlings																								
Protection (insecticides and fungicides)																								
Foliar fertilization																								
Cristal fertilization																								
Picking																								

Source: DEAAS-MAFRD

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