Republika e Kosovës - Republika Kosova - Republic of Kosovo
Ministria e Bujqësisë, Pylltarisë dhe Zhvillimit Rural
Ministarstvo Poljoprivrede, Šumarstva i Ruralnog Razvoja
Ministry of Agriculture, Forestry and Rural Developement

ECONOMIC CATALOG FOR AGRICULTURAL PRODUCTS 2016

December, 2016

Economic catalogue for agricultural products 2016

Ministry of Agriculture, Forestry and Rural Development

December, 2016

Tabel of content

Introduction

This is the first edition of Economic catalogue for agricultural production 2016 of the Republic of Kosovo. This catalogue contains information about the cost of production of certain agricultural products in Kosovo that helps farmers in farm management and agricultural enterprises. One of the key indicators to show the cost of production is the Gross Margin. This indicator is used to analyse the performance of businesses and to compare the profitability of different crops cultivated in the same area of land, and can be used to assess the profitability of the same culture using different input options. Farmers have the opportunity to see the potential profit of cultivating a certain crop by changing the price and basic yield. Also, the calculation of the breakeven price may provide to farmers insights for the minimum price at which he can sell the product without having loss. Through gross margin and other indicators presented in this catalogue, the farmer can analyse the performance of its business and discover areas that need improvement.

The Ministry of Agriculture, Forestry and Rural Development, through this economic catalogue, aims to support farmers in planning and management of their agricultural activities. The data used for the analysis of production costs are taken directly from farmers. Meetings were organized with groups of farmers in those places where is mostly concentrated production of a specific crop during a calendar year. Other data presented in this catalogue are taken from the Agency of Statistics. The Department of Economic Analysis and Agricultural Statistics is responsible for processing and analysing the data and publishing of this economic catalogue.

We thank the expert Diana Kopeva, for her contribution in commenting the Economic Catalogue for Agricultural Products 2016.

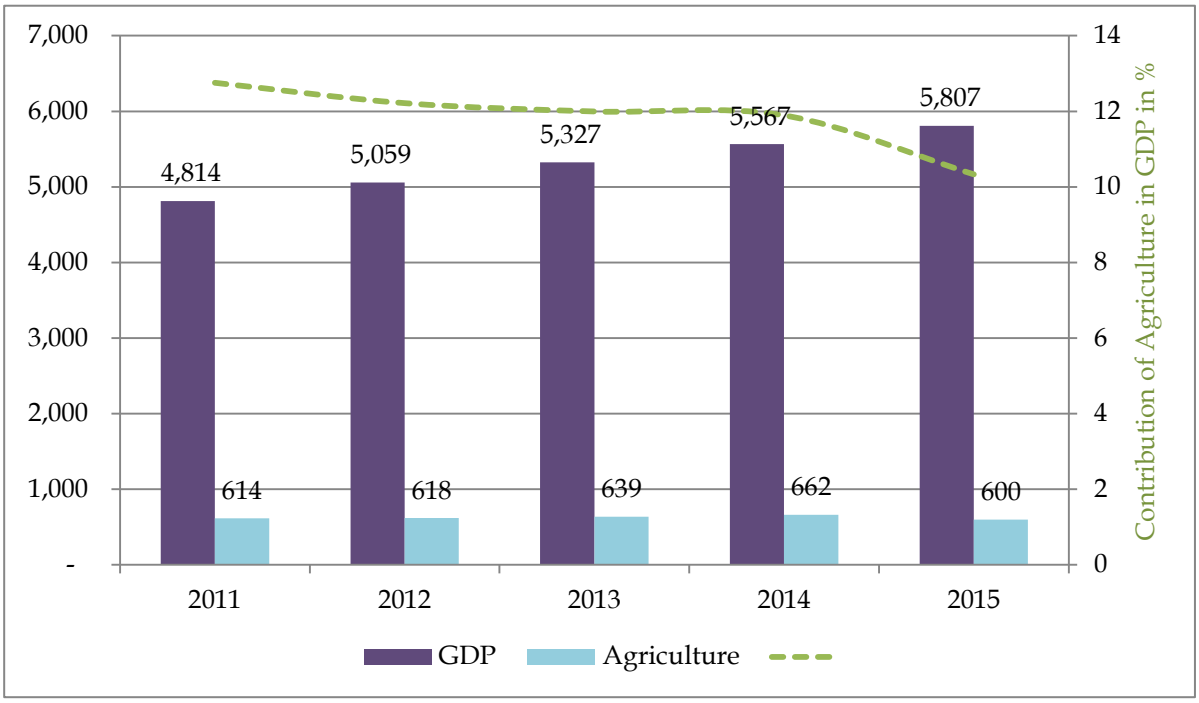
Dr. Sc. Ekrem Gjokaj

Director of Department of Economic Analysis and Agricultural Statistics

1 General information

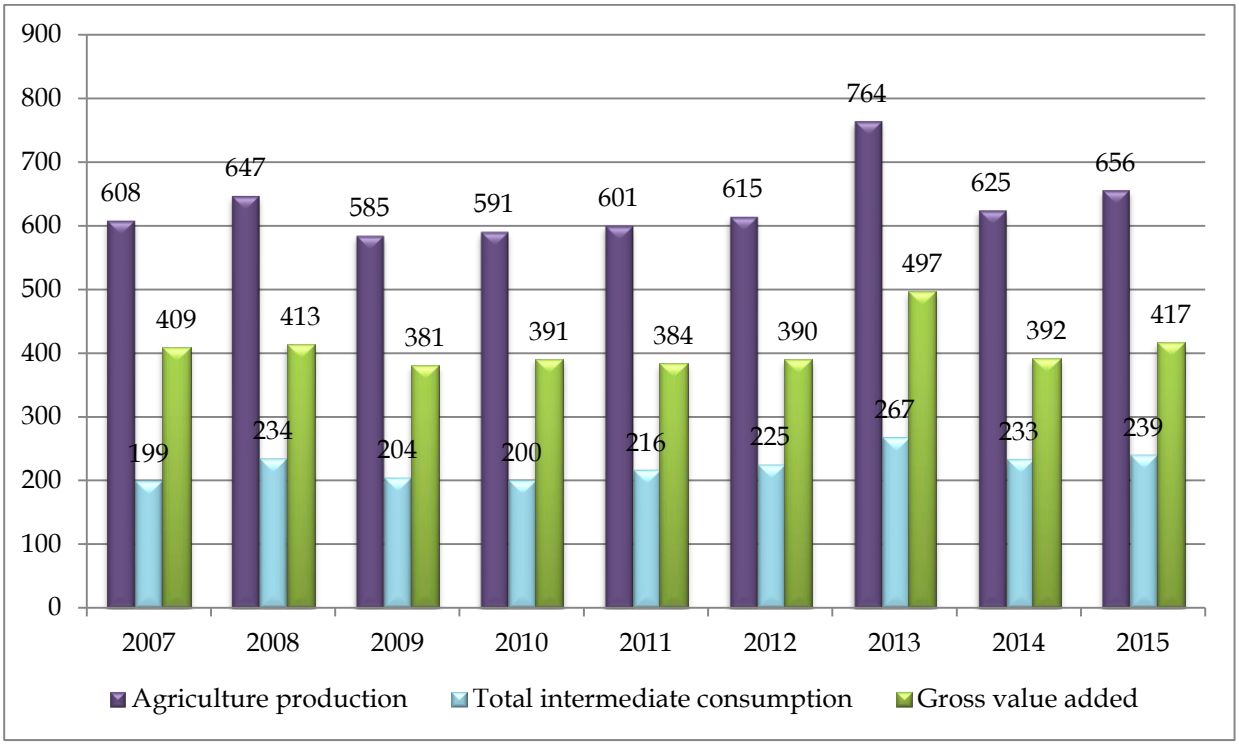
1.1 Key indicators for agriculture sector

Figure 1: Contribution of agriculture to gross domestic product in mil. €, 2011-2015



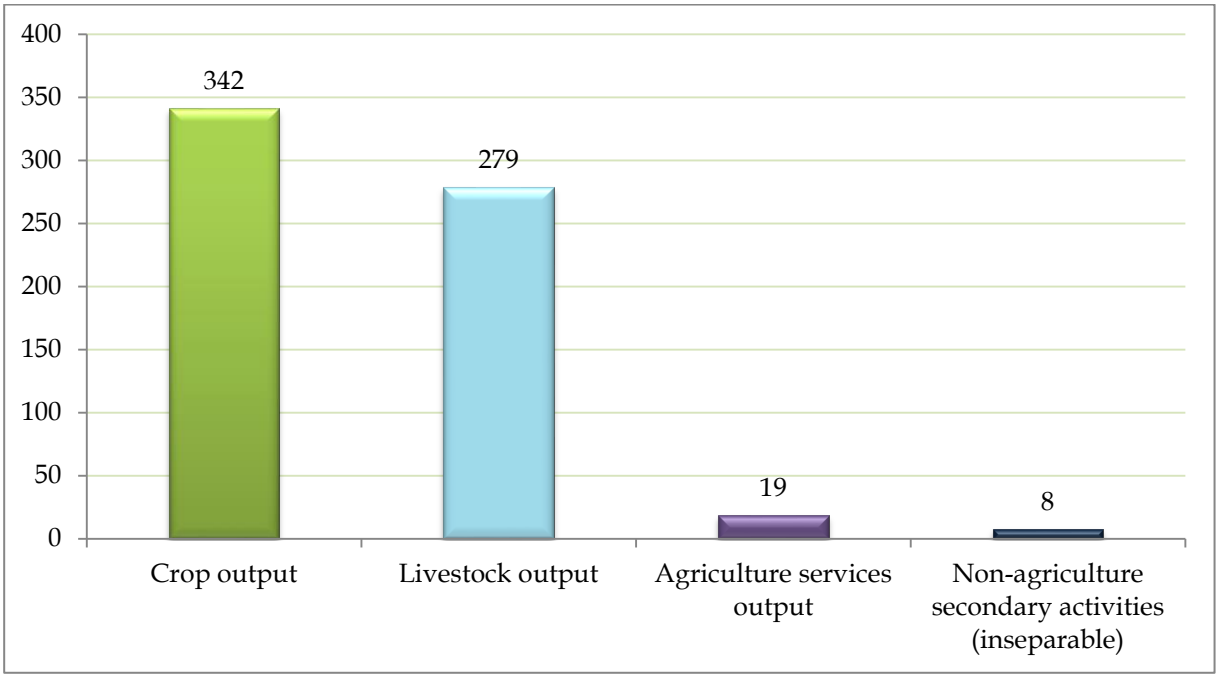
Source: KAS, processed by DEAAS – MAFRD

Figure 2: Intermediate consumption, agricultural output and gross value added in mil. €, 2015



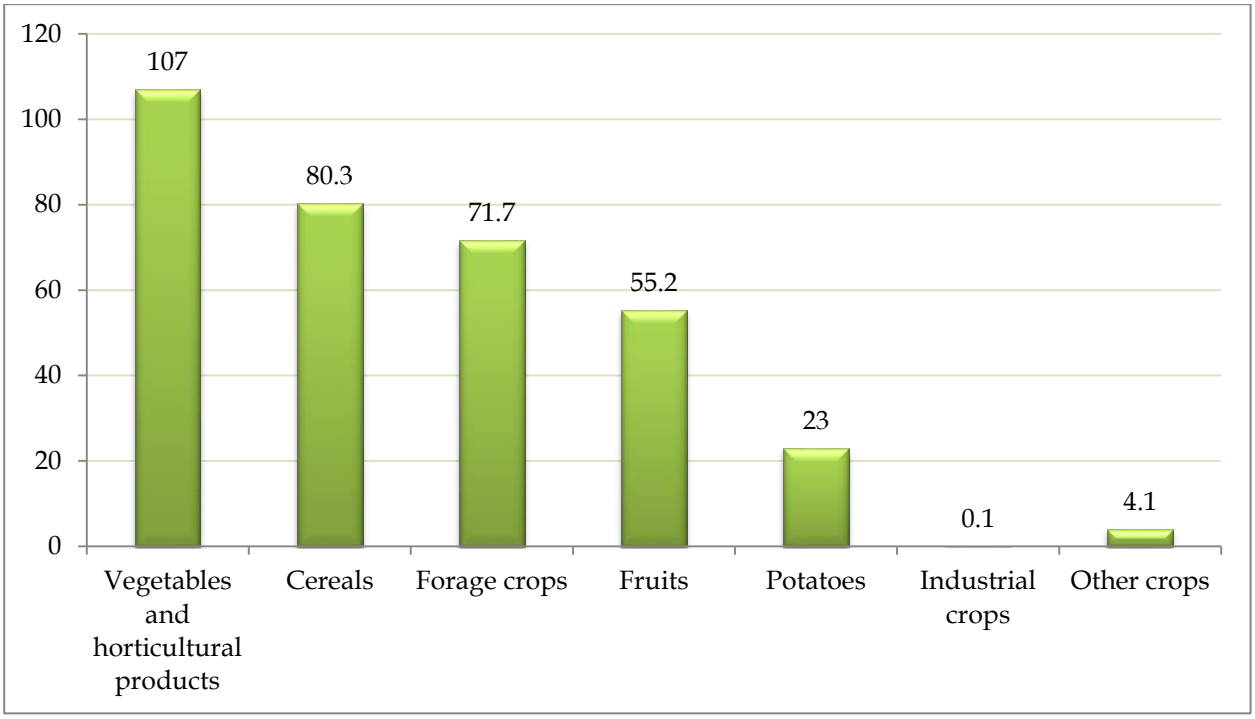
Source: KAS, Economic Accounts for Agriculture 2015, processed by DEAAS – MAFRD

Figure 3: Total output of the agricultural industry in mil. €, 2015



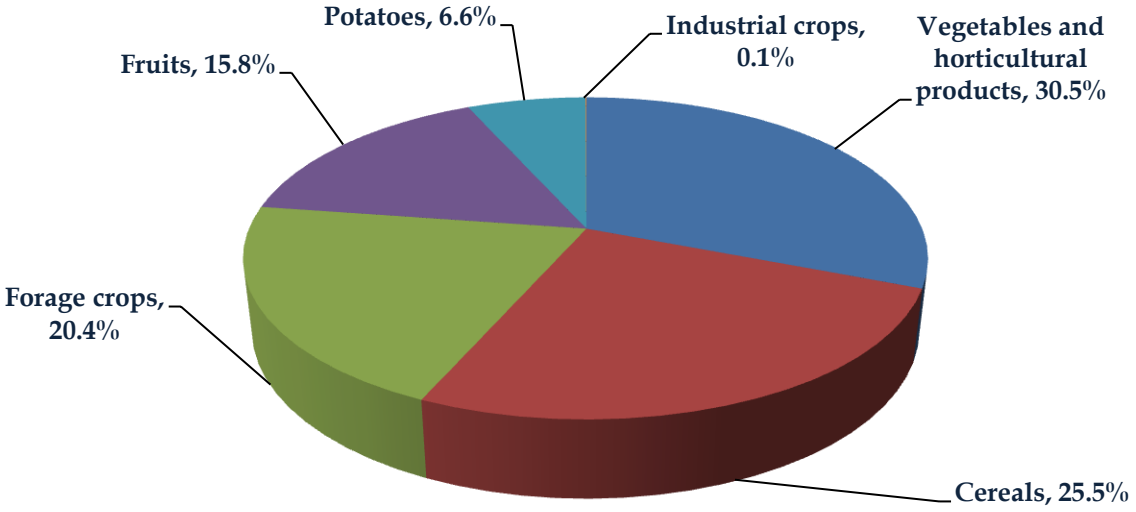
Source: KAS, Economic Accounts for Agriculture 2015, processed by DEAAS – MAFRD

Figure 4: Crop output according to categories in mil. €, 2015



Source: KAS, Economic Accounts for Agriculture 2015, processed by DEAAS – MAFRD

Figure 5: Contribution of crops according to categories, 2015



Source: KAS, Economic Accounts for Agriculture 2015, processed by DEAAS – MAFRD

Table 1: Annual price index of agricultural inputs 2010 - 2015 (2010 = 100)

	2010	2011	2012	2013	2014	2015	Difference 2015/2014 in %
Goods and services currently consumed in agriculture (Input 1)	100	113	120	122	120	118	-1.8
Seeds and Planting Material	100	113	109	107	115	159	37.6
Energy; Lubricants	100	115	123	119	116	102	-11.7
Fertilizers and soil improvers	100	126	142	146	139	131	-6.2
Plant Protection Products and Pesticides	100	98	100	130	159	114	-28.7
Veterinary expenses	100	107	107	109	105	103	-1.9
Animal feed material	100	122	137	143	131	114	-12.5
Maintenance of materials	100	100	100	101	100	99	-1.3
Maintenance of buildings	100	101	102	100	100	100	-0.7
Other goods and services	100	101	104	107	109	113	3.6
Goods and services contributing to Agricultural investments (Input 2)	100	101	101	103	105	110	4.5
Tractors	100	101	101	104	107	118	10.6
Other	100	101	102	102	104	103	-0.7

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: Area and crops production, 2009-2015

Crop	2009	2010	2011	2012	2013	2014	2015	Difference 2015/2014 in %
Area				ha				
Crops	119,984	119,871	121,095	137,215	141,912	131,949	134,886	*2*
Wheat	77,938	78,420	79,928	102,918	101,846	90,728	89,942	*-1*
Corn	35,854	35,424	35,209	31,181	36,122	35,038	41,492	*18*
Barley	1,717	1,177	844	568	1,363	1,487	1,141	*-23*
Rye	394	571	607	253	235	588	396	*-33*
Oat	4,081	4,279	4,508	2,294	2,346	3,940	1,790	*-55*
Other grain crops	-	-	-	-	-	168	125	*-26*
Production				t				
Crops	411,208	430,524	435,034	438,792	540,136	463,581	443,584	*-4*
Wheat	271,373	294,540	300,203	345,027	391,727	331,296	304,443	*-8*
Corn	125,864	120,461	119,693	86,304	136,633	116,209	131,486	*13*
Barley	5,363	3,642	2,608	1,808	4,415	4,716	3,061	*-35*
Rye	834	1,371	1,457	740	571	1,521	809	*-47*
Oat	7,774	10,510	11,072	4,913	6,790	9,840	3,415	*-65*
Other grain crop	-	-	-	-	-	-	371	

Source: KAS – Agricultural Household Survey ('09-'13); Census of Agriculture ('14); Agricultural Household Survey 2015;

Table 3: Direct payments for cereals

		2012	2013	2014	2015	Difference 2015/2014 in %
Wheat	Number of applicants	9,604	11,758	11,871	11,032	-7
	Number of beneficiaries	8,841	10,686	10,579	10,298	-3
	Number of hectares paid	37,951	46,594	44,442	42,780	-4
	Payment per ha	100	125	125	150	20
	Total amount paid	3,795,094	5,824,268	5,555,218	6,417,047	16
Wheat seed	Number of applicants	10	27	16	17	6
	Number of beneficiaries	10	27	16	11	-31
	Number of hectares paid	250	850	511	344	-33
	Total amount paid	25,020	63,720	107,391	86,063	-20
Corn	Number of applicants	2,346	3,858	6,134	8,278	35
	Number of beneficiaries	2,209	3,626	5,413	7,574	40
	Number of hectares paid	5,755	9,430	12,687	18,236	44
	Payment per ha	100	100	100	150	50
	Total amount paid	575,459	943,028	1,268,719	2,735,462	116

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

1.2.2 Vegetables

Table 4: Area and vegetable production, 2009-2015

Crop	2009	2010	2011	2012	2013	2014	2015	Difference 2015/2014 in %
Area				**ha**				**%**
Vegetables	15,839	16,356	16,196	14,557	16,356	15,854	14,642	*-8*
Potatoes	3,376	3,760	3,746	3,198	2,777	3,695	3,353	*-9*
Tomatoes	821	935	967	1,271	950	558	791	*42*
Peppers	2,955	2,914	2,993	3,153	3,686	2,553	3,090	*21*
Cucumbers	316	343	359	255	340	193	317	*65*
Mellon	954	1,141	1,240	847	827	781	781	*0*
Cabbage	962	836	842	568	851	556	594	*7*
Onion	798	1,043	1,074	881	1,060	1,041	1,079	*4*
Beans	4,112	3,609	3,260	2,954	3,648	3,959	2,945	*-26*
Other	1,545	1,775	1,715	1,430	2,217	2,520	1,692	*-33*
Production				**t**				**%**
Vegetables	202,995	338,989	345,565	163,146	235,326	221,330	245,948	*11*
Potatoes	58,687	87,354	87,036	33,407	50,847	64,027	70,678	*10*
Tomatoes	15,107	60,318	62,358	13,693	17,291	17,386	24,333	*40*
Peppers	46,669	93,924	96,322	50,744	72,928	57,921	55,469	*-4*
Cucumbers	7,199	12,902	13,502	5,239	8,975	5,428	17,365	*220*
Mellon	18,896	25,743	27,975	17,080	17,641	16,669	17,404	*4*
Cabbage	27,895	22,988	23,154	13,975	21,924	14,426	16,694	*16*
Onion	8,697	13,257	13,655	8,601	15,308	12,812	13,795	*8*
Beans	7,139	5,575	5,033	3,723	5,892	5,831	9,018	*55*
Other	12,706	16,928	16,530	16,684	24,520	26,831	21,191	*-21*

Source: KAS – Agricultural Household Survey ('09-'13); Census of Agriculture ('14); Agricultural Household Survey 2015; processed by DEAAS – MAFRD

Table 5: Direct payments for vegetables in open field

		2014	2015	Difference 2015/2014 i n %
Vegetables in open field	Number of applicants	1,870	4,717	152
	Number of beneficiaries	1,548	4,268	176
	Number of hectares paid	3,422	5,216	52
	Payment per ha	300	300	0
	Total amount paid	1,026,735	1,564,692	52

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

1.2.3 Orchards and Vineyards

Table 6: Area and fruit production, 2009-2015

Crop	2009	2010	2011	2012	2013	2014	2015	Difference 2015/2014 in %
Area				**ha**				**%**
Fruits	6,027	6,578	6,733	7,082	8,342	6,921	7,998	*16*
Apple	1,355	1,661	1,790	1,725	2,024	1,973	1,972	*0*
Pear	261	352	354	326	561	210	367	*75*
Plum	1,060	1,063	1,063	1,404	1,843	699	1,518	*117*
Strawberry	26	49	45	52	148	201	203	*1*
Raspberry	1	1	0	0	23	141	324	*129*
Vine grape	2,420	2,504	2,510	2,517	2,408	2,420	2,321	*-4*
Table grape	637	636	648	702	751	781	747.23	*-4*
Other	267	312	323	355	584	496	546	*10*
Production				**t**				**%**
Fruits	49,308	52,419	41,429	59,633	76,702	45,873	69,711	*52*
Apple	11,742	12,545	13,523	8,120	16,786	13,519	18,352	*36*
Pear	1,748	2,495	2,510	1,562	4,259	1,363	3,189	*134*
Plum	8,084	6,957	6,957	17,514	24,433	7,525	17,543	*133*
Strawberry	180	294	270	275	465	965	1,498	*55*
Raspberry	4	2	1	1	105	529	1,748	*230*
Vine grape	20,570	22,536	12,048	22,656	20,473	15,101	18,426	*22*
Table grape	5,733	6,042	4,536	7,026	7,137	4,869	6,996	*44*
Other	1,247	1,548	1,584	2,479	3,044	2,003	1,959	*-2*

Source: KAS – Agricultural Household Survey ('09-'13); Census of Agriculture ('14); Agricultural Hosehold Survey 2015; Department of Winery and Vineyards; processed by DEAAS – MAFRD

Table 7: Direct payments for existing orchards and vineyards

		2013	2014	2015	Difference 2015/2014 in %
Vineyards	Number of applicants	2,579	2,995	2,914	-3
	Number of beneficiaries	2,556	2,995	2,806	-6
	Number of hectares paid	2,791	2,435	2,456	1
	Payment per ha	500/200	1000/300	1000/300	
	Total amount paid	1,124,516	2,290,783	2,046,167	-11
Existing orchards	Number of applicants	-	-	1,796	-
	Number of beneficiaries	-	-	1,578	-
	Number of hectares paid	-	-	1,731	-
	Payment per ha	-	-	400	-
	Total amount paid	-	-	692,256	-

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

2 Gross margin and net income

The success of a business largely depends on how it is planned and how it is managed over the time. For a better business planning and management for producers it is very necessary to have reference calculations which they would use when starting their business but also during the development. Using 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 gross margins calculation 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 labour force 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, 2016 1.1 Wheat Area 1 ha				
	Unit	Quantity	Price per unit	Value in €
INCOMES				
Wheat	kg/ha	4,500.00	0.19	855.00
Straw	sheaves/ha	120.00	0.90	108.00
Total income				**963.00**
VARIABLE COSTS				
Inputs				
Seed	kg/ha	300.00	0.33	99.00
NPK	kg/ha	350.00	0.53	185.50
NAG	kg/ha	350.00	0.30	105.00
Herbicides 1	l/ha	2.00	4.20	8.40
Herbicides 2	ml/ha	150.00	0.11	16.83
Bags	pieces	90.00	0.13	11.70
Total input				**426.43**
Machinery expenditures				
Plowing	l/diesel	20.00	0.98	19.60
Seed preparation	l/diesel	10.00	0.98	9.80
Planting	l/diesel	8.00	0.98	7.84
Fertilization	l/diesel	8.00	0.98	7.84
Spraying	l/diesel	8.00	0.98	7.84
Harvesting	service	1.00	100.00	100.00
Transport to the stable	l/diesel	8.00	0.98	7.84
Maintenance	flat rate			75.00
Total machinery expenditures				**235.76**
Total variable costs				**662.19**
GROSS MARGIN				**300.81**
LABOUR FORCE				
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 labour force expenditures				**48.75**
GROSS MARGIN BEFORE DEPRECIATION				**252.06**
Depreciation				111.06
NET INCOME				**141.00**
Subsidies	€/ha			150.00
NET INCOME + Subsidies				**291.00**

Source: DEAAS – MAFRD

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	4,050	4,500	4,950	5,400
			96	108	120	132	144
-20%	Wheat	0.15	- 45.87	31.17	108.21	185.25	262.29
	Straw	0.72					
-10%	Wheat	0.17	31.17	117.84	204.51	291.18	377.85
	Straw	0.81					
Scenario with basic price	Wheat	0.19	108.21	204.51	**300.81**	397.11	493.41
	Straw	0.90					
10%	Wheat	0.21	185.25	291.18	397.11	503.04	608.97
	Straw	0.99					
20%	Wheat	0.23	262.29	377.85	493.41	608.97	724.53
	Straw	1.08					

Source: DEAAS – MAFRD

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

NET INCOME			-20%	-10%	Scenario with basic yield	10%	20%
			3,600	4,050	4,500	4,950	5,400
			96	108	120	132	144
-20%	Wheat	0.15	- 205.68	- 128.64	- 51.60	25.44	102.48
	Straw	0.72					
-10%	Wheat	0.17	- 128.64	- 41.97	44.70	131.37	218.04
	Straw	0.81					
Scenario with basic price	Wheat	0.19	- 51.60	44.70	**141.00**	237.30	333.60
	Straw	0.90					
10%	Wheat	0.21	74.19	180.12	286.05	391.98	497.91
	Straw	0.99					
20%	Wheat	0.23	102.48	218.04	333.60	449.16	564.72
	Straw	1.08					

Source: DEAAS – MAFRD

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, 2016 1.2.a Grain corn with irrigation Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Grain corn	kg/ha	7,500.00	0.24	1,800.00
Total income				**1,800.00**
VARIABLE COSTS				
Inputs				
Seed	bags	0.82	32.85	26.94
NPK	kg/ha	325.00	0.53	172.25
Urea	kg/ha	100.00	0.38	38.00
NAG	kg/ha	200.00	0.30	60.00
Herbicides	l/ha	1.00	22.50	22.50
Irrigation	flat rate			100.00
Total input				**419.69**
Machinery expenditures				
Plowing	l/diesel	20.00	0.98	19.60
Seed preparation	l/diesel	10.00	0.98	9.80
Planting	l/diesel	8.00	0.98	7.84
Fertilization	l/diesel	8.00	0.98	7.84
Spraying	l/diesel	8.00	0.98	7.84
Irrigation	l/diesel	48.00	0.98	47.04
Harvesting	service	1.00	130.00	130.00
Transport to the stable	l/diesel	8.00	0.98	7.84
Maintenance				43.45
Total machinery expenditures				**281.25**
Total variable costs				**700.94**
GROSS MARGIN				**1,099.06**
LABOUR FORCE				
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 labour force expenditures				**240.00**
GROSS MARGIN BEFORE DEPRECIATION				**859.06**
Depreciation				106.19
NET INCOME				**752.87**
Subsidies	€/ha			150.00
NET INCOME + Subsidies				**902.87**

Source: DEAAS – MAFRD

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%
		6,000	6,750	7,500	8,250	9,000
-20%	0.19	451.06	595.06	739.06	883.06	1,027.06
-10%	0.22	595.06	757.06	919.06	1,081.06	1,243.06
Scenario with basic price	0.24	739.06	919.06	**1,099.06**	1,279.06	1,459.06
10%	0.26	883.06	1,081.06	1,279.06	1,477.06	1,675.06
20%	0.29	1,027.06	1,243.06	1,459.06	1,675.06	1,891.06

Source: DEAAS – MAFRD

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

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		6,000	6,750	7,500	8,250	9,000
-20%	0.19	104.87	248.87	392.87	536.87	830.87
-10%	0.22	248.87	410.87	572.87	734.87	896.87
Scenario with basic price	0.24	392.87	572.87	**752.87**	932.87	1,112.87
10%	0.26	536.87	734.87	932.87	1,130.87	1,328.87
20%	0.29	680.87	896.87	1,112.87	1,328.87	1,544.87

Source: DEAAS – MAFRD

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, 2016 1.2.b Grain corn without irrigation Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Grain corn	kg/ha	4,500.00	0.24	1,080.00
Total income				**1,080.00**
VARIABLE COSTS				
Inputs				
Seed	bags	0.82	32.85	26.94
NPK	kg/ha	325.00	0.53	172.25
Urea	kg/ha	100.00	0.38	38.00
NAG	kg/ha	200.00	0.30	60.00
Herbicides	l/ha	1.00	22.50	22.50
Irrigation	flat rate			
Total input				**319.69**
Machinery expenditures				
Plowing	l/diesel	20.00	0.98	19.60
Seed preparation	l/diesel	10.00	0.98	9.80
Planting	l/diesel	8.00	0.98	7.84
Fertilization	l/diesel	8.00	0.98	7.84
Spraying	l/diesel	8.00	0.98	7.84
Irrigation	l/diesel			
Harvesting	service	1.00	130.00	130.00
Transport to the stable	l/diesel	8.00	0.98	7.84
Maintenance				18.45
Total machinery expenditures				**209.21**
Total variable costs				**528.90**
GROSS MARGIN				**551.10**
LABOUR FORCE				
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 labour force expenditures		**4.00**		**60.00**
GROSS MARGIN BEFORE DEPRECIATION				**491.10**
Depreciation				98.19
NET INCOME				**392.91**
Subsidies	€/ha			150.00
NET INCOME + Subsidies				**542.91**

Source: DEAAS – MAFRD

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%
		3,600	4,050	4,500	4,950	5,400
-20%	0.19	162.30	248.70	335.10	421.50	507.90
-10%	0.22	248.70	345.90	443.10	540.30	637.50
Scenario with basic price	0.24	335.10	443.10	**551.10**	659.10	767.10
10%	0.26	421.50	540.30	659.10	777.90	896.70
20%	0.29	507.90	637.50	767.10	896.70	1,026.30

Source: DEAAS – MAFRD

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

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		3,600	4,050	4,500	4,950	5,400
-20%	0.19	4.11	90.51	176.91	263.31	349.71
-10%	0.22	90.51	187.71	284.91	382.11	479.31
Scenario with basic price	0.24	176.91	284.91	**392.91**	500.91	608.91
10%	0.26	263.31	382.11	500.91	619.71	738.51
20%	0.29	349.71	479.31	608.91	738.51	868.11

Source: DEAAS – MAFRD

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, 2016 1.2.c Corn silage with irrigation Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Corn silage	kg/ha	45,000.00	0.06	2,700.00
Total income				**2,700.00**
VARIABLE COSTS				
Inputs				
Seed	bags	2.50	32.85	82.13
NPK	kg/ha	325.00	0.53	172.25
Urea	kg/ha	100.00	0.38	38.00
NAG	kg/ha	200.00	0.30	60.00
Herbicides	l/ha	1.50	22.50	33.75
Plastic folia	flat rate			20.00
Irrigation	flat rate			100.00
Total input				**506.13**
Machinery expenditures				
Plowing	l/diesel	20.00	0.98	19.60
Seed preparation	l/diesel	10.00	0.98	9.80
Planting	l/diesel	8.00	0.98	7.84
Fertilization	l/diesel	8.00	0.98	7.84
Spraying	l/diesel	8.00	0.98	7.84
Irrigation	l/diesel	48.00	0.98	47.04
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				**302.08**
Total variable costs				**808.20**
GROSS MARGIN				**1,891.80**
LABOUR FORCE				
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 labour force expenditures				**232.50**
GROSS MARGIN BEFORE DEPRECIATION				**1,659.30**
Depreciation				151.19
NET INCOME				**1,508.10**
Subsidies	€/ha			150.00
NET INCOME + Subsidies				**1,658.10**

Source: DEAAS – MAFRD

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%
		36,000	40,500	45,000	49,500	54,000
-20%	0.04	919.80	1,135.80	1,351.80	1,567.80	1,783.80
-10%	0.05	1,135.80	1,378.80	1,621.80	1,864.80	2,107.80
Scenario with basic price	0.05	1,351.80	1,621.80	**1,891.80**	2,161.80	2,431.80
10%	0.06	1,567.80	1,864.80	2,161.80	2,458.80	2,755.80
20%	0.06	1,783.80	2,107.80	2,431.80	2,755.80	3,079.80

Source: DEAAS – MAFRD

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

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		36,000	40,500	45,000	49,500	54,000
-20%	0.04	536.10	752.10	968.10	1,184.10	1,400.10
-10%	0.05	752.10	995.10	1,238.10	1,481.10	1,724.10
Scenario with basic price	0.05	968.10	1,238.10	**1,508.10**	1,778.10	2,048.10
10%	0.06	1,184.10	1,481.10	1,778.10	2,075.10	2,372.10
20%	0.06	1,400.10	1,724.10	2,048.10	2,372.10	2,696.10

Source: DEAAS – MAFRD

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, 2016 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	0.06	2,100.00
Total incomes				**2,100.00**
VARIABLE COSTS				
Inputs				
Seed	bags	2.50	32.85	82.13
NPK	kg/ha	325.00	0.53	172.25
Urea	kg/ha	100.00	0.38	38.00
NAG	kg/ha	200.00	0.30	60.00
Herbicides	l/ha	1.50	22.50	33.75
Plastic folia	flat rate			20.00
Total input				**406.13**
Machinery expenditures				
Plowing	l/diesel	20.00	0.98	19.60
Seed preparation	l/diesel	10.00	0.98	9.80
Planting	l/diesel	8.00	0.98	7.84
Fertilization	l/diesel	8.00	0.98	7.84
Spraying	l/diesel	8.00	0.98	7.84
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				**230.37**
Total variable costs				**636.50**
GROSS MARGIN				**1,463.51**
LABOUR FORCE				
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 labour force expenditures				**52.50**
GROSS MARGIN BEFORE DEPRECIATION				**1,411.01**
Depreciation				143.19
NET INCOME				**1,267.81**
Subsidies	€/ha			150.00
NET INCOME + Subsidies				**1,417.81**

Source: DEAAS – MAFRD

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	31,500	35,000	38,500	42,000
-20%	0.04	707.51	875.51	1,043.51	1,211.51	1,379.51
-10%	0.05	875.51	1,064.51	1,253.51	1,442.51	1,631.51
Scenario with basic price	0.05	1,043.51	1,253.51	**1,463.51**	1,673.51	1,883.51
10%	0.06	1,211.51	1,442.51	1,673.51	1,904.51	2,135.51
20%	0.06	1,379.51	1,631.51	1,883.51	2,135.51	2,387.51

Source: DEAAS – MAFRD

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

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		28,000	31,500	35,000	38,500	42,000
-20%	0.04	511.81	679.81	847.81	1,015.81	1,183.81
-10%	0.05	679.81	868.81	1,057.81	1,246.81	1,435.81
Scenario with basic price	0.05	847.81	1,057.81	**1,267.81**	1,477.81	1,687.81
10%	0.06	1,015.81	1,246.81	1,477.81	1,708.81	1,939.81
20%	0.06	1,183.81	1,435.81	1,687.81	1,939.81	2,191.81

Source: DEAAS – MAFRD

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, 2016 2.1 Apple Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Apple	kg/ha	40,000.00	0.36	14,400.00
Total incomes				**14,400.00**
VARIABLE COSTS				
Inputs				
Organic fertilizer	t/ha	60.00	5.00	300.00
Mineral fertilizer	kg/ha	825.00	0.53	437.25
Pesticides	kg/ha	14.00	60.00	840.00
Other expenses	flat rate			50.00
Total inputs				**1,627.25**
Machinery expenditures				
Cultivations	service	3.00	30.00	90.00
Spraying (6 time)	service	6.00	30.00	180.00
Other works	flat rate			100.00
Total machinery expenditures				**370.00**
Marketing expenditures				
Boxes	pieces	2,000.00	0.40	800.00
Transport	services	14.00	50.00	700.00
Total marketing expenditures				**1,500.00**
Total variable expenditures				**3,497.25**
GROSS MARGIN				**10,902.75**
LABOUR FORCE				
Shearing	pieces (plant trees)	1,600.00	1.00	1,600.00
Organic fertilization	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 cleaning	p/d	6.00	15.00	90.00
Picking	p/d	80.00	15.00	1,200.00
Other works	p/d	2.00	15.00	30.00
Total labour force expenditures				**3,310.00**
GROSS MARGIN BEFORE DEPRECIATION				**7,592.75**
Depreciation				651.31
NET INCOME				**6,941.44**
Subsidies	€/ha			400.00
NET INCOME + Subsidies				**7,341.44**

Source: DEAAS – MAFRD

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

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		32,000	36,000	40,000	44,000	48,000
-20%	0.29	5,978.75	6,870.77	8,022.75	8,994.75	10,066.75
-10%	0.32	7,130.75	8,166.77	9,462.75	10,578.75	11,794.75
Scenario with basic price	0.36	8,282.75	9,462.77	**10,902.75**	12,162.75	13,522.75
10%	0.40	9,434.75	10,758.77	12,342.75	13,746.75	15,250.75
20%	0.43	10,586.75	12,054.77	13,782.75	15,330.75	16,978.75

Source: DEAAS – MAFRD

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

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		32,000	36,000	40,000	44,000	48,000
-20%	0.29	2,257.44	2,909.48	4,061.44	4,913.44	5,865.44
-10%	0.32	3,409.44	4,205.48	5,501.44	6,497.44	7,593.44
Scenario with basic price	0.36	4,561.44	5,501.48	**6,941.44**	8,081.44	9,321.44
10%	0.40	5,713.44	6,797.48	8,381.44	9,665.44	11,049.44
20%	0.43	6,865.44	8,093.48	9,821.44	11,249.44	12,777.44

Source: DEAAS – MAFRD

2.5 Strawberry

2.5.1 Gross margin and net income per 10 acres

Table 26: Strawberry production cost

2. Calculation of perennial crops production cost, 2016 2.2 Strawberry in open field Area 10 acres, average for three years				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Strawberry	**kg**	**2,666.67**	**2.00**	**5,333.33**
Total incomes				**5,333.33**
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	0.98	11.43
Total inputs				**91.83**
Marketing expenses				
Primary packaging - crates	pieces	592.59	0.38	225.19
Boxes - baskets 0.5 kg	pieces	5,333.33	0.06	320.00
Transport	l/diesel	120.00	0.98	117.60
Total marketing expenditures				**662.79**
Total variable expenditures				**754.62**
GROSS MARGIN				**4,578.71**
LABOUR FORCE				
Cleaning of old leaves and shearing	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 labour force expenditures				**560.00**
GROSS MARGIN BEFORE DEPRECIATION				**4,018.71**
Depreciation				431.09
NET INCOMES				**3,587.62**

Source: DEAAS – MAFRD

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	2,400	2,667	2,933	3,200
-20%	1.60	2,767.75	3,139.90	3,512.05	3,884.20	4,256.34
-10%	1.80	3,194.42	3,619.90	4,045.38	4,470.86	4,896.34
Scenario with basic price	2.00	3,621.09	4,099.90	**4,578.71**	5,057.53	5,536.34
10%	2.20	4,047.75	4,579.90	5,112.05	5,644.20	6,176.34
20%	2.40	4,474.42	5,059.90	5,645.38	6,230.86	6,816.34

Source: DEAAS – MAFRD

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	2,400	2,667	2,933	3,200
-20%	1.60	1,841.16	2,181.06	2,520.96	2,860.85	3,200.75
-10%	1.80	2,267.83	2,661.06	3,054.29	3,447.52	3,840.75
Scenario with basic price	2.00	2,694.49	3,141.06	**3,587.62**	4,034.19	4,480.75
10%	2.20	3,121.16	3,621.06	4,120.96	4,620.85	5,120.75
20%	2.40	3,547.83	4,101.06	4,654.29	5,207.52	5,760.75

Source: DEAAS – MAFRD

2.6 Grape

2.6.1 Gross margin and net income per ha

Table 29: Table grape production cost

2. Calculation of perennial crops production cost, 2016 2.3 Table grape Area 1 ha				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Grape	kg	12,000.00	0.60	7,200.00
Total incomes				**7,200.00**
VARIABLE COSTS				
Inputs				
Strings	kg	6.50	6.15	39.98
NPK 5:20:30	kg	500.00	0.53	265.00
NAG	kg	200.00	0.28	56.00
Foliar fertilizer	kg	2.00	12.00	24.00
Preparations for protection	kg	25.30	21.00	531.30
Other expenditures	flat rate			20.00
Total inputs				**936.28**
Machinery expenses				
Spring plowing	service	1.00	110.00	110.00
Autumn plowing	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 time)	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				**2,556.28**
GROSS MARGIN				**4,643.73**
LABOUR FOURCE				
Shearing	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
Netting of vine	p/d	6.00	15.00	90.00
Plowing and harrowing (2 times)	p/d	8.00	15.00	120.00
Pruning (2 times)	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 labour force expenditures				**1,005.00**
GROSS MARGIN BEFORE DEPRECIATION				**3,638.73**

Depreciation		608.48
NET INCOMES		**3,030.25**
Subsidies (option 1)	€/ha	1,000.00
Subsidies (option 2)	€/ha	300.00
NET INCOMES + Subsidies (option 1)		**4,030.25**
NET INCOMES + Subsidies (option 2)		**3,330.25**

Source: DEAAS – MAFRD

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

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		9,600	10,800	12,000	13,200	14,400
-20%	0.48	2,051.73	2,627.73	3,203.73	3,779.73	4,355.73
-10%	0.54	2,627.73	3,275.73	3,923.73	4,571.73	5,219.73
Scenario with basic price	0.60	3,203.73	3,923.73	**4,643.73**	5,363.73	6,083.73
10%	0.66	3,779.73	4,571.73	5,363.73	6,155.73	6,947.73
20%	0.72	4,355.73	5,219.73	6,083.73	6,947.73	7,811.73

Source: DEAAS – MAFRD

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

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		9,600	10,800	12,000	13,200	14,400
-20%	0.48	528.25	1,059.25	1,590.25	2,121.25	2,652.25
-10%	0.54	1,104.25	1,707.25	2,310.25	2,913.25	3,516.25
Scenario with basic price	0.60	1,680.25	2,355.25	**3,030.25**	3,705.25	4,380.25
10%	0.66	2,256.25	3,003.25	3,750.25	4,497.25	5,244.25
20%	0.72	2,832.25	3,651.25	4,470.25	5,289.25	6,108.25

Source: DEAAS – MAFRD

2.7 Pepper

2.7.1 Gross margin and net income per ha

Table 32: Peppers production cost

3. Calculation of vegetable production cost, 2016 3.1 Pepper in open field (red pepper) Area 1 ha				
	Unit	Quantity	Price per unit	Value in €
INCOMES				
Pepper	kg	30,000.00	0.26	7,800.00
Total incomes				**7,800.00**
VARIABLE COSTS				
Inputs				
Seedlings	pieces	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	0.53	530.00
Urea	kg			
NAG	kg			
Foliar fertilizer (vuksal)	litre	3.00	5.00	15.00
Fungicides	kg	4.50	20.00	90.00
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	pieces	1,800.00	0.05	90.00
Boxes	pieces	1,500.00	0.25	375.00
Total inputs				**2,628.00**
Machinery expenses				
Fertilization	litre	40.00	0.98	39.20
Plowing	litre	40.00	0.98	39.20
Disking x 2	litre	40.00	0.98	39.20
Harrowing	litre	10.00	0.98	9.80
Works between rows with tiller	litre	30.00	0.98	29.40
Spraying	litre	5.00	0.98	4.90
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				**711.70**
Total variable expenditures				**3,339.70**
GROSS MARGIN				**4,460.30**
LABOUR FORCE				
Fertilization	p/d	10.00	15.00	150.00
Plowing	p/d	1.00	15.00	15.00

Disking 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 labour force expenditures				**1,815.00**
GROSS MARGIN BEFORE DEPRECIATION				**2,645.30**
Depreciation				200.00
NET INCOMES				**2,445.30**
Subsidies	€/ha			300.00
NET INCOMES + Subsidies				**2,745.30**

Source: DEAAS – MAFRD

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

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		24,000	27,000	30,000	33,000	36,000
-20%	0.21	1,745.30	2,322.80	2,900.30	3,477.80	4,055.30
-10%	0.23	2,369.30	3,024.80	3,680.30	4,335.80	4,991.30
Scenario with basic price	0.26	2,993.30	3,726.80	**4,460.30**	5,193.80	5,927.30
10%	0.29	3,617.30	4,428.80	5,240.30	6,051.80	6,863.30
20%	0.31	4,241.30	5,130.80	6,020.30	6,909.80	7,799.30

Source: DEAAS – MAFRD

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

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		24,000	27,000	30,000	33,000	36,000
-20%	0.21	-89.70	397.80	885.30	1,372.80	1,860.30
-10%	0.23	534.30	1,099.80	1,665.30	2,230.80	2,796.30
Scenario with basic price	0.26	1,158.30	1,801.80	**2,445.30**	3,088.80	3,732.30
10%	0.29	1,782.30	2,503.80	3,225.30	3,946.80	4,668.30
20%	0.31	2,406.30	3,205.80	4,005.30	4,804.80	5,604.30

Source: DEAAS – MAFRD

2.8 Tomatoes

2.8.1 Gross margin and net income per 10 acres in traditional greenhouse

Table 35: Tomatoes production cost in traditional greenhouse

3. Calculation of vegetable production cost, 2016 3.2.a Tomatoes in traditional greenhouses Area 10 acres				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Tomatoes	kg	15,040.00	0.25	3,760.00
Total incomes				**3,760.00**
VARIABLE COSTS				
Inputs				
Seedlings	pieces	3,200.00	0.10	316.02
Organic fertilizer	kg	5,000.00	0.01	33.33
NPK 15:15:15	kg	75.00	0.53	39.75
NAG	kg	32.00	0.28	8.96
Protective preparations				21.81
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	pieces	2,200.00	0.29	638.00
Total inputs				**1,096.70**
Machinery expenses				
Plowing (by tiller)	litre	10.00	0.98	9.80
Disking x 2	litre	8.00	0.98	7.84
Harrowing	litre	4.00	0.98	3.92
Fertilization	litre	15.00	0.98	14.70
Works between rows with tiller	litre	8.00	0.98	7.84
Transport from the field to market	flat rate			400.00
Maintenance	flat rate			25.00
Total machinery expenditures				**469.10**
Total variable expenditures				**1,565.80**
GROSS MARGIN				**2,194.20**
LABOUR FORCE				
Fertilization	p/d	1.00	15.00	15.00
Plowing (by tiller)	p/d	0.50	15.00	7.50
Disking	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 market	p/d	15.00	15.00	225.00
Other measures of care during vegetation	p/d	37.50	15.00	562.50
Total labour force expenditures				**1,185.00**
GROSS MARGIN BEFORE DEPRECIATION				**1,009.20**
Depreciation				366.10
NET INCOMES				**643.11**

Source: DEAAS – MAFRD

Table 36: The impact of price and yield change in gross margin (tomatoes in traditional greenhouse)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		12,032	13,536	15,040	16,544	18,048
-20%	0.20	968.20	1,205.20	1,442.20	1,679.20	1,916.20
-10%	0.23	1,269.00	1,543.60	1,818.20	2,092.80	2,367.40
Scenario with basic price	0.25	1,569.80	1,882.00	**2,194.20**	2,506.40	2,818.60
10%	0.28	1,870.60	2,220.40	2,570.20	2,920.00	3,269.80
20%	0.30	2,171.40	2,558.80	2,946.20	3,333.60	3,721.00

Source: DEAAS – MAFRD

Table 37: The impact of price and yield change in net income (tomatoes in traditional greenhouse)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		12,032	13,536	15,040	16,544	18,048
-20%	0.20	-492.89	-300.89	-108.89	83.11	275.11
-10%	0.23	-192.09	37.51	267.11	496.71	726.31
Scenario with basic price	0.25	108.71	375.91	**643.11**	910.31	1,177.51
10%	0.28	409.51	714.31	1,019.11	1,323.91	1,628.71
20%	0.30	710.31	1,052.71	1,395.11	1,737.51	2,079.91

Source: DEAAS – MAFRD

2.8.2 Gross margin and net income per 10 acres in standard greenhouse

Table 38: Tomatoes production cost in standard greenhouse

3. Calculation of vegetable production cost, 2016 3.2.b Tomatoes in standard greenhouses Area 10 acres				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Tomatoes	kg	21,000.00	0.25	5,250.00
Total incomes				**5,250.00**
VARIABLE COSTS				
Inputs				
Seedlings	pieces	3,000.00	0.10	300.14
Organic fertilizer	kg	5,000.00	0.01	33.33
NPK 15:15:15	kg	75.00	0.53	39.75
NAG	kg	30.00	0.28	8.40
Protective preparations				21.81
Vitamins (Sall preparation)	litre	0.9	3	2.7
Water	slat rate	0	0	15
Support system (rope)	m	7500	0.0033	24.75
Packaging	pieces	3000	0.29	870
Total inputs				**1,315.88**
Machinery expenses				
Plowing (by tiller)	litre	10.00	0.98	9.80
Disking x 2	litre	8.00	0.98	7.84
Harrowing	litre	4.00	0.98	3.92
Fertilization	litre	15.00	0.98	14.70
Works between rows with tiller	litre	8.00	0.98	7.84
Transport from the field to market	flat rate			400.00
Maintenance	flat rate			25.00
Total machinery expenditures				**469.10**
Total variable expenditures				**1,784.98**
GROSS MARGIN				**3,465.02**
LABOUR FORCE				
Fertilization	p/d	1.00	15.00	15.00
Plowing (by tiller)	p/d	0.50	15.00	7.50
Disking	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 market	p/d	20.00	15.00	300.00
Other measures of care during vegetation	p/d	37.50	15.00	562.50
Total labour force expenditures				**1,335.00**
GROSS MARGIN BEFORE DEPRECIATION				**2,130.02**
Depreciation*				490.05
NET INCOMES				**1,639.97**

Source: DEAAS – MAFRD; * Depreciation is calculated with the 65% investment support in greenhouse construction

Table 39: The impact of price and yield change in gross margin (tomatoes in standard greenhouse)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		16,800	18,900	21,000	23,100	25,200
-20%	0.20	1,749.02	2,082.02	2,415.02	2,748.02	3,081.02
-10%	0.23	2,169.02	2,554.52	2,940.02	3,325.52	3,711.02
Scenario with basic price	0.25	2,589.02	3,027.02	**3,465.02**	3,903.02	4,341.02
10%	0.28	3,009.02	3,499.52	3,990.02	4,480.52	4,971.02
20%	0.30	3,429.02	3,972.02	4,515.02	5,058.02	5,601.02

Source: DEAAS – MAFRD

Table 40: The impact of price and yield change in net income (tomatoes in standard greenhouse)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		16,800	18,900	21,000	23,100	25,200
-20%	0.20	43.97	316.97	589.97	862.97	1,135.97
-10%	0.23	463.97	789.47	1,114.97	1,440.47	1,765.97
Scenario with basic price	0.25	883.97	1,261.97	**1,639.97**	2,017.97	2,395.97
10%	0.28	1,303.97	1,734.47	2,164.97	2,595.47	3,025.97
20%	0.30	1,723.97	2,206.97	2,689.97	3,172.97	3,655.97

Source: DEAAS – MAFRD

2.9 Cucumber

2.9.1 Gross margin and net income per 10 acres in traditional greenhouse

Table 41: Cucumber production cost in traditional greenhouse

3. Calculation of vegetable production cost, 2016 3.3.a Cucumber in traditional greenhouses Area 10 acres				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES	-	-	-	-
Cucamber	kg	17,600.00	0.20	3,520.00
Total incomes	-	-	-	**3,520.00**
KOSTO VARIABILE	-	-	-	-
Inputs	-	-	-	-
Seedlings	pieces	3,200.00	0.07	214.35
Organic fertilizer	kg	6,000.00	0.01	40.00
NPK 15:15:15	kg	100.00	0.46	46.00
NAG	kg	96.00	0.29	27.84
Protective preparations	-	-	-	61.67
Water	flat rate	0	0	15
Support system (rope)	m	6,400.00	0.00	21.12
Packaging	pieces	1,700.00	0.20	340.00
Total inputs	-	-	-	**765.98**
Machinery expenses	-	-	-	-
Plowing (by tiller)	litre	10.00	0.98	9.80
Disking x 2	litre	8.00	0.98	7.84
Harrowing	litre	4.00	0.98	3.92
Fertilization	litre	15.00	0.98	14.70
Works between rows with tiller	litre	8.00	0.98	7.84
Transport from the field to market	flat rate	-	-	500.00
Maintenance	flat rate	-	-	25.00
Total machinery expenditures	-	-	-	**569.10**
Total variable expenditures	-	-	-	**1,335.08**
GROSS MARGIN	-	-	-	**2,184.92**
LABOUR FORCE	-	-	-	-
Fertilization	p/d	1.00	15.00	15.00
Plowing (by tiller)	p/d	0.50	15.00	7.50
Disking	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 market	p/d	15.00	15.00	225.00
Other measures of care during vegetation	p/d	33.75	15.00	506.25
Total labour force expenditures	-	-	-	**1,166.25**
GROSS MARGIN BEFORE DEPRECIATION				**1,018.67**
Depreciation				332.76
NET INCOMES				**685.91**

Source: DEAAS – MAFRD

Table 42: The impact of price and yield change in gross margin (cucumber in traditional greenhouse)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		14,080	15,840	17,600	19,360	21,120
-20%	0.16	985.72	1,233.32	1,480.92	1,728.52	1,976.12
-10%	0.18	1,267.32	1,550.12	1,832.92	2,115.72	2,398.52
Scenario with basic price	0.20	1,548.92	1,866.92	**2,184.92**	2,502.92	2,820.92
10%	0.22	1,830.52	2,183.72	2,536.92	2,890.12	3,243.32
20%	0.24	2,112.12	2,500.52	2,888.92	3,277.32	3,665.72

Source: DEAAS – MAFRD

Table 43: The impact of price and yield change in net income (cucumber in traditional greenhouse)

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		14,080	15,840	17,600	19,360	21,120
-20%	0.16	-415.79	-216.94	-18.09	180.76	379.61
-10%	0.18	-134.19	99.86	333.91	567.96	802.01
Scenario with basic price	0.20	147.41	416.66	**685.91**	955.16	1,224.41
10%	0.22	429.01	733.46	1,037.91	1,342.36	1,646.81
20%	0.24	710.61	1,050.26	1,389.91	1,729.56	2,069.21

Source: DEAAS – MAFRD

2.9.2 Gross margin and net income per 10 acres in standard greenhouse

Table 44: Cucumber production cost in standard greenhouse

3. Calculation of vegetable production cost, 2016 3.3.b Cucumber in standard greenhouses Area 10 acres				
	Unit	**Quantity**	**Price per unit**	**Value in €**
INCOMES				
Cucamber	kg	24,000.00	0.20	4,800.00
Total incomes				**4,800.00**
KOSTO VARIABILE				
Inputs				
Seedlings	pieces	3,000.00	0.07	206.27
Organic fertilizer	kg	6,000.00	0.01	40.00
NPK 15:15:15	kg	100.00	0.53	53.00
NAG	kg	90.00	0.28	25.20
Protective preparations				66.67
Water	flat rate			15.00
Support system (rope)	m	7,500.00	0.00	24.75
Packaging	pieces	2,300.00	0.20	460.00
Total inputs				**890.89**
Machinery expenses				
Plowing (by tiller)	litre	10.00	0.98	9.80
Disking x 2	litre	8.00	0.98	7.84
Harrowing	litre	4.00	0.98	3.92
Fertilization	litre	15.00	0.98	14.70
Works between rows with tiller	litre	8.00	0.98	7.84
Transport from the field to market	flat rate			500.00
Maintenance	flat rate			25.00
Total machinery expenditures				**569.10**
Total variable expenditures				**1,459.99**
GROSS MARGIN				**3,340.01**
FUQIA PUNËTORE				**-**
Plehërimi	p/d	1.00	15.00	15.00
Lavrimi (me golldon)	p/d	0.50	15.00	7.50
Frezimi	p/d	0.50	15.00	7.50
Mbjellja	p/d	2.00	15.00	30.00
Spërkatja	p/d	3.75	15.00	56.25
Ujitja	p/d	3.75	15.00	56.25
Vjelja	p/d	25.00	15.00	375.00
Transporti nga fusha në treg	p/d	20.00	15.00	300.00
Masat tjera të përkujdesit gjatë vegjetacionit	p/d	45.00	15.00	675.00
Gjithsej shpenzime të fuqisë punëtore				**1,522.50**
MARZHA BRUTO PARA ZHVLERËSIMIT				**1,817.51**
Zhvlerësimi*				439.01
TË ARDHURAT NETO				**1,378.50**

Source: DEAAS – MAFRD; * Depreciation is calculated with the 65% investment support in greenhouse construction

Table 45: The impact of price and yield change in gross margin (cucumber in standard greenhouse)

GROSS MARGIN		-20%	-10%	Scenario with basic yield	10%	20%
		19,200	21,600	24,000	26,400	28,800
-20%	0.16	1,704.01	2,042.01	2,380.01	2,718.01	3,056.01
-10%	0.18	2,088.01	2,474.01	2,860.01	3,246.01	3,632.01
Scenario with basic price	0.20	2,472.01	2,906.01	**3,340.01**	3,774.01	4,208.01
10%	0.22	2,856.01	3,338.01	3,820.01	4,302.01	4,784.01
20%	0.24	3,240.01	3,770.01	4,300.01	4,830.01	5,360.01

Source: DEAAS – MAFRD

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

NET INCOME		-20%	-10%	Scenario with basic yield	10%	20%
		19,200	21,600	24,000	26,400	28,800
-20%	0.16	-122.50	148.00	418.50	689.00	959.50
-10%	0.18	261.50	580.00	898.50	1,217.00	1,535.50
Scenario with basic price	0.20	645.50	1,012.00	**1,378.50**	1,745.00	2,111.50
10%	0.22	1,029.50	1,444.00	1,858.50	2,273.00	2,687.50
20%	0.24	1,413.50	1,876.00	2,338.50	2,801.00	3,263.50

Source: DEAAS – MAFRD

3 Price and yield at the breakeven point

Table 47: Prices and yields at the breakeven point to cover only the variable cost

Wheat (1ha)	
Base yield (kg)	4,500
Base price (€)	0.19
Price at the breakeven point (€)	**0.16**
Yield at the breakeven point kg	**3,742**

Grain corn with irrigation (1ha)	
Base yield (kg)	7,500
Base price (€)	0.24
Price at the breakeven point (€)	**0.13**
Yield at the breakeven point kg	**3,921**

Grain corn without irrigation (1 ha)	
Base yield (kg)	4,500
Base price (€)	0.24
Price at the breakeven point (€)	**0.13**
Yield at the breakeven point kg	**2,454**

Corn silage with irrigation (1ha)	
Base yield (kg)	45,000
Base price (€)	0.06
Price at the breakeven point (€)	**0.02**
Yield at the breakeven point kg	**17,345**

Corn silage without irrigation (1 ha)	
Base yield (kg)	35,000
Base price (€)	0.06
Price at the breakeven point (€)	**0.02**
Yield at the breakeven point kg	**11,483**

Apple (1 ha)	
Base yield (kg)	40,000
Base price (€)	0.36
Price at the breakeven point (€)	**0.17**
Yield at the breakeven point kg	**18,909**

Strawberry (10 acres)	
Base yield (kg)	2,667
Base price (€)	2.00
Price at the breakeven point (€)	**0.49**
Yield at the breakeven point kg	**657**

Grape (1 ha)	
Base yield (kg)	12.000
Base price (€)	0.60
Price at the breakeven point (€)	**0.30**
Yield at the breakeven point kg	**5,935**

Tomatoes in traditional greenhouse (10 acres)	
Base yield (kg)	15,040
Base price (€)	0.25
Price at the breakeven point (€)	**0.18**
Yield at the breakeven point kg/ha	**11,003**

Tomatoes in standard greenhouse (10 acres)	
Base yield (kg)	21,000
Base price (€)	0.25
Price at the breakeven point (€)	**0.15**
Yield at the breakeven point kg/ha	**14,480**

Cucumber in traditional greenhouse (10 acres)	
Base yield (kg)	17,600
Base price (€)	0.20
Price at the breakeven point (€)	**0.14**
Yield at the breakeven point kg/ha	**12,507**

Cucumber in standard greenhouse (10 acres)	
Base yield (kg)	24,000
Base price (€)	0.20
Price at the breakeven point (€)	**0.12**
Yield at the breakeven point kg/ha	**14,902**

Pepper in open field (1 ha)	
Base yield (kg)	30,000
Base price (€)	0.26
Price at the breakeven point (€)	**0.17**
Yield at the breakeven point kg/ha	**19,826**

4 Technical information

Table 48: Agro-technical measures on wheat

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Plowing																								
Preparation for planting																								
Fertilization NPK																								
Planting																								
Re-fertilization (N_2)																								
Spraying against weeds																								
Spraying against insects																								
Protection against diseases																								
Foliar fertilizer/feeding																								
Harvesting																								
Netting																								
Transport of wheat and straw																								

Source: DEAAS – MAFRD

Table 49: Agro-technical measures on corn

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Basic plowing																								
Basic fertilization 50% NPK (before plowing)																								
Basic fertilization 50% NPK																								
Preparation for planting																								
Planting (grain corn)																								
Protection against weeds*																								
Spraying against insects (as needed)																								
Re-fertilization (N_2)																								
Foliar fertilizer/feeding																								
Harvesting																								
Planting (corn silage)																								

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

Table 50: Agro-technical measures on apple

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Shearing																								
Protection																								
Basic fertiliz./feeding																								
Cristal																								
Foliar fertilization/feeding																								
Network covering																								
Green pruning																								
Mulchering																								
Mowing																								
Protection against weeds																								
Irrigation as needed																								
Water drainage																								
Picking																								
Tightening of strings and netting																								
Removal of network																								

Source: DEAAS – MAFRD

Table 51: Agro-technical measures on grape

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

Source: DEAAS – MAFRD

Table 52: Agro-technical measures on strawberry

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

Source: DEAAS – MAFRD

Table 53: Agro-technical measures on tomatoes

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Basic fertilization																								
Basic plowing																								
Land preparation																								
Planting of seedlings (in modules)																								
Planting of seedlings (in permanent place)																								
Protection																								
Protection against weeds																								
Foliar fertilization/feeding																								
Cristal fertilization/feeding																								
Picking																								

Source: DEAAS – MAFRD

Table 54: 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)																								
Mulchering and planting in rows																								
Protection																								
Cristal fertilization																								
Foliar fertilization/feeding																								
Pruning																								
Netting of plants																								
Picking																								

Source: DEAAS – MAFRD

Table 55: Agro-technical measures on peppers

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

Source: DEAAS – MAFRD

Table 56: Agro-technical measures on peppers in greenhouse

Activity/Month	January		February		March		April		May		June		July		August		September		October		November		December	
Planting of seedlings (in modules)																								
Land preparation																								
Mulchering																								
Planting of seedlings (in permanent place)																								
Protection																								
Netting of plants																								
Pruning																								
Picking time																								
Organic fertilization/feeding																								
Cristal fertilization/feeding																								
Foliar fertilization/feeding																								

Source: DEAAS – MAFRD

Table 57: Agro-technical measures on cucumbers

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

Source: DEAAS – MAFRD

5 Conclusions

In Kosovo, since the majority of the population live in rural areas, agricultural land ownership and good environmental conditions for development of agriculture enables them to engage in agricultural activities and to generate incomes for their families. Farmers begin to be engaged in agricultural activities to feel the pleasure of owning their business, while the generation of profit is the main motive to start a new activity.

Considering that generation of profit and generation of incomes for their families is a priority for the farmers, good planning before deciding in what kind of agricultural activity to engage or what kind of crop to cultivate, would help farmers to achieve higher profit.

Farmers must keep records in order to be able to compare themselves with other farmers and to understand at what point is their business, whether there are advantages or deficiencies compared to businesses that are engaged in the same activities.

Record keeping and use of reference calculations presented in this economic catalogue, helps in better management of the farm, by providing information that by cultivation of which crop or with the combination of which crops a farmer can achieve higher profit.

List of tables

List of figures