

LIST OF TABLES, CHARTS AND PHOTOS
THE ISSUES OF AGRICULTURAL ADVISORY SERVICE
1'21(103)

The structure of total grain consumption of selected cereals in the entire European Union and in Poland, on average in the 2017/2018-2019/2020 season	1
The share of individual cereals in consumption for fodder in the entire European Union and in Poland, on average in the 2017/2018-2019/2020 season	2
Efficiency of winter wheat and spring barley production and maize grown for grain on average in 2018-2020 (points according to PWWD)	3
Basic information on farms collecting in 2018 numerical data on selected cereals (on average in groups of farms participating in the research)	4
Production, costs and income from the cultivation of winter wheat and spring barley in the years 2018-2020 (on average in groups of farms participating in the research)	5
Production, costs and income from growing maize for grain in the years 2018-2020 (on average in groups of farms participating in the research)	6
Indicators characterizing the production of selected cereals on average in 2018 -2020 (in groups of farms participating in the research)	7
Selected initiatives and activities undertaken by the Rural Housewives' Clubs (in the period of their activity) in the Masovian voivodeship to improve the living standards of rural residents	8
RDP 2014-2020 budget by basic measures (in PLN milion and EURO million)	9
The amount of support according to sub-measures under farm development and economic activity (according to data at the end of the first half of 2020)	10
Funding limits for bonuses for young farmers and amounts implemented payments (according to data as at the end of 2020 year)	11
Amounts for the restructuring of small farms and amounts payments made (according to data as at the end of 2020 year)	12
Funding limits for non-agricultural start-up bonuses and amounts payments made (according to data as at the end of 2020)	13

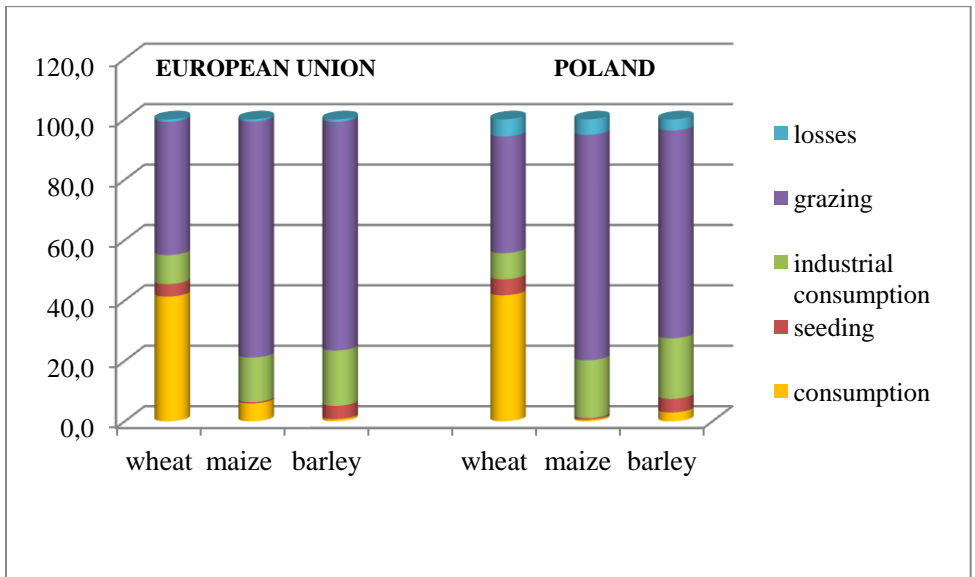
Amounts of payments granted and number of beneficiaries under development entrepreneurship – development of agricultural services (according to data as at the end of 2020)	14
Amounts of payments made and number of beneficiaries under the payment for farmers transfer ring small farms (according to data as at the end of 2020)	15
Representatives of three species of large edible snails from the family Helicidae	16
Technological division of the large gray snail carcass (<i>Cornu aspersum maxima</i>) ...	17
Side view of the breeding box	17
Experimental and production pens	18
Parameters of the breeding body and carcass <i>Cornu aspersum aspersum</i> and <i>Cornu aspersum maxima</i> from a variety of living and feeding conditions. Average values	19
Nutritional parameters <i>Cornu aspersum aspersum</i> and <i>Cornu aspersum maxima</i> from a variety of living and feeding conditions	20
Basic differences in the course of the Gray snail breeding cycle (<i>Cornu aspersum</i>) and Roman snail (<i>Helix pomatia</i>)	22
Comparison of the reproduction parameters of the Gray snail (<i>Cornu aspersum</i>) and the Roman snail (<i>Helix pomatia</i>)	23

PRODUCTION EFFICIENCY OF SELECTED CEREALS IN POLAND IN 2018-2020

Irena Augustyńska, Magdalena Czułowska

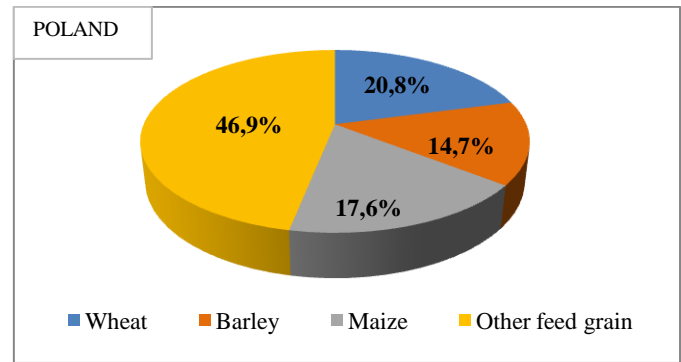
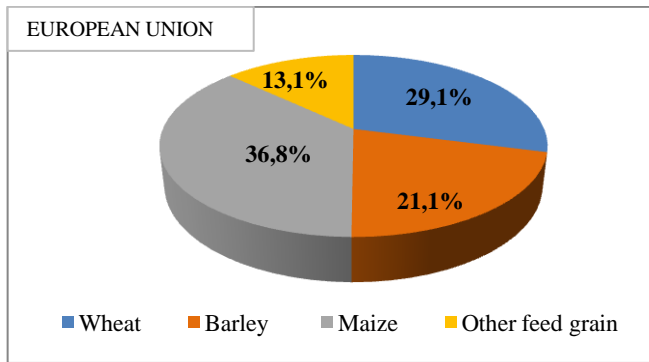
Graph 1

The structure of total grain consumption of selected cereals in the entire European Union and in Poland, on average in the 2017/2018-2019/2020 seasons



Source: Own study based on data from the European Commission [Crops... 2020] and data from the Central Statistical Office and IAFE-NRI [after Łopaciuk 2020a].

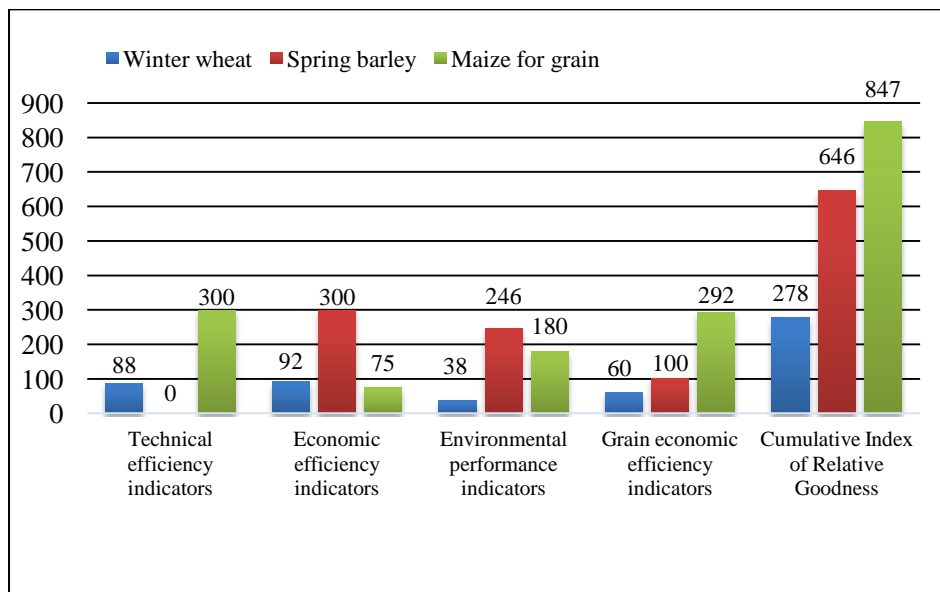
The share of individual cereals in consumption for fodder in the entire European Union and in Poland, on average in the 2017/2018-2019/2020 seasons



Source: Own study based on data from the European Commission [Crops... 2020] and data from the Central Statistical Office and IERiGŻ-PIB [after Łopaciuk 2020].

Graph 3

**Efficiency of winter wheat and spring barley production
and maize grown for grain
on average in 2018-2020 (points according to PWWD)**



Source: Own study based on data from the AGROKOSZTY system.

Table 1

**Basic information on farms collecting in 2018
numerical data on selected cereals
(on average in groups of farms participating in the research)**

Specification		Winter wheat	Spring barley	Maize for grain
Average area of agricultural land		69,08	61,02	86,51
Average arable land area	[ha]	65,49	55,34	85,41
Average cultivation area of the analyzed plant		22,42	9,97	26,12
Share in the total harvest area of farms	[%]	30,85	16,22	28,16
Total labor inputs per 1 hectare of the analyzed plant	[hour]	8,7	6,7	13,1
including: share of own labor inputs	[%]	95,7	97,0	94,1
Share in production value (total) of farms:				
total animals production	[%]	21,9	38,7	14,1
total plant production		77,7	59,9	84,2
the plant production activity under study		25,3	8,6	34,5
Value of the fixed assets of farms on 1 hectare of agricultural land	[PLN]	10 079	9 597	11 441

Source: Own study based on data from the AGROKOSZTY system.

Table 2

**Production, costs and income from the cultivation of winter wheat and spring barley
in the years 2018-2020
(on average in groups of farms participating in the research)**

Specification		Winter wheat				Spring barley			
		Years of research			Average in years 2018- 2020	Years of research			Average in years 2018- 2020
		2018	2019	2020		2018	2019	2020	
Grain yield	[dt/ha]	56,6	61,1	66,6	61,4	40,4	43,9	49,9	44,7
The selling price of the grain	[PLN/ dt]	76,51	67,03	71,82	71,78	67,32	62,72	62,82	64,29
Total production value	[PLN/ ha]	4348	4114	4802	4421	2724	2762	3144	2877
including grain		4330	4093	4783	4402	2717	2754	3136	2869
Total direct costs		1348	1406	1438	1398	805	850	856	837
of this: seed material		223	244	243	237	187	210	197	198
total mineral fertilizers		735	767	794	765	461	481	498	480
plant protection products		350	355	361	355	133	135	137	135
growth regulators		34	34	34	34	15	15	15	15
others		6	6	6	6	9	9	9	9
Gross margin (less subsidies)		3000	2708	3364	3023	1919	1912	2288	2040
Total indirect costs		1854	1944	1973	1925	1164	1218	1238	1206
of this: actual indirect costs		817	846	847	837	544	562	568	558
amortization		685	735	760	727	415	446	460	440
costs of external factors		352	363	366	361	205	210	210	208
Operating income less subsidies	1146	764	1391	1098	755	694	1050	834	
Subsidies	829	852	870	850	840	864	882	862	
Income from activity	1975	1616	2261	1948	1595	1558	1932	1696	
Total costs	[PLN/ ha]	3202	3350	3411	3323	1969	2068	2094	2043
Cost of own labor	[PLN/ ha]	144	155	159	153	113	121	125	120
Share of subsidies in income from activities	[%]	42,0	52,7	38,5	43,6	52,7	55,4	45,7	50,8
Profitability of production	[%]	135,8	122,8	140,8	133,1	138,4	133,6	150,1	140,8
The cost of producing grain	[PLN/ dt]	57	55	51	54	49	47	42	46
Grain production cost / Grain price		0,74	0,82	0,71	0,75	0,72	0,75	0,67	0,71

For 2018 – actual data, for 2019-2020 – estimated data.

Total subsidies: single area payment, greening payment and additional payment.

Source: Own study based on data from the AGROKOSZTY system.

**Production, costs and income from growing maize for grain
in the years 2018-2020
(on average in groups of farms participating in the research)**

Specification		Maize for grain			
		Years of research			Average in years 2018-2020
		2018	2019	2020	
Grain yield	[dt/ha]	100,5	94,3	119,2	104,7
The selling price of the grain	[PLN/dt]	60,46	51,81	66,50	59,59
Total production value	[PLN/ha]	6078	4887	7925	6297
including : grain		6078	4887	7925	6297
Total direct costs		2050	2126	2196	2124
of this: seed material		538	568	598	568
total mineral fertilizers		975	1015	1050	1013
plant protection products		177	181	181	180
growth regulators		0	0	0	0
others		360	362	367	363
Gross margin (less subsidies)		4028	2761	5729	4173
Total indirect costs		2768	2887	2907	2854
of this: actual indirect costs		1299	1334	1311	1315
amortization		918	987	1026	977
costs of external factors		551	566	570	562
Operating income less subsidies		1260	-126	2822	1319
Subsidies		830	854	872	852
Income from activity	2090	728	3694	2171	
Total costs	[PLN/ha]	4818	5013	5103	4978
Cost of own labor		214	229	236	226
Share of subsidies in income from activities	[%]	39,7	117,2	23,6	39,2
Profitability of production		126,1	97,5	155,3	126,5
The cost of producing grain	[PLN/dt]	48	53	43	48
Grain production cost / Grain price		0,79	1,03	0,64	0,80

For 2018 – actual data, for 2019-2020 – estimated data..

Total subsidies: single area payment, greening payment and additional payment..

Source: Own study based on data from the AGROKOSZTY system.

Table 4

**Indicators characterizing the production of selected cereals
on average in 2018 -2020
(in groups of farms participating in the research)**

Specification	Winter wheat	Spring barley	Maize for grain
Grain yield [dt] per 100 PLN of fixed assets	0,61	0,47	0,91
Grain yield [dt] per total labor input [hour]	7,02	6,64	7,98
Operating income [PLN] per 100 zł of total costs	58,62	83,02	43,61
Cost of NPK [PLN] per 1 ha of cultivation	700	445	856
Consumption of NPK [kg] per 1 ha of cultivation	253	163	336
Average gross fertilization efficiency [kg]	24,31	27,47	31,13
Protein content [kg] in grain harvested from 1 ha of cultivation	741	496	948
Fat content [kg] in grain harvested from 1 ha of cultivation	102	83	431
Total cost [PLN] of production (total cost + cost of own labor) of 1 kg of protein and fat (in total) contained in grain harvested from 1 ha of cultivation	4,12	3,74	3,77

Source: Own study based on data from the AGROKOSZTY system.

THE ACTIVITY OF THE RURAL HOUSEWIVES' CLUBS ON THE EXAMPLE OF THE MASOVIAN VOIVODESHIP

Barbara Chmielewska

Table 1

Selected initiatives and activities undertaken by the Rural Housewives' Clubs (in the period of their activity) in the Masovian voivodeship to improve the living standards of rural residents

Examples of activities and initiatives	Rural Housewives' Clubs	
	unregistered*	registered*
	[%]	
Participation in the harvest festival	97	65
Other celebrations (including patriotic)	90	35
Participation in cultural events	96	85
Participation in excursions, including pilgrimages	75	60
Participation in local government celebrations	75	55
Cultivating the traditions of folk local groups	65	43
Occasional events	71	42
Cooking, preparation of preserves, proper nutrition courses	92	32
Cutting and sewing courses	50	5
Table setting, floristic and cosmetics courses	50	25
Computer service courses	2	10
Integration of residents	83	65
Better access to healthcare	75	9
Organizing assistance for low-income families	56	10
Improving access to cultural institutions	58	50
Trainings on the harmful effects of drugs and alcohol	42	10
Help in organizing care for children and the elderly	33	14
Support due to natural disasters	32	8
Road infrastructure	67	15
Water supply infrastructure	25	5
Communication infrastructure (including buses)	75	10
Gasification	67	10
Organizing a meeting place (common room)	83	55
Help in obtaining additional income	5	10
Assistance in the development of local entrepreneurship	20	18
Assistance or submission of applications for EU subsidies	17	60

*"Unregistered" rural clubs are clubs, that are not registered with ARiMR. "Registered" rural clubs are clubs, that have been registered with ARiMR on the basis of the act of November 9, 2018 on rural housewives' clubs.

Source: Own study based on the data contained in the expert opinion: „Wkład organizacji porządowych w zrównoważony rozwój obszarów wiejskich w województwie mazowieckim.”

THE DEGREE OF USE OF SUPPORT INSTRUMENTS UNDER THE RDP 2014-2020 MEASURE: DEVELOPMENT OF FARMS AND AGRICULTURAL ACTIVITY

Bogdan M. Wawrzyniak

Table 1

RDP 2014-2020 budget by basic measures (in PLN milion and EURO million)

Actions	Funds limit [PLN milion]	Funds limit [EURO milion]	Percentage in relation to the total
Knowledge transfer and information activities	256,5	58,0	0,42
Advisory and replacement services	330,6	75,0	0,55
Quality systems for agricultural products and footstuffs	144,3	33,0	0,24
Investments in fixed assets	16 782,5	3 817,0	28,0
Restoring agricultural production potential – natural disasters	543,1	122,9	0,90
Farm and business development	9 044,5	2 026,4	15,0
Basic services and village renewal in rural areas	6 033,6	1 387,0	10,2
Investments in forest area development and improvement of forest viability	1 317,0	301,0	2,22
Creation of producer groups and producer organizations	941,9	215,1	1,62
Agri-environment-climate activities	5 971,0	1 366,8	10,0
Organic farming	3 062,5	699,9	5,14
Payments for areas with natural constraints (LFA)	8 576,0	1 983,3	14,6
Animal welfare	221,2	55,0	0,40
Cooperation	389,5	88,0	0,64
Leader	3 453,2	787,0	5,77
Technical Support	1 416,7	323,3	2,37
Liabilities – structural pensions	1 181,0	264,0	1,93
Overall	59 665,1	13 602,72	100,00

Source: Prepared on the basis of RDP 2014-2020 data from 2015.
(MRiRW, 2015).

Table 2

The amount of support according to sub-measures under farm development and economic activity (according to data at the end of the first half of 2020)

Description	Funds limit [thou. PLN]	Funds limit [thou. EURO]	Number of beneficiaries	Completed payments		Per. of the limit being used up
				Amounts [thou. PLN]	Amounts EFRROW [thou. EURO]	
Bonuses for young farmers	3 153 380,5	717 997,5	14 293	1 289 200,0	820 317,9	41,5
Restructuring of small farms	3 354 029,6	731 029,3	27 866	1 352 364,0	860 509,2	41,9
Bonuses for starting non-agricultural activities	1 496 355,9	339 359,1	1 928	162 220,0	103 220,6	11,6
Entrepreneurship development – development of agricultural services	1 014 568,9	231 997,6	1 140	443 710,5	282 330,0	44,4
Payments to transferors of small farms	26 192,3	5 996,8	562	9 941,1	2 323,7	38,7
Overall	9 044 527,2	2 026 380,3	45 789	3 405 664,2	2 068 701,4	36,9

Source: Own study based on the ARiMR Management System.

Table 3

Funding limits for bonuses for young farmers and amounts implemented payments (according to data as at the end of 2020 year)

Voivodeship	Funds limit [thou. euro]	Funds limit [thou. pln]	The amount of therealized payment [thou. pln]	Percent	Number of submitted applications	Number of beneficiares	Percent
Lower Silesia	41 428,5	181 456,8	31 780,0	17,5	675	352	52,1
Kuyavia-Pomerania	58 674,8	256 995,6	100 500,0	39,1	1 818	1 104	60,7
Lublin	66 170,6	289 827,2	157 580,0	54,3	2 956	1 723	58,3
Lubusz	17 217,6	75 413,1	11 320,0	17,5	352	128	36,4
Lodzkie	54 503,2	238 724,1	113 960,0	47,7	1 986	1 247	62,8
Lesser Poland	23 708,3	103 842,3	61 880,0	59,6	1 044	679	65,1
Masovia	107 089,4	469 051,6	244 360,0	52,1	4 536	2 689	59,3
Opole Province	21 819,9	95 571,2	27 660,0	28,9	578	314	54,3
Subcarpathia	22 257,9	97 489,6	20 620,0	21,1	532	242	45,5
Podlasie	51 760,5	226 710,9	130 760,0	57,7	2 235	1 452	65,0
Pomerania	34 909,1	152 901,8	48 360,0	31,6	1 016	539	53,1
Silesia	16 147,8	70 727,4	22 480,0	31,8	404	240	59,4
Świętokrzyskie Province	26 709,5	116 985,4	75 120,0	64,2	1 271	825	64,9
Warmia-Masuria	48 019,6	210 323,2	58 080,0	27,6	1 197	646	54,0
Greater Poland	92 456,6	413 717,3	159 960,0	38,7	3 204	1 830	57,1
West Pomerania	35 124,4	153 843,1	24 780,0	16,1	600	283	47,2
Overall	717 997,7	3 153 580,6	1 289 200,0	40,8	24404	14293	58,7

Source: Own study based on the ARiMR Management System.

Table 4

**Amounts for the restructuring of small farms and amounts payments made
(according to data as at the end of 2020 year)**

Voivodeship	Funds limit [thou. euro]	Funds limit [thou. pln]	The amount of therealized payment [thou. pln]	Percent	Number of submitted applications	Number of beneficia-res	Percent
Lower Silesia	31 863,8	139 581,8	14 652,0	10,5	578	301	52,1
Kuyavia-Pomerania	23 974,5	105 006,1	48 072,0	45,8	1 655	990	59,8
Lublin	100 340,4	439 489,2	374 508,0	85,2	11 562	7 734	66,9
Lubusz	11 565,9	50 654,7	6 828,0	13,5	354	141	39,8
Lodzkie	68 323,7	299 254,8	127 836,0	42,7	4 104	2 650	64,6
Lesser Poland	95 361,7	417 681,2	122 052,0	29,2	3 807	2 508	65,9
Masovia	104 936,1	459 619,7	218 136,0	47,5	7 352	4 485	61,0
Opole Province	12 408,5	54 347,0	3 972,0	7,3	236	82	34,7
Subcarpathia	92 068,1	403 257,8	50 976,0	12,6	1 760	1 058	60,1
Podlasie	34 927,6	152 980,3	55 620,0	36,3	1 952	1 135	58,1
Pomerania	17 080,8	74 810,4	31 656,0	42,3	1312	648	49,4
Silesia	35 770,2	156 672,6	18 960,0	12,1	688	389	56,5
Świętokrzyskie Province	54 689,3	239 537,8	150 348,0	62,8	4 766	3 080	64,6
Warmia-Masuria	16 851,1	73 807,4	39 264,0	53,2	1 327	811	61,1
Greater Poland	51 855,3	227 124,9	76 296,0	33,6	2 693	1 582	58,7
West Pomerania	13 940,4	61 057,2	13 188,0	21,6	623	273	43,8
Overall	731 029,8	3 354 882,9	1 352 364,0	40,3	44769	27867	62,2

Source: Own study based on the ARiMR Management System.

Table 5

Funding limits for non-agricultural start-up bonuses and amounts payments made (according to data as at the end of 2020)

Voivodeship	Funds limit [thou. euro]	Funds limit [thou. pln]	The amount of therealized payment [thou. pln]	Percent	Number of submitted applications	Number of beneficia-res	Percent
Lower Silesia	15 430,2	67 583,4	3 780,0	5,6	326	46	14,0
Kuyavia-Pomerania	23 329,8	102 184,5	5 040,0	4,9	566	61	10,8
Lublin	45 980,5	201 394,6	29 200,0	14,5	1 898	352	18,5
Lubusz	5 035,2	22 054,2	2 200,0	10,0	203	26	12,8
Lodzkie	32 353,4	141 707,9	9 620,0	6,8	862	114	13,2
Lesser Poland	41 619,8	182 294,7	17 640,0	9,7	1 034	203	19,6
Masovia	55 091,7	241 301,6	24 000,0	10,0	1 780	290	16,3
Opole Province	9 948,1	43 572,7	1 340,0	3,1	150	16	10,7
Subcarpathia	26 312,7	115 249,6	13 160,0	11,4	792	157	19,8
Podlasie	26 786,5	117 324,8	11 300,0	9,4	721	134	18,6
Pomerania	12 790,3	56 021,5	5 180,0	9,2	531	62	11,7
Silesia	11 567,8	50 666,9	5 460,0	10,8	278	63	22,7
Świętokrzyskie Province	21 618,8	94 690,3	10 360,0	10,9	685	120	17,5
Warmia-Masuria	13 652,2	59 796,6	5 500,0	9,2	531	65	12,2
Greater Poland	38 292,7	167 722,1	16 020,0	9,6	1 337	190	14,2
West Pomerania	8 765,1	38 391,1	2 420,0	6,3	231	29	12,5
Overall	388 574,8	1 701 956,5	162 220,0	9,5	11925	1928	16,2

Source: Own study based on the ARiMR Management System.

Table 6

**Amounts of payments granted and number of beneficiaries under
development entrepreneurship – development of agricultural services
(according to data as at the end of 2020)**

Voivodeship	Amount of amounts as part of payments [thou. pln]	Amounts of realized payments [thousand]	Percent	Number of submitted applications	Number of beneficiares	Percent	Average salary per farm [thou. pln]
Lower Silesia	54 354,4	15 833,0	29,1	119	36	30,5	439,8
Kuyavia-Pomerania	99 021,7	36 291,9	36,6	234	93	39,7	390,2
Lublin	59 018,8	20 599,5	34,9	143	52	36,4	396,1
Lubusz	49 145,3	17 408,4	35,4	108	44	40,7	395,6
Lodzkie	82 129,0	36 708,5	44,7	186	87	46,8	421,9
Lesser Poland	27 623,7	9 495,9	34,4	76	28	36,8	339,1
Masovia	149 699,4	59 538,4	39,8	364	152	41,7	391,7
Opole Province	44 432,3	12 227,6	27,0	104	31	29,8	394,4
Subcarpathia	29 351,0	12 476,0	42,5	78	36	46,1	346,5
Podlasie	76 610,5	29 829,6	38,9	183	73	39,9	408,6
Pomerania	78 386,8	28 355,6	36,2	170	69	40,6	410,9
Silesia	53 423,3	14 770,8	27,6	136	45	33,1	328,2
Świętokrzyskie Province	23 981,6	8 234,8	34,3	59	21	35,6	392,1
Warmia-Masuria	104 950,0	40 105,2	38,2	239	99	41,4	405,1
Greater Poland	290 020,8	86 423,7	29,8	712	228	32,0	379,1
West Pomerania	50 546,9	15 411,3	30,5	124	46	37,1	335,1
Overall	1 272 695,5	443 710,2	34,9	3035	1140	37,6	389,2

Source: Own study based on the ARiMR Management System.

**Amounts of payments made and number of beneficiaries under the payment
for farmers transfer ring small farms
(according to data as at the end of 2020)**

Voivodeship	Amounts of payments made [thou. pln]	Number of submitted applica-tions	Number of beneficia-res	Percent	Average payment per farm [thou. pln]
Lower Silesia	294,3	27	18	66,7	16,3
Kuyavia-Pomerania	672,6	54	36	66,7	18,7
Lublin	1 427,9	113	80	70,8	17,8
Lubusz	130,8	13	9	69,2	14,5
Lodzkie	1 450,0	117	83	70,9	17,5
Lesser Poland	200,0	21	14	66,7	14,3
Masovia	2 734,2	206	139	67,4	13,3
Opole Province	102,2	16	8	50,0	12,7
Subcarpathia	561,9	48	36	75,0	15,6
Podlasie	567,9	43	33	76,7	17,2
Pomerania	126,1	14	8	57,1	15,7
Silesia	149,6	16	7	50,0	21,3
Świętokrzyskie Province	452,4	50	31	62,0	14,6
Warmia-Masuria	224,0	16	11	68,7	20,4
Greater Poland	704,9	72	40	55,5	17,6
West Pomerania	141,7	15	9	60,0	15,7
Overall	9940,5	841	562	66,8	17,7

Source: Own study based on the ARiMR Management System.

EDIBLE SNAILS BREEDING IN POLAND

Maciej Ligaszewski, Przemysław Pol

Picture 1

Representatives of three species of large edible snails from the family Helicidae



From left: turkish or iced snail (*Helix lucorum*), rarely found in trade in Europe; Roman snail (*Helix pomatia*); large gray snail (*Cornu aspersum maxima*); small gray snail (*Cornu aspersum aspersum*).

Source: (Photo: Pol, Ligaszewski 2019).

**Technological division of the large gray snail carcass
(*Cornu aspersum maxima*)**



Left, bottom: dining area: leg + collar + front part of the coat. Right: visceral pouch

Source: (Ligaszewski i Pol, 2019).

Side view of the breeding box



Source: (Ligaszewski i Pol).

Picture 4

Experimental and production pens



Source: Archival photo of the National Research Institute of Animal Production in Balice.

Table 1

Parameters of the breeding body and carcass *Cornu aspersum aspersum* and *Cornu aspersum maxima* from a variety of living and feeding conditions.

Average values

Parameter	Subspecies: <i>Cornu aspersum</i>	Protein content in feed 16,7%		Protein content in feed 18,6%	
		A field farm	A farm in a greenho- use	A field farm	A farm in a greenho- use
Body weight (g)	<i>Cornu asp. asp.</i>	11,8	11,3	12,7	11,2
	<i>Cornu asp. m.</i>	18,9	18,3	20,0	20,0
Shell diameter (mm)	<i>Cornu asp. asp.</i>	29,8	29,2	29,9	29,8
	<i>Cornu asp. m.</i>	35,5	34,4	35,9	35,7
Shell weight (g)	<i>Cornu asp. asp.</i>	1,8	2,0	2,0	2,1
	<i>Cornu asp. m.</i>	3,0	3,3	3,3	3,7
Carcass weight (g)	<i>Cornu asp. asp.</i>	9,8	9,0	10,4	8,9
	<i>Cornu asp. m.</i>	15,7	14,7	16,5	16,1
Leg weight (g)	<i>Cornu asp. asp.</i>	6,8	5,9	6,8	5,8
	<i>Cornu asp. m.</i>	10,0	9,7	10,6	10,3
Share the leg with the jacket in the carcass weight (%)	<i>Cornu asp. asp.</i>	69,4	65,3	65,5	65,1
	<i>Cornu asp. m.</i>	63,6	65,8	64,7	64,0
Share the leg with the jacket in body weight (%)	<i>Cornu asp. asp.</i>	57,5	52,4	53,8	51,8
	<i>Cornu asp. m.</i>	52,8	52,9	53,2	51,6
Carcass share in body weight (%)	<i>Cornu asp. asp.</i>	82,9	80,3	82,1	79,6
	<i>Cornu asp. m.</i>	82,9	80,5	82,2	80,6

Source: (Ligaszewski i Pol, 2016, 2019).

Table 2

Nutritional parameters *Cornu aspersum aspersum* and *Cornu aspersum maxima* from a variety of living and feeding conditions

Parameter	Subspecies: <i>Cornu aspersum</i>	A field farm		A farm in a greenhouse	
		Protein content in feed 16,7%		Protein content in feed 18,6%	
		A field farm	A farm in a greenhouse	A field farm	A farm in a greenhouse
General protein in the leg with a coat (%)	<i>Cornu asp. asp.</i>	12,0	11,3	10,8	13,0
	<i>Cornu asp. m.</i>	10,7	11,8	10,9	12,6
General protein in the visceral sac (%)	<i>Cornu asp. asp.</i>	13,9	15,2	13,5	16,8
	<i>Cornu asp. max.</i>	13,5	14,8	13,1	15,0
Raw fat in the leg with a coat (%)	<i>Cornu asp. asp.</i>	0,47	0,28	0,37	0,24
	<i>Cornu asp. max.</i>	0,32	0,80	0,35	0,24
Raw fat in the visceral sac (%)	<i>Cornu asp. asp.</i>	2,29	1,05	1,42	0,53
	<i>Cornu asp. max.</i>	1,91	1,11	1,99	0,84
PUFA fraction share ¹⁾ in the WKT leg profile (%)	<i>Cornu asp. asp.</i>	59,0	60,2	60,7	63,2
	<i>Cornu asp. max.</i>	58,5	60,6	61,5	61,5
PUFA fraction share ¹⁾ in the WKT profile of the visceral sac (%)	<i>Cornu asp. asp.</i>	46,8	50,8	49,6	59,5
	<i>Cornu asp. max.</i>	46,2	49,5	47,3	50,6
MUFA fraction share in the WKT leg profile (%)	<i>Cornu asp. asp.</i>	22,5	20,0	19,0	15,0
	<i>Cornu asp. max.</i>	22,0	19,0	18,1	17,2
MUFA fraction share ²⁾ in the WKT profile visceral sac (%)	<i>Cornu asp. asp.</i>	40,4	35,4	35,8	22,4
	<i>Cornu asp. max.</i>	38,9	35,3	37,6	31,8
UFA fraction share ³⁾ in the WKT leg profile (%)	<i>Cornu asp. asp.</i>	81,5	80,2	79,7	78,2
	<i>Cornu asp. max.</i>	80,5	79,6	79,6	78,7

Share of the UFA fraction in the WKT profile visceral sac (%)	<i>Cornu asp.</i>	87,2	86,2	85,4	81,9
	<i>Cornu asp. max.</i>	85,1	84,8	84,9	82,3
PUFA 3/6 ratio ⁴⁾ in the WKT profile, legs	<i>Cornu asp.</i>	8,0	11,1	9,5	11,2
	<i>Cornu asp. max.</i>	8,5	10,8	9,5	11,3
PUFA 3/6 ratio in the WKT profile visceral sac	<i>Cornu asp.</i>	6,8	11,6	7,2	16,6
	<i>Cornu asp. max.</i>	6,8	11,9	8,4	14,8
Cholesterol content in the legs (mg/g)	<i>Cornu asp.</i>	1,38	1,33	1,31	1,58
	<i>Cornu asp. max.</i>	1,31	1,34	1,35	1,34
Cholesterol content in visceral bags (mg/g)	<i>Cornu asp.</i>	0,99	1,08	0,93	1,09
	<i>Cornu asp. max.</i>	1,06	1,12	0,95	0,92

- 1) PUFA – polyunsaturated fatty acids; WKT– sum of higher fatty acids (saturated and unsaturated);
2) MUFA – monounsaturated fatty acids;
3) UFA – sum of unsaturated acids;
4) ratio of omega-3 polyunsaturated fatty acids to omega-6 fatty acids.

Source: (Ligaszewski i Pol, 2016, 2019).

**Basic differences in the course of the Gray snail breeding cycle
(*Cornu aspersum*) and Roman snail (*Helix pomatia*)**

Roman snail (<i>Helix pomatia</i>)	Gray snail (<i>Cornu aspersum</i>)
The length of the breeding cycle from egg to commercial maturity	
12-14 months including a break for winter hibernation: from June this year by July of the following year.	6 – 7 months: from February to September this year.
Optimal breeding conditions	
Reproduction in soil, planted with plants, greenhouse day, in the period from May to July, in conditions of natural light day and air temperature. The eggs are laid into the soil and then incubated in breeding trays at a temperature of 22-25 ⁰ C.	Breeding in an air-conditioned room under the conditions of an 18-hour light day and temperature 18-22 ⁰ C. The breeders are kept in a specially constructed important boxes where they lay eggs into their hatching cups; the eggs are then incubated in the hatching trays at a temperature of 22-25 ⁰ C.
The optimal size of snail spring hatching stocks in breeding pens	
first year of life: 300 broods/m ² second year of life (after hibernation):15-50 broods/m ²	300 broods/m ²
Differences in life activity observed in breeding farms depending on climatic conditions and the daily cycle	
Optimum temperature 14-20 ⁰ C, high humidity; foraging until the morning hours.	Optimum temperature 16-22 ⁰ C, moderate humidity; foraging in the evening and at night.
Places where snails stay in farms	
<u>Greenhouse farming in the first year of life:</u> first 3 months of life (June-August): plants and soil; the next 2 months (September-October): soil, feed tables; hibernation period (November-March): soil. <u>Field rearing in the second year of life:</u> four months (April-July): soil, feed tables.	<u>Hatching rearing in air-conditioned rooms:</u> hatching (March-April): litter boxes, air-conditioned pens; <u>Rearing after the brood has been transferred to field pens:</u> the first 1,5 months (mid May-June): plants; next 3 months of life (July-September): feed tables.
Differences in the behavior of snails in the late autumn period	
The harvest of ripe commodity grapevines is carried out until the end of September. Later they bury themselves in the soil of the field farms. They should be stored in a hibernation room (6 ⁰ C), as their legal sale will be possible only in May.	It is necessary to collect all mature snails by the end of October. The gray snail does not bury itself in the soil and is not able to hibernate in field conditions, in Polish winter conditions. Trade in this species of snail is allowed all year round.

Source: (Ligaszewski i Pol, 2019).

Table 4

Comparison of the reproduction parameters of the Gray snail (*Cornu aspersum*) and the Roman snail (*Helix pomatia*)

Type	Number of eggs in the deposit (pcs/1 bed)	Average egg weight (mg)	Incubation period (days) at temp. 21 – 24 °C	The percentage of hatching (% , pcs)
Roman snail	15-65	125	18 – 21	30 – 50
Gray snail	100 - 200	40-60	12-14	60 – 80

Źródło: (Ligaszewski i Pol, 2019).