

Production and consumption of meat in Republic of Macedonia*

Ažderski Jovan¹, Pejkovski Zlatko¹, Stojanova Marina¹, Jakovlev Zlatko², Angelkova Tanja², Bunevski Goko¹

Abstract: Meat and meat products participate as one of the most important items in human nutrition. According to its biochemical and physiological traits, meat has a significant place in the diet. Its presence in diet is an essential need.

That is why permanent need of each society is to increase the meat production enabling the supply to the market with this product and improving the economic position of producers. Providing high productivity, economy and profitability of producers should be taken into consideration. In this way, cheaper products, available for every category of consumers, including even those categories with lower income, should be obtained.

Key words: production, meat consumption, Republic of Macedonia.

1. Introduction

Demand for meat and meat products, as consequence of growth, development and rapid changes of all major aspects influencing the meat production (number and structure of population, income and its distribution, prices, export orientation and trends) constantly increase in Republic of Macedonia. However, this increase is different manifested in different periods, depending on the changes in factors influencing it (Ažderski, 1992).

In order to provide sufficient quantities of meat and meat products to meet the demand of the market is not an easy task. This is especially expressed in moments when the demand for these products is growing. It would be illusory to expect fast turnaround in terms of abundant supply of meat on the market in short period, because the reproduction in livestock production is very slow as we know. If we want to increase the production of meat, it is necessary to take numerous measures in the society. First of all, measures which will motivate the producers for this type of production (Ažderski i Pejkovski, 1997).

In livestock production, sector should move in the direction of increase of yield, to change the breed structure in order to improve the productivity and, consequently, to increase the supply of meat as major products for domestic consumption as well as for export.

To increase the production, no major investments are necessary. Less investments and better organization give significant results in relatively short period of time.

2. Present in meat production in Republic of Macedonia

2.1 Meat production

Meat production has an important role in Macedonian agriculture. Livestock production for agricultural households is major source of income, even 60% of total income. Through production of meat the following should be realized:

- satisfaction of the domestic demand which is constantly growing,
- to ensure necessary quantities of meat as necessary reserves for the society,
- to provide sufficient quantities for export, based on economically rational basis (in sheep and lamb meat) and
- to provide higher profitability of production and better standard of living.

Meat production directly depends on livestock production, breed structure and gain realized per unit (head of livestock).

Feed production has direct effect on the meat production. Especially increase of production of wheat and forage leads to more stable livestock production and improvement of the product range.

¹Faculty of agricultural sciences and food, Skopje, Aleksandar Makedonski bb, 1000 Skopje, Republic of Macedonia;

²University Goce Delcev, Faculty of tourism and business logistics, Krste Misirkov, 2000 Stip, Republic of Macedonia.

In the last years, modern technical-technological solutions cause the increase of the average gain per animal, and also contribute to increase of work productivity and economic efficiency in animal rearing (Jovanović *et. al*, 2009).

Due to relatively positive natural and economic conditions, as well as to methods used in livestock production, meat production is constantly increasing. Increased production of meat comes not only from increase of gain, but also from improved breed structure, which leads to increase of gain per animal.

Meat supply depends on production, but other factors are also important. The price is the main factor which regulate the trends in meat production. Main characteristic of meat production is that it can not adapt quickly to the market demands. Only the production of poultry meat is quickly adaptable to the market demands, because of the short reproduction cycle.

In other livestock species, reproduction cycle is longer. It ranges from 2 to 4 years, giving the meat production cyclic character with tendency of constant growth.

Meat production directly depends on livestock production and its breed structure. RM disposes with good natural and economic conditions for production of meat. This is expressed if we take into consideration increasing changes in agriculture and growing investments in it. Investment in hydro-melioration systems and changes in the sowing structure on plough fields in favour of forage plants has direct influence on livestock production and changes in its structure. Also, country disposes with high quality mountain and high-mountain pastures which, with minimum of agro-technical measures, can be excellent source of cheap food. That is excellent basis for development of sheep production.

2.2 Meat consumption per capita in Republic of Macedonia

One of the main conditions for good functioning of social reproduction is balance between two links: production and consumption.

If commodity funds are ensured on time, this results in normal consumption to certain social level. On the other hand, this creates conditions for development of a stable process of social reproduction

Table 1. Meat production in Republic of Macedonia for the period 2000 to 2009.
Tabela 1. Proizvodnja mesa u Republici Makedoniji u periodu 2000-2009. godine

Godina/ Year	Ukupno/ Total	Govedina/ Beef	Svinjetina/ Pork	Ovčetina/ Mutton	Živinsko meso/ Poultry	Ostalo/ Other
2000	27.470	7.287	9.323	4.919	4.840 (+)	1.101
2001	26.041	5.835 (-)	8.413	5.789	4.702	1.302
2002	27.471	6.738	10.626 (+)	4.637 (-)	3.992	1.478
2003	29.835	8.691	9.609	5.895	4.116	1.524 (+)
2004	29.839 (+)	8.824 (+)	9.373	7.030	3.189	1.423
2005	28.264	7.604	8.897	6.857	3.809	1.097 (-)
2006	28.041	7.132	8.633	7.198 (+)	3.715	1.363
2007	27.229	7.121	8.856	6.495	3.524	1.232
2008	25.065 (-)	7.018	8.703	5.204	3.012 (-)	1.128
2009	25.362	7.307	8.291 (-)	5.225	3.319	1.220
Average/ Prosek 2000-2009	27.462	7.356	9.072	5.925	3.822	1.287

(+) maximum

(-) minimum

Source: State Statistics Bureau

Fast growth of population in Republic of Macedonia and also changes in the structure of the income, impose the question of increased meat production. It is a fact that Republic of Macedonia, even though it doesn't have great surplus (except in sheep and lamb meat), it wants to export meat in order to improve the financial-balance position of RM towards other countries.

on an extended basis. This can all be realized within the laws of economics, i.e. market mechanisms through all production and trade stages until final retail stage is reached.

Table 2. Meat consumption per household and per capita in Republic of Macedonia for the period 2000 to 2009.**Tabela 2.** Potrošnja mesa po domaćinstvu i članu domaćinstva u Republici Makedoniji u periodu od 2000 do 2009 godine.

Year/ Godina	Meat type/Vrste mesa	Average per household/ Prosek po domaćinstvu, kg	Average household per capita/Prosek po članu domaćinstva, kg
2000	Fresh and processed meat/Meso, sveže i prerađeno	113,0	28,8
	Beef and veal/Govedina, teletina i junetina	25,1	6,4
	Pork/Svinjetina	29,0	7,4
	Mutton and lamb meat/Ovčetina i jagnjetina	5,5	1,4
	Poultry meat/Živinsko meso	30,4	7,7
	Other meat type/Ostale vrste mesa	5,7	1,5
	Meat products/Proizvodi od mesa	17,3	4,4
	Fish/Riba	17,6	4,5
	Fresh and frozen fish/Sveža i zamrznuta riba	16,9	4,3
Fish products/Proizvodi od ribe	0,7	0,2	
2001	Fresh and processed, meat/Meso, sveže i prerađeno	144,3	29,1
	Beef and veal/Govedina, teletina i junetina	28,7	5,8
	Pork/Svinjetina	38,7	7,8
	Mutton and lamb meat/Ovčetina i jagnjetina	7,5	1,5
	Poultry meat/Živinsko meso	38,2	7,7
	Other meat type/Ostale vrste mesa	7,9	1,6
	Meat products/Proizvodi od mesa	23,3	4,7
	Fish/Riba	20,5	4,2
	Fresh and frozen fish/Sveža i zamrznuta riba	9,6	4,0
Fish products/Proizvodi od ribe	0,9	0,2	
2002	Fresh and processed meat/Meso, sveže i prerađeno	159,4	40,2
	Beef and veal/Govedina, teletina i junetina	36,1	9,1
	Pork/Svinjetina	28,7	7,3
	Mutton and lamb meat/Ovčetina i jagnjetina	5,3	1,3
	Poultry meat/Živinsko meso	42,1	10,6
	Other meat type/Ostale vrste mesa	4,1	1,1
	Meat products/Proizvodi od mesa	43,1	10,8
	Fish/Riba	24,2	6,0
	Fresh and frozen fish/Sveža i zamrznuta riba	21,3	5,3
Fish products/Proizvodi od ribe	2,9	0,7	
2003	Fresh and treated meat/Meso, sveže i prerađeno	157,2	39,4
	Beef and veal/Govedina, teletina i junetina	37,0	9,2
	Pork/Svinjetina	24,9	6,3
	Mutton and lamb meat/Ovčetina i jagnjetina	4,9	1,2
	Poultry meat/Živinsko meso	44,9	11,3
	Other meat type/Ostale vrste mesa	3,7	0,9
	Meat products/Proizvodi od mesa	41,8	10,5
	Fish/Riba	21,8	5,5
	Fresh and frozen fish/Sveža i zamrznuta riba	19,2	4,8
Fish products/Proizvodi od ribe	2,6	0,7	
2004	Fresh and processed meat/Meso, sveže i prerađeno	163,0	41,4
	Beef and veal/Govedina, teletina i junetina	39,0	9,9
	Pork/Svinjetina	29,9	7,6
	Mutton and lamb meat/Ovčetina i jagnjetina	4,2	1,1
	Poultry meat/Živinsko meso	43,4	11,0
	Other meat type/Ostale vrste mesa	3,8	1,0
	Meat products/Proizvodi od mesa	42,7	10,8
	Fish/Riba	22,3	5,7
	Fresh and frozen fish/Sveža i zamrznuta riba	19,5	5,0
Fish products/Proizvodi od ribe	2,8	0,7	

2005	Fresh and treated meat/Meso, sveže i prerađeno	175,0	39,5
	Beef and veal/Govedina, teletina i junetina	40,7	9,2
	Pork/Svinjetina	28,7	6,5
	Mutton and lamb meat/Ovčetina i jagnjetina	4,1	0,9
	Poultry meat/Živinsko meso	47,8	10,8
	Other meat type/Ostale vrste mesa	4,5	1,0
	Meat products/Proizvodi od mesa	49,2	11,1
	Fish/Riba	25,3	5,7
	Fresh and frozen fish/Sveža i zamrznuta riba	22,0	5,0
Fish products/Proizvodi od ribe	3,3	0,7	
2006	Fresh and processed meat/Meso, sveže i prerađeno	177,6	44,4
	Beef and veal/Govedina, teletina i junetina	44,7	11,2
	Pork/Svinjetina	27,1	6,8
	Mutton and lamb meat/Ovčetina i jagnjetina	4,1	1,0
	Poultry meat/Živinsko meso	44,0	11,0
	Other meat type/Ostale vrste mesa	4,2	1,0
	Meat products/Proizvodi od mesa	53,5	13,4
	Fish/Riba	26,4	6,6
	Fresh and frozen fish/Sveža i zamrznuta riba	22,9	5,7
Fish products/Proizvodi od ribe	3,5	0,9	
2007	Fresh and processed meat/Meso, sveže i prerađeno	168,0	42,6
	Beef and veal/Govedina, teletina i junetina	41,0	10,4
	Pork/Svinjetina	24,1	6,1
	Mutton and lamb meat/Ovčetina i jagnjetina	3,3	0,8
	Poultry meat/Živinsko meso	44,1	11,2
	Other meat type/Ostale vrste mesa	4,5	1,2
	Meat products/Proizvodi od mesa	51,0	12,9
	Fish/Riba	24,6	6,2
	Fresh and frozen fish/Sveža i zamrznuta riba	21,0	5,3
Fish products/Proizvodi od ribe	3,6	0,9	
2008	Fresh and processed meat/Meso, sveže i prerađeno	173,5	45,2
	Beef and veal/Govedina, teletina i junetina	39,0	10,2
	Pork/Svinjetina	23,2	6,0
	Mutton and lamb meat/Ovčetina i jagnjetina	3,4	0,9
	Poultry meat/Živinsko meso	43,2	11,1
	Other meat type/Ostale vrste mesa	4,7	1,2
	Meat products/Proizvodi od mesa	60,0	15,8
	Fish/Riba	25,0	6,4
	Fresh and frozen fish/Sveža i zamrznuta riba	21,3	5,5
Fish products/Proizvodi od ribe	3,7	0,9	
2009	Fresh and processed meat/Meso, sveže i prerađeno	171,5	45,3
	Beef and veal/Govedina, teletina i junetina	36,4	9,7
	Pork/Svinjetina	22,4	5,9
	Mutton and lamb meat/Ovčetina i jagnjetina	3,8	1,0
	Poultry meat/Živinsko meso	45,6	12,0
	Other meat type/Ostale vrste mesa	4,6	1,2
	Meat products/Proizvodi od mesa	58,7	15,5
	Fish/Riba	24,0	6,3
	Fresh and frozen fish/Sveža i zamrznuta riba	20,5	5,4
Fish products/Proizvodi od ribe	3,5	0,9	

Average/ Prosek	Fresh and processed meat/Meso, sveže i prerađeno	160,3	39,6
	Beef and veal/Govedina, teletina i junetina	36,8	9,1
2000- 2009	Pork/Svinjetina	27,8	6,8
	Mutton and lamb meat/Ovčetina i jagnjetina	4,6	1,1
	Poultry meat/Živinsko meso	42,4	11,2
	Other meat type/Ostale vrste mesa	4,8	1,3
	Meat products/Proizvodi od mesa	44,1	11,6
	Fish/Riba	23,2	6,1
	Fresh and frozen fish/Sveža i zamrznuta riba	20,4	5,4
	Fish products/Proizvodi od ribe	2,8	0,7

Source: State Statistics Bureau

Consumption of food is satisfactory in terms of volume, but not in the structure. Average citizen of Macedonia daily consume 3000 kcal, but the energy derives mainly from cereals (*Ažderski et al.*, 2002).

Presence of animal products in consumed food is not satisfactory (daily about 30 g of animal proteins are consumed, whereas in developed countries daily intake is 80-90 grams). Therefore, , in addition to production of approx. 300.000 tons of wheat, which is only a half of the need, we import each year 250.000 to 300.000 tons of wheat.

On the other hand, high level of increase in demand for animal products causes instability on domestic market. This applies, especially, on meat as major and basic product of animal origin. Often occurs that domestic production doesn't increase proportionally to the increase of demand. This discrepancy occurring between the demand and production of meat in different time periods as a consequence has constant price increase. This influences drop in the demand to some extent.

Consumption of meat in Republic of Macedonia is not satisfactory. If we take into consideration the importance of meat in human diet, the issue of inadequate presence of meat in nutrition of Macedonian population is not underestimated.

3. Material and methods

Data from public, annuals, bulletins and journals published by the State Statistics Bureau was used in preparation of this study. For quantitative analysis of data different statistical methods were used: tables, index method and linear trend.

In calculation of average growth rate, geometrical mean was used and, subsequently, comparative method, etc.

4. Conclusion

Livestock is one of the agriculture branches very important for Macedonian economy. Through

livestock production, everything that is unusable by humans or cannot be made into products, is transferred into usable products for animals and therefore has irreplaceable party. Livestock production is and will be treated in future as branch of exceptional social importance.

However, livestock production is rather extensive that results in small supply of livestock products on the market. Recently, society has been making great efforts to improve this progressive branch (annually, over 100 million euros investments, of which 50 million euros is for livestock production). But, in spite of this, this social activity is insufficient. Frequent losses of livestock breeders because of high cost of food resulted in oscillations on the livestock production, especially meat. This has as a consequence reduced supply of meat, which leads to increase of price and reduced demand of meat from the population.

In order to avoid such incidence, a great social intervention is necessary. Intervention would consist of social-economic measures, of current policy such as: price policy, state reserves, funds for improvement of livestock production, compensations, subsidies, premiums, credits with subsidized interest rates, longer repayment period, etc.

Consumption of meat in Republic of Macedonia exceeds the supply, which is expressed through big deficit and import of large quantities of meat, except mutton and lamb meat.

Therefore it is necessary to engage more social means in development of livestock production, which will bring benefit to the population, in terms of consumption as well as increase of income for producers, and ultimately whole society.

It can be concluded that the demand for meat is unsatisfactory.

Average consumer in RM uses annually 39.6 kg of meat (*Statistički godišnici na DZS, 2000–2009*;). If this is compared to meat consumption per capita in developed countries, it is obvious that we lag behind significantly. For instance, in USA, in average, meat

consumption per capita is 208 kg, in Australia 200 kg, France 195 kg, Canada 193 kg. This means that we are behind in meat consumption by 5 times. Meat consumption in RM is also behind Greece (101 kg), Spain (97 kg) and Serbia (87 kg) over 2 times (Matekalo-Sverak et al., 2009; Prevolnik et al., 2010; Stamenković et al., 2008; Usaleski, 1981).

The question is raised: What is the reason for such low meat consumption? The answer is low national income per capita realized in RM and high retail prices of meat. Also, habits in nutrition of population should be considered, as well as consumption of cheaper products in diet, relatively low

supply of meat on the market and high retail prices. All of the formerly mentioned contributed to present situation in regard to meat consumption.

Also, if we look at the structure of the consumed meat it can be observed that situation changes in favour to beef, as high quality meat, as well as to poultry meat, which is cheap. Maybe the consumption of pork could be higher if the supply of this meat on the market would increase. In case of mutton, a slight drop in structure of consumed meat is recorded. This indicates that consumer orientation has shifted towards meat of better quality, indicating changes in the nutritional habits and choosiness.

References

- Ažderski J., 1992. Marketing koncepcija kako dolgoročna osnova za programiranje na razvojot na stočarskoto proizvodstvo vo Maleševijata. Magisterski trud, Skopje.
- Ažderski J., Nikolić Marija, Pejkovski Z., 2002. Nekoi prašanja za ishrana na naselenieto vo R.Makedonija. Zbornik na trudovi – Ekonomski institut – Skopje, posveten na 50 godišniot jubilej. Godina 4, tom II str. 215–228.
- Ažderski J., Pejkovski Z., 1997. Vlijanie na demografskite i ekonomskite faktori vrz potrošuvackata na hrana vo R.Makedonija. Godišen zbornik na ISPPi, godina XIX, 1, 311–327.
- Jovanović S., Popović Lj., Dokmanović M., Đorđević V., Mirilović M., Todorović E., Baltić Ž. M., 2009. Uprredna analiza proizvodnje svinjskog mesa i mesnatosti trupova sa farmi iz otkupa u Srbiji. Tehnologija mesa, 50, 5–6, 287–295.
- Matekalo-Sverak V., Turubatović L., Petronijević R., 2009. Postupci unapredjenja kontrole kvaliteta proizvoda od mesa – strategija zaštite potrošača. Tehnologija mesa, 50, 5–6, 31–37.
- Prevolnik M., Škrlep M., Škornjac D., Čandek-Potokar M., 2010. Application of near infrared spectroscopy to predict chemical composition of meat and meat products. Tehnologija mesa, 50, 2, 133–143.
- Stamenković T., Milićević D., Dević B., 2008. Proizvodnja svinjskog mesa u svetu i njene tendencije. Tehnologija mesa, 48, 1–2, 67–72.
- Statistički godišnici na DZS od 2000 do 2009 godina.
- Usaleski V., 1981. Proizvodstvo i potrošuvacka na nekoi karakteristični vidovi meso vo R.Makedonija. Magisterski trud, Skopje.

Proizvodnja i potrošnja mesa u Republici Makedoniji

Ažderski Jovan, Pejkovski Zlatko, Stojanova Marina, Jakovlev Zlatko, Angelkova Tanja, Bunevski Goko

R e z i m e: Meso i proizvodi od mesa učestvuju u ishrani kao jedan od najvažnijih njenih činilaca. Prema svojim biohemijskim i fiziološkim osobinama, meso ima važno mesto u ljudskoj ishrani. Njegovo prisustvo u ishrani je od ključne važnosti.

Zbog toga je stalna potreba svakog društva povećanje proizvodnje mesa, čime se omogućava snabdevanje tržišta proizvodima i poboljšanje ekonomske situacije proizvođača. Obezbeđivanje visoke produktivnosti, ekonomičnosti i rentabilnosti proizvođača, takođe, mora biti uzeto u obzir. Na ovaj način, jefitnij proizvodni će biti dostupni svim kategorijama potrošača, čak i onih sa manjim prihodima.

Ključne reči: proizvodnja, potrošnja mesa, Makedonija.