

EDIBLE SNAIL FARMING IN SERBIA: PRESENT AND FUTURE

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ABSTRACT: Snail farming is a type of sustainable animal production, which could become an important source of incomes for the country, and prevent further exhaustion of natural snail populations. It has raised considerable public attention in Serbia. There are over 350 newly registered snail farms that have started production in the past couple of years. The idea of snail farming in Serbia is strongly and erroneously influenced by media, often presented as an low investment cycle, low manpower, and a very advantageous side activity. On the other hand export of snails collected from natural populations has been very profitable in the past decade despite the economic blockade of the country during the 90-ies. In this paper, beginnings of snail farming in Serbia, problems of investments, production and protection technology, and marketing are discussed. The need of regulation is pointed out.

Key words: edible snails, farming, natural populations, legislation, export

INTRODUCTION

Edible snails are produced and marketed for human consumption and pharmaceutical purposes all over the world (Europe, Asia, Australia, North and South America) (MURPHY, 2001). In EU countries, especially in Western Europe where snails are consumed as a traditional gourmet dish, the market expresses an increased import need for edible snails, due to restricted collection of these species from nature (ITC, 1993).

Compared to its size our country is an important exporter of snails collected from nature but since not sufficiently controlled, this activity is threatening survival of edible snail species (JOVANOVIĆ, 1995).

According to european practice, in the past couple of years the number of snail farms organized in complete biological cycle is increasing. The absence of farming experience and market stability, with two atypical drought years, uncomplete regulation and the export procedure not fully regulated, the first steps of serbian snail farming is intercepted by great difficulties.

The aim of the paper is to analyze the actual state and opportunities of snail farming in our country.

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AMOUNT AND STRUCTURE OF EXPORT

Snail export from Serbia lasts several decades. According to official data (Serbian Chamber of Commerce), even during the 1999, when the country was bombed, in absence of control, an amount of 1746 tones of snails, which represent a value of 1.7 millions of USD, was exported. In the next four years an average of 1278.75 tones of snails (1.94 millions USD) was exported per year (Tab.1). Official quantities of snail export do not correspond to the permitted ones. For instance in 2002 year 1450 t were exported and only 700 t permitted.

Tab.1. Amount and structure of snail export from Serbia (data obtained from the Serbian Chamber of Commerce)

Tab.1. Obim i struktura izvoza puževa iz Srbije (podaci Privredne komore Srbije)

Product Proizvod	2000.		2001.		2002.		2003. (I-X)	
	t	1000 USD	t	1000 USD	t	1000 USD	t	1000 USD
Snails except marine snails Puževi, osim morskih	1222	999	931	1228	1454	2310	1382	2907
Snails processed or canned Puževi, pripremljeni ili konzervisani	109	292	-	-	-	-	17	15
TOTAL UKUPNO	1331	1291	931	1228	1454	2310	1399	2922

Structure of our snail export is extremely disadvantageous. Snails are exported fresh with lowest possible seasonal prices, while the part of frozen or canned flesh is negligible. Thus the state loses both the position on European market and considerable incomes. Most of the profit is achieved by countries where snails are processed or transferred towards Western Europe (Macedonia, Greece, Bulgaria, Italia, Romania, Bosnia Herzegovina).

EXCESSIVE SNAIL HARVESTING FROM NATURE AND LACK OF CONTROL

Control of collecting, use and marketing of snails is regulated by the Law for environment protection and a bylaw Regulation on control of collection, use and marketing of wild plant and animal species (Official gazette RS No. 17, 363 i 365 (1993, 1999)). According to this regulation in Serbia picking up of snails from nature is permitted from June 1 to October 1. Besides the fact that the collection season is extremely extended, regulation is additionally violated, since snails are harvested during the whole vegetation period. Few inspectors do not have enough authority, penalties are scarce and minimal, and so the poaching is profitable. Illegal purchase spots are numerous and common. As a consequence, every year an illegal export, according to veterinary and agriculture inspection data, is almost equal to the legal one. Only few of these illegitimate transports are captured and sanctioned by law. The result of this situation is the increase of illegal incomes and spreading of the uncontrolled distributive network.

In our country in year 2002 between 100 to 120 millions of individual snails were collected from nature. Edible snail species endangered by poaching are Burgundy snail, *Helix pomatia*, Linne, and Turkish snail, *Helix lucorum*, Linne, (JOVANOVIĆ, 1995). Ministry of science and environmental protection has prepared a new Regulation for control of use and marketing of wild plant and animal species, which should help future farmers collecting their initial stock from nature and, in the same time protect natural population to the maximum.

BEGINNINGS AND PROBLEMS OF SNAIL FARMING IN SERBIA

From 2002, in Serbia a number of farms of Burgundy snail has been established. According to the existing regulation, for setting up a new farm one needs a permission from the Ministry of Agriculture and Water Management – Veterinary sector, based on a Demand for setting up a farm and the ownership of the land or a contract for land rent for at least five year, as well as a property plan. After acceptance of these documents Permission for collection of the initial snail stock is obtained from the Institute for Nature Protection of Serbia.

Snail breeding system practiced in Serbia is the outdoor system performed in a cochlear, an enclosure in which a complete biological cycle is possible, with the maintained vegetation for snail nutrition and shade (POLEKSIĆ et al., 2004).

According to the Institute for Nature Protection of Serbia, up to June 1 2004, there are 393 farms registered in our country. Observed by years of foundation an increase of the number of farms is evident (table 2).

Tab. 2. Increase of snail farming in a three year period (up to June 2004 year)

Tab. 2. Povećanje broja farmi u trogodišnjem periodu (do juna 2004. godine)

Year Godina	2002.	2003.	2004.
Total of registered farms Ukupan broj registrovanih farmi	40	177	393

Since there is a lack of official data for this year, because of the extended farm registration period, the sample of 119 farms established in 2003 was analysed.

Tab.3. Size of farms and initial population quantities (data from the Institute for Protection of Nature of Serbia for 2003 year)

Tab.3. Površine farmi i količine unetih matičnih jata (podaci Zavoda za zaštitu prirode Srbije za 2003. godinu)

	Total of 119 farms Ukupno na 119 farmi	Average per farm Prosek po farmi
Farming area Površina farme	386358.02 m ²	3246.7 m ²
Initial population quantities Unete količine matičnog jata	56978.5 kg	478.8 kg

The analysis (table 3) has shown that the size of farms varies from only 228 m² to cooperative farms of over 22 000 m². The average size of Serbian farms is small, such is the harvest, there is too much work per area unit, and transportation is complicated. Due to snail biology their production is specific, since these mollusks need about three years to reach sexual maturity (POLEKSIC, 2000). This has to be taken into consideration, together with the fact that the majority of farms has been founded in the last two years and that full capacity of the farm is still not attained. For this reason it is impossible to consider production amount of the farms. On the other hand a certain number of problems is already evident and needs attention.

According to our analyses, the farm should have at least 1 ha of surface area for a successful production. The future of small farms is in question since there is a danger of their disappearance or transformation into acquisition sites.

A number of farms will probably perish because of the following reasons: the amount of investment, long period before the first income, as well as a lack of breeding experience. Complete reproduction of the Italian outdoor breeding system (AVAGNINA, 2002) is facing a lot of practical difficulties here. We already mentioned the problem of small farm size. Another is the supply of enough vegetation and additional food for the recommended stocking density. In the past drought seasons a number of farms have lost their plant coverage and snails suffered from the sun. Predicted additional vegetation planted was not sufficient for food supply. The experience of successful farms has shown that compared to the farm size, a triple additional surface area under vegetation is needed.

Another problem is the recommended breeding sector width of 2.5 – 4 m which is not sufficient for shade. The problem could be solved by the increase of breeding enclosures width to 8 – 10 m, and achievement of thicker shade plant distribution.

Concerning chemical plant protection, European standards for ecological snail production are followed in Serbia. Our farmers are not acquainted with effects of pesticides on snails, there is no misuse, and even preventive treatments with known granulated soil insecticides are lacking. It could represent a danger of snail and plant pest appearance in prolonged period of farming.

NEED FOR REGULATION OF SNAIL FARMING

Related to European practice there is a clear need to develop snail farming and processing in Serbia.

In order to make possible export of fresh but also frozen and canned snails, this type of animal production must be regulated according to EU requirements, especially since almost all the snails produced are intended for export to EU countries, where strict regulation of import of live animals and processed food from animal origin already exists (ANONYMUS, 2002). As a result of the regulation recommended export of snails from farm origin and processed snail flesh will reach better “winter” prices, without intermediary, directly towards the users in western countries. It is a known fact that the wholesale price for snails is market dependent but farmed snails are always sold for a better price than those collected from nature. Although the price varies, on the world market it is accustomed between 3 and 5 € /kg of fresh snails (AVAGNINA, 2002). All snails exported from Serbia are referred as collected from nature, thus cannot reach the mentioned prices. The loss of income for the state is huge. For example during 2003 only 0.25 €/kg were paid to people which collected snails from nature, the price raised to

1 €/kg on acquisition sites. When exported to EU countries the price reached 2 €/kg. Existence of clear rules will help production and processing of snails and will, on the other hand increase incomes of the state.

SUMMARY

The aim of this paper is to emphasize that snail farming, if performed correctly, is a sustainable animal production, which could become an important source of income for the country, and will prevent further exhaustion of natural snail populations. Snail farming has raised considerable public attention in Serbia. In the past couple of years over 350 snail farms have started production. Until June 2004 more than 200 new ones have been officially registered. Full capacity of a snail farm can be considered after a three-year period. The increased number of farms could be the influence of the media in which snail farming is often presented as an easy way to gain considerable profit. On the other hand export of snails collected from natural populations has been very profitable in the past decade despite the economic blockade of the country during the 90-ies. It still continues and could seriously endanger natural populations of *Helix pomatia* and *H. lucorum*. In the period 1999 – 2000 year, approximately 1300 t of live snails have been exported annually. Unfortunately, the income was only about 1 550 000 USD, due to the fact that these snails were regarded as collected from nature, and exported through other countries towards the EU. Snail production should be strictly regulated in order to meet European standards and allow export directly to EU countries.

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