



Economic and Legal Aspects of Justification of Apple Storage

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ABSTRACT

Competitiveness in the global market involves quantitative and qualitative security to offer. Apple, as one of the most important fruit species on the Serbian market is characterized by strong seasonal character of offer. In order to ensure continuous supply of market with high-quality fruit during the year, it is necessary to store freshly harvested fruits in cold storages. Cold storage facilities provide optimum conditions for preserving the quality of the fruit until the moment of their launch on the market. In addition to preserving the quality of fruit in cold storage facilities, disposal of investments provides the opportunity to achieve higher selling prices. The main goal of the research in this paper is to determine the economic effects of apple storage. By postponing sales, and with effective storage in cold storage facilities, producers are able to sell their products at a time when the offer is lower and demand is higher. On this way much better financial result is achieved. In the event that the producer or trader has no own cold storage, it is necessary to conclude the storage contract with the storage keeper. Then, besides the economic ones, we need to analyze the legal aspects as well, because the apple is stored on the basis of the storage contract, which implies the responsibility of storage keeper for stored goods, but also other legal effects of this contract.

KEY WORDS: Apple, market, sales price, cold storage, storage contract

Introduction

Because of its climate and geography, Serbia has great potential for the apple production, as one of the most important fruit crops in the world. Market demands for the apple production are high and only high-quality and healthy fruits are possible to sell. Good quality implies healthy fruits or the fruits with no damage caused by diseases and pests (Indić et al, 2011). However, immediately after harvest, there are losses, which in the developed countries amount from 5 to 25%, and in the developing countries the percentage of loss is ranging from 25 to 50% (Gladon, 2006). In order to prevent these losses, first it must be understood that the fruit continues to live after harvest, i.e. apples after harvest remain physiologically active. Specifically, this means that the fruits continue to grow, breathe, lose moisture, continue to be sensitive to physiological changes, and are also susceptible to all kinds of damages and diseases (Kader, 2002). Breathing, as the primary metabolism, may limit the useful life of apple, negatively affect the quality, and cause a change of nutrients during storage. Given that apple has high water content, over 85%, improper storage can lead to weight loss due to evaporation (Šoškić, 2011). Fruits during ripening after harvest produce ethylene, which can accelerate the aging of fruits and weaken the antiviral and antimicrobial capabilities. All of that result in a decline of the quality, nutritional value and safety of fruits after harvest (Li and Li, 2008).

Low humidity leads to intense transpiration causing large losses of mass, and the fruits shrivel and lose their freshness. Lower temperatures reduce the respiration of fruits, biochemical processes in fruits are slowing down, while the growth of microorganisms also slows down and stops. On the other hand, a low content of O₂ and high CO₂ leads to the prevention of fruit ripening by inhibition of respiration (Simeunović, 2014). For these reasons, it is necessary to store apple in cold storages soon after harvest that will enable an environment with low temperature and high humidity or with low O₂ and high CO₂.

The most effective solution to reduce these losses is certainly the storage of fruit immediately after harvest. In order to prolong the shelf life of apple, while preserving the quality of the fruits, in recent times, in addition to storage at low temperatures, Ultra Low Oxygen technology (ULO) is also applied, this means that it reduces the presence of oxygen. The most important advantages of storing apples in ULO cold storages are: calo with the ULO cold storage is <1%, skin colour and the kernel of the fruit remains unchanged during the storage period, freshness is kept, quality remains unchanged and fruit retention period is considerably longer within ULO cold storage than that of ordinary cold storage (Kalanović-Bulatović et al., 2009).

Technological parameters maintained by ULO installed equipment, vary both by individual varieties of apples, as well as for individual countries in the world because of the variety of climate zones and external weather conditions. Established integrated system ensures that from the time when apple is picked to the time it enters into a controlled atmosphere of ULO cold storage, it passes a maximum of 60 minutes. The basic working principle of ULO cold storage comes down to control of the temperature, humidity, oxygen and carbon dioxide. ULO regime is characterized with oxygen level of 0.9 to 2.2%, with the level of carbon dioxide from 1.5-2%, and high relative humidity, usually from 90 to 95% (Weber et al., 2011). In such storage conditions, all biological processes in the fruits are slowing, and fruits like apple can be kept through the whole year, without a significant impact on the quality. When storing apple in conventional cold storages, the losses ranging from 7 to 10% are occurring, while in storing apple in ULO cold storages, losses are not exceeding 1% (Marković et al., 2011).

In addition to reducing the losses that occur after harvesting, the objective of storage is to equalize fluctuations in market supply, and then to ensure regular and continuous supply of raw materials for the processing industry, as well as striking a balance between supply and demand, resulting in a stabilization of market prices (Alexander and Kenkel, 2012). The need for apple storage comes from need for delay of sale, with the main objective to achieve better economic effects, respectively higher profit. In this case, storage is particularly important, given that apple is an agricultural product that is seasonal and arrives once a year and is the subject of trade throughout the year (Novković and Mutavdžić, 2009). The desired economic effects are realized by delaying the sale, or achieving higher purchase prices, which would therefore mean higher profit (Kokot and Marković, 2015).

In this paper, the economic feasibility of apple storage was analysed on concrete example. At the same time, the amount of total investment in building a cold storage with ULO technology, used for the purposes of storing, was determined according to a standardized scheme of investment calculations. Based on the analysis of the real growth of the apple sale prices and the costs of their storage and shrinkage in the ten-year period (2009-2018), the main objective of the research is to determine the economic effects of apple storage, with attention dedicated to defining the optimal period for the sales of this fruit.

Under the storage contract, the storage of goods in terms of service storage is legally formalized, in the situation when an apple producer or retailer does not have its storage space or this space is insufficient. In the case of a storage contract, "the storage keeper undertakes to receive and store certain goods and take necessary or contracted measures for the purpose of preserving it in a particular condition, and to hand it over at the request of the landlord or other authorized person, and the landlord undertakes to pay him a compensation" (Law on Obligations, art. 730). The laws of the countries that emerged on the territory of the former Yugoslavia have an identical definition too. Examples are Croatian legislation (Law on Obligatory Relations, Croatia, art. 744, par. 1, 2005), the legislation of Bosnia and Herzegovina, that is, the Federation of Bosnia and Herzegovina and the Serb Republic (Law on Obligations of the Federation of Bosnia and Herzegovina 1992 and Serb Republic, art. 730) and Macedonian legislation (Law on Obligations, Macedonia, art. 786-804, 2001). A similar definition of the storage contract also contains German law in art. 467 par. 1 and 2, which stipulates that the storage keeper is obliged to store and keep goods and the landlord, is obliged to pay the agreed compensation (German Civil Code, 1896). For this contract, especially important provision is the one that stipulates "undertaking the necessary or contracted measures to preserve it in a given state".

When making a contract on the storage of apples, it is necessary to bear in mind all the aforementioned elements, which points to the need to protect the landlord by specifying conditions to be provided by the storage keeper in order to preserve the apple "in a certain state". This also applies to the insurance of goods because it is not mandatory, unless agreed between the storage keeper and the landlord (Law on Obligations, art. 732).

Material and methods

The database of the Statistical Office of Republic of Serbia (for the period from 2009 to 2018) as well as data from the company "Atos Fructum", from Mala Remeta, Irig municipality, which owns ULO cold storage with capacity of 3,200 t, in which harvested apples are stored, were used for the realization of the set goal of research. Legal sources for this area, both laws and case law were used.

Based on the data of the Republic Bureau of Statistics, an analysis of the average purchase prices of apple for consumption by months in the ten-year period (2009-2018) was performed, and then the

maximum purchase price over year (P_{mp}) was determined, as well as the price at the time of harvest (P_{ht}), and based on the following pattern their difference (P_d):

$$P_d = P_{mp} - P_{ht} \quad (1)$$

Based on the price difference calculated in this way for individual months, it is possible to determine how much the producers can achieve a higher price on average in relation to the one they would have received if they had not decided to store.

In this way, the price increase is significant when determining the economic effects of storage, i.e. analysis of the main economic indicators of apple storage in the observed period, based on the data of the analyzed agricultural company located in the municipality of Irig in Srem district. Since the construction of the warehouse requires appropriate investments, and its operation is planned for a longer period of time, in the first step, the amount of funds needed for the building of this construction facility was determined. Calculations by Kalanović-Bulatović et al. (2009) were used to determine the value of the investment.

Determining the economic efficiency of storage is based on the calculation of the revenue or total income, then total costs, as well as determining the financial result. The calculation of the revenue (R) was performed on the basis of the following pattern, where the cold storage capacity (Q_s) is multiplied by the average increase in the price of apples during the year (φP_d):

$$R = Q_s \cdot \varphi P_d \quad (2)$$

When calculating the price, as an element of the revenue, the average increase in the market price of apples during the year was used. The calculation of individual categories of cold storage operating costs is based on natural indicators determined on the basis of research performed in the agricultural company with the application of appropriate prices, at which the company paid or calculated the stated costs. Costs (C) are grouped into fixed and variable according to the standard scheme. To determine the financial result achieved by storing apple (B) an analytical calculation was used, where the value of realized fixed (C_f) and variable costs (C_v) is deducted from the revenue (R):

$$B = R - (C_f + C_v) \quad (3)$$

Results and discussions

Investment in the construction of ULO cold storage

In addition to high standards in production, the intention of "Atos Fructum" was the construction of modern cold storage as part of the orchard, with which will be provided access to the most advanced apple storage. Built cold storage has a capacity of 3,200 t, with ULO technology which represents the latest achievement in the field of long-term storage of fresh fruits. ULO regime in chambers gives the possibility that the entire yield of apple can be stored and offered to the market at any time of the year, whereby the production properties of apple are fully preserved without any chemical intervention. This form of storage is applied in developed European countries (Germany, Denmark, France, Italy, the Netherlands, etc.) for storing up to 70% of the total quantity of fruits, and in the US for 50% volume (www.atos-fructum.com).

Table 1

The cost of construction of ULO cold storage capacity of 3,200 t

Tabela 1

Troškovi izgradnje ULO hladnjače kapaciteta 3.200 t

Serial No.	Elements	Amount (RSD)	Amount (EUR) ¹
I	Land value	14,147,160	117,893
II	Construction and equipping of ULO cold storage	192,051,000	1,600,425
III	Electric power connection and substation	4,683,840	39,032
IV	Water and sewage system, fire protection and environmental feasibility study	2,425,800	20,215
V	Video surveillance	152,880	1,274
Total		213,460,680	1,778,839

¹ 1 EUR = 120 RSD

ULO cold storage consists of manipulative and operational part. The manipulative part are offices, rooms used for storing apples in crates, sorter etc. Operative part of cold storage consists of hallway and ULO chambers which are laterally arranged in relation to the hallway. Analysed cold storage consists of 17 chambers whose capacities ranges from 88 to 236 t. For the functioning of ULO cold storage, it is necessary to build the access and internal roads, main and supporting facilities, transport and communication infrastructure, a system for wastewater and storm waters, and ensure the smooth supply of water and electricity.

The total investment in the construction of ULO cold storage consists of the cost of purchasing the land, carried out ground works, the building costs of cold storage and the equipment value built in the facility (Kalanović-Bulatović et al., 2009). Based on table 1, it can be concluded that the total value of the investment in the construction of ULO cold storage amounts to 213,460,680 dinars, or € 1,778,839.

In the structure of total investment, a dominant share has costs of building and equipping, with the participation of more than 89%. The value of the purchased land is in the second place, while all other costs have significantly lower participation, which can be seen on the table 1.

The costs of the structural part include the cost of all work on the preparation of the land and the cost of works on the construction of the facility. Preparation of project documentation proceeds over the commencement of works.

Preparation of the land involves removing the surface layer of humus, filling the buffer layer of sand and gravel, building a foundation, construction of concrete floor, as well as the construction of access roads. After completion of ground works, installation works and equipping the facility follow. Review of the total expenditures of construction is given in table 2.

Table 2

The cost of preparing the land and costs of construction works

Tabela 2

Troškovi pripreme zemljišta i radova na izgradnji objekta

Serial No.	Elements	Amount (RSD)	Amount (EUR)
I	Preparation of project documentation	768,000	6,400
II	Ground works	29,162,160	243,018
III	Installation works	8,986,320	74,886
IV	Commissioning and proving of cooling parameters	972,000	8,100
Total		39,888,480	332,405

The equipment value that is built into the cold storage includes the value of the steel structure, thermal insulation, the costs of introducing electrical and lighting, cooling and ULO equipment as well as spare parts (Tab. 3).

Table 3

The value of installed equipment

Tabela 3

Vrednost ugrađene opreme

Serial No.	Elements	Amount (RSD)	Amount (EUR)
I	Steel construction	32,066,280	267,219
II	Thermal isolation	46,274,640	385,622
III	Cooling equipment	45,449,880	378,749
IV	ULO equipment	25,058,040	208,817
V	Electrical installation	1,002,360	8,353
VI	Installation of lighting	1,458,000	12,150
VII	Spare parts	853,200	7,110
Total		152,162,400	1,268,020

On this occasion the value of additional equipment such as boxing pallets, technological equipment for sorting, packaging technology equipment and means of internal transport (forklifts) were also taken into account (Tab. 4). Nevertheless, these costs can be significantly reduced if for example for a start a particular piece of equipment is leased or the used equipment is purchased.

Table 4

Other technological equipment

Tabela 4

Ostala tehnološka oprema

Serial No.	Elements	Amount (RSD)	Amount (EUR)
I	Technological equipment for sorting	57,600,000	480,000
II	Packaging technology equipment	11,520,000	96,000
III	Means of internal transport	11,520,000	96,000
IV	Boxing pallets	174,600,000	1,455,000
Total		255,240,000	2,127,000

Cost of apple storage

Operating costs of analysed cold storage can be divided into fixed and variable costs. The variable costs include the cost of electricity, while other costs have the character of fixed or mostly fixed. Cold storage is commonly in use since September, when the harvest starts, until May, where operating costs incurred regardless of the percentage of cold storage used capacity.

Table 5 shows the amounts of all the elements involved in the structure of total operating costs of ULO cold storage per annum. As can be seen in the structure of total costs, the depreciation costs dominate. This is due to large investments in the construction of the cold storage (Kart and Demircan, 2015). Depreciation is calculated on the value of the building structure, ULO equipment and other technological equipment.

On the second priority are the costs of electricity. The maximum power consumption was recorded in the period from September to April of next year, when the realization of stored apple is usually done. The costs of electricity generate also in the months when the cold storage is not in use, but in this period they are twice lower.

Maintenance costs include the costs of regular servicing of equipment, while the provision costs include the costs of elimination of possible breakdowns and replacement parts. These costs occur only once, and their share in structure of total costs is not significant.

Table 5
Operating costs of ULO cold storage
Tabela 5
Operativni troškovi ULO hladnjače

Elements	Amount (RSD)	Amount (EUR)	%
-Electricity costs	3,719,520	30,996	6.13
-Salary and salary compensation costs	1,789,200	14,910	2.95
- Salary costs (net)	1,296,000	10,800	2.13
- Tax and contribution costs	493,200	4,110	0.81
-Depreciation costs	54,126,000	451,050	89.14
-Maintenance costs	360,000	3,000	0.59
-Provisions costs	200,000	1,667	0.33
-Intangible costs - tax costs	528,000	4,400	0.87
- Property tax – land	48,000	400	0.08
- Property tax – ULO cold storage	480,000	4,000	0.79
Total	60,722,720	506,023	100.0

Three full-time employees are hired for the jobs in the cold storage. Temporary labour force is engaged only during the screening apple before the sale, however, these costs do not affect the operating costs of cold storage, considering that this operation is performed regardless of whether the apple is stored after harvest or not.

Economic effects of storing apple

Based on the analysis of monthly trends of purchase prices of apple, in the period from 2009 to 2018, significant seasonal fluctuations were established. As stated above, the purpose of storage of agricultural products is to delay selling until the moment when the purchase price is most preferable. Sales delaying (storage) economy is based on the difference between the growth of purchase price of agricultural products and the costs of their storing.

In order to estimate the economic effects of apple storage, it is necessary to analyse trends of average monthly purchase prices in the ten-year period (*Tab. 6*). This analysis should show is it more profitable for farmers to sell apple immediately after harvest, or to postpone the sale and wait for higher purchase prices. Also, the analysis should demonstrate in what months the purchase prices of apple were the highest, respectively in what period the highest incomes from storing were realized. Based on table 6 it can be concluded that there is positive difference between maximum purchase price over year and price at the time of harvest in all the years of the analysed period. The highest income from storage was recorded in production year 2010, when it was achieved the highest positive difference between the month when the harvest was made and the month with the highest purchase price. This means that it was possible to make a profit of 34.98 RSD/kg, if the sale of stored apple was executed in July 2010. The lowest earnings of apple storage were realized in production year 2014, when the maximum positive price differential compared to the moment of harvest, was only 6.73 RSD per kilogram, in December this year.

The analysis of monthly purchase prices of apple, in the ten-year period, led to the conclusion that the farmers, who have opted for storage, while selling the apple can achieve on average for 24.90 RSD/kg higher prices than those they would get if they did not go for storage. Also, it is obvious that the highest income of apple storage is achieved in the period from from April to July.

Table 6

Average purchase price of apple for consumption per months in the 2009-2018 (RSD/kg)

Tabela 6

Prosečne otkupne cene konzumne jabuke po mesecima u periodu 2009-2018 (RSD/kg)

Year / Month	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
I	41.30	30.34	46.61	45.88	57.11	40.75	58.95	47.49	50.73	70.25
II	35.02	38.78	56.17	42.42	58.91	37.41	50.84	57.17	52.99	70.92
III	32.63	31.50	57.63	44.84	56.12	38.34	56.40	64.84	60.43	73.90
IV	36.33	33.78	55.43	43.51	43.91	34.13	67.61	61.90	63.94	80.73
V	36.63	23.45	60.58	46.13	55.61	41.77	63.84	62.31	64.21	74.90
VI	49.61	35.93	52.08	64.21	61.37	41.47	58.45	56.24	56.79	51.21
VII	35.39	62.13	54.06	57.36	48.48	30.68	53.39	53.32	47.31	48.72
VIII	29.93	34.23	43.09	58.22	36.18	33.92	37.08	38.77	56.59	43.19
IX ²	27.15	35.21	32.60	50.84	38.42	40.64	33.71	39.13	48.99	25.47
X	26.08	36.45	34.30	51.02	30.88	36.91	33.12	33.38	44.63	29.55
XI	23.72	39.37	40.14	51.66	32.29	42.22	42.51	45.23	57.36	36.22
XII	25.73	33.70	46.06	51.16	32.77	45.15	47.73	53.40	59.49	38.25
Max purchase price over year	49.61	62.13	60.58	64.21	61.37	45.15	67.61	64.84	64.21	80.73
Price at the time of harvest	30.35	27.15	35.21	32.60	50.84	38.42	40.64	33.71	39.13	48.99
Difference	19.26	34.98	25.37	31.61	10.53	6.73	26.97	31.13	25.08	31.74

² Harvest and apple storage are done in September.**Table 7**

Economic effects of apple storage (RSD/year)

Tabela 7

Ekonomski efekti skladištenja jabuke (RSD/godišnje)

Elements of calculations	Unit measure	Amount
- Average apple price increase throughout the year	RSD/kg	24.90
- Cold storage capacity	kg	3,200,000
A, Total revenue	RSD	79,680,000
- Fixed costs	RSD	57,003,200
- Variable costs	RSD	3,719,520
B, Total expenditure	RSD	60,722,720
FINANCIAL RESULT (A-B)	RSD	18,957,280
FINANCIAL RESULT (A-B)	EUR	157,977,00

As it can be seen from table 7, the average annual revenue of apple storage amounts to 79,680,000 RSD, When operating costs of cold storage are deducted from that amount, it can be concluded that the apple storage can achieve an average annual profit of around 19 million RSD, or around € 158 thousand, It also means that producers can make a profit of 5,92 RSD for each kilogram of stored apples,

Legal aspects of storing apple

If the producer or trader owns a storage space – cold storage, it is important to analyse the insurance of apples during its storage, The storage keeper is obliged to secure the goods received for storage only if this is agreed, If the contract does not specify which risks should be included by the insurance, the storage keeper is obliged to secure the goods from the usual risks (Law on Obligations, art, 732), The subject of insurance may be insurance against usual risks: flood, fire, pipe leakage, theft, etc, However, a special type of insurance can be insurance against the ruin of goods or its damage, Some insurance companies in Serbia offer insurance against risks specific for the insurance of goods stored in storages with cooling devices and maintenance of common temperature and humidity, It is defined as the risk of unforeseen damage to the device for cooling or power failure, which may cause: changes in the cooling mode, complete cooling failure, the harmful effects of cooling agents on stored insured goods, disabling the maintenance of contracted or customary temperature and humidity and a controlled atmosphere in the cold storage (<https://wiener.co.rs/Za-privredu/Osiguranje-imovine/Zalihe-u-hladnjacama>), The subject of insurance may be: supplies of goods for sale or processing located in built refrigerators of companies, wholesale companies, ports, industrial enterprises for the production or processing of food products and others, In the analysed case, the insurance cost was not calculated because no insurance was made for the mentioned risks,

If a storage contract is concluded between the landlord and the storage keeper, it is important to consider several elements, The storage keeper shall be liable for damage to the goods unless he/she proves that the damage was caused by circumstances that could not be avoided or remedied by either the natural character of the goods, as well as the incorrect packaging (Law on Obligations, art, 731), The same article of the Law on Obligations stipulates that “the storage keeper is obliged to warn the landlord of the defects or the natural characteristics of the goods, or the incorrect packaging, which could result in damage to goods, as soon as the noted shortcomings were observed or must have noticed”, The reimbursement of damage that the storage keeper is obliged to pay for the destruction, reduction or damage of goods during its receipt until the hand over cannot exceed the real value of the goods, unless the damage was caused by deliberate or gross negligence (Law on Obligations, art, 733),

Regarding the storage keeper's responsibility, it is provided an example of a court verdict from Croatia, regarding the cotton storage, which was destroyed by fire, created due to “self-ignition”, “When it is established in the procedure that self-ignition of cotton is the cause of fire, although it happened by chance, The case cannot be attributed to anyone in the guilt”, (Supreme Court of the Republic of Croatia, II Rev, 63/99, dated 3 October 2001 - Selection of Decisions 2/2001 - 31),

In addition to the right to storage compensation, the storage keeper has a lien on those goods for his claims arising from the storage contract and other claims arising in connection with the storage of the goods, This is confirmed by the case law, The storage keeper has a legal lien on received goods in order to secure his claims from the storage contract and on the basis of special costs related to the storage of goods (High Commercial Court of the Republic of Croatia, Pg, 1145/95, dated 4 July 1995 - Collection 4 - 47),

Bearing in mind that the apple belongs to the category of replaceable things, the legislator has prescribed that “a storage keeper cannot mix received replaceable things with things of the same kind and of the same quality, unless the landlord agrees, or if it is obvious that these are things that can be mix without risk of damage to the landlord” (Law on Obligations, art, 734), As the apple has its own specificities, and it would not be possible to apply analogy to wheat, corn or other replaceable things, it is important to specify in the contract whether the storage keeper is allowed to mix apples with apples from other landlords, or those that may be owned by the storage keeper,

In terms of taking over goods from the recipient of the goods, which may also be a landlord or a person who has his/her authorization, he/she is obliged to inspect the goods at the time of their takeover (Law on Obligations, art, 738), If, upon taking over goods, there are defects, the recipient is obliged to immediately inform the storage keeper about this, otherwise the goods are considered to have been duly received, However, “for defects that could not be determined at the time of the takeover, the recipient shall be obliged to notify the storage keeper in a reliable manner within seven days, counting from the day the goods were taken, otherwise the goods are considered to have been duly received”,

A storage keeper authorized by law to issue a storage receipt for goods received for storage shall be obliged to issue it to the landlord at his request (Law on Obligations, art, 740), Here, however, exist a dilemma of what “by law” means, since no law fully defines what the public and what the private storages are, Some authors like Carić (Kapor and Carić, 1993), consider that all “storage companies” are in the status of a public warehouse,

Conclusions

Storage of apples reduces the losses incurred after harvest, allows the preservation of quality, while on the other side provides a better economic result, which is based on sales delay and achieving a higher purchase prices,

ULO cold storages are characterized by extremely low levels of oxygen and carbon dioxide, as well as with high relative humidity, In such circumstances, all biological processes in stored apple significantly slow down, and apple can be stored in cold storage throughout the year, Also, greatly important advantage of ULO cold storage is a very low percentage of losses that do not exceed 1%,

Analysis of movements in the monthly purchase prices, in the ten-year period shows that the apple storage was economically justified in all years of the analysed period, whereby there is a noticeable tendency of significant increase of purchase prices in the period after harvest,

Total investment in the construction of analysed ULO cold storage is 213,460,680 RSD, or the € 1,778,839, Annual earnings from storage amounts to average of 24,90 RSD per kilogram, while storage costs at a level of 18,98 dinars per kilogram, which ensures that analysed cold storage realizes pure annual profit of 5,92 RSD/kg (in total around 19 million RSD),

When concluding the contract on the storage of apples between the warehouseman and the depositor, it is important to specify mutual obligations regarding liability, defects of stored goods, prices, storage conditions and other mutual obligations, It is also important to specify whether the stored apples can be mixed with the stored apples of other depositors, An essential part of the contract is the insurance of goods, which is not a legal obligation of the warehouseman if not contracted,

Acknowledgement

This research was funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia, based on the agreement between the Ministry and the Faculty of Agriculture, University of Novi Sad, on the realization and financing of scientific research in 2021 (451-03-9/2021-14/200117),

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Ekonomski i pravni aspekti opravdanosti skladištenja jabuke

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SAŽETAK

Konkurentnost na globalnom tržištu podrazumeva kvantitativnu i kvalitativnu sigurnost u ponudi. Jabuka, kao jedna od najznačajnijih voćnih vrsta na tržištu Srbije, odlikuje se izrazito sezonskim karakterom ponude. Da bi se u toku godine obezbedilo kontinuirano snabdevanje tržišta kvalitetnim jabukama neophodno je skladištenje sveže ubranih plodova u hladnjačama. One omogućavaju optimalne uslove za očuvanje kvaliteta jabuke do momenta izlaska na tržište. Pored očuvanja kvaliteta voća skladištenog u hladnjačama, odlaganjem plasmana pruža se mogućnost za postizanjem veće prodajne cene. Osnovni cilj istraživanja u ovom radu je da se utvrde ekonomski efekti skladištenja jabuke. Odlaganjem prodaje, te efektivnim skladištenjem u hladnjačama, proizvođači su u prilici da svoje proizvode prodaju u periodu kada je ponuda manja, a tražnja veća. Na taj način postiže se daleko povoljniji finansijski rezultat. Za slučaj da proizvođač ili trgovac nemaju sopstvenu hladnjaču neophodno je zaključiti ugovor o uskladištenju sa skladištarom. Tada se osim ekonomskih moraju analizirati i pravni aspekti jer se jabuka skladišti na osnovu ugovora o uskladištenju, što podrazumeva odgovornost skladištara za uskladištenu robu, ali i druge pravne efekte ovog ugovora.

KLJUČNE REČI: Jabuka, tržište, prodajna cena, hladnjača, ugovor o uskladištenju

PRIMLJEN: 12.04.2021.

PRIHVACEN: 21.07.2021.