



# BIOLOGICAL ASSETS MANAGEMENT: VALUATION AND DISCLOSURE

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## Abstract:

Agricultural activities, due to several specific characteristics, are regulated by a separate standard - International Accounting Standard 41 - *Agriculture*, which makes a clear difference between biological assets and agricultural products. The purpose of this paper is to consider the representation of biological assets in the financial reporting of public companies in the territory of the Republic of Serbia. The research was conducted on a sample of 582 public companies from the Belgrade Stock Exchange during 2017, of which 29 are from the agricultural sector. The results of the research show that in the sector of agriculture, forestry and fisheries, the most common item is the value of biological assets, where 17 public companies disclosed the value of biological assets according to IAS 41.

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## Keywords:

agricultural sector, fair value, IFRS, IAS, financial reporting.

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## 1. INTRODUCTION

Agriculture is among the earliest human activities and, as such, plays a vital role in the global economy (Fischer & Marsh, 2013; Mates, 2008). In contrast to other sectors, there is constant need for agricultural products, while other sectors are characterised by volatility. From the perspective of the market in the Republic of Serbia, agriculture represents an important economic activity distinguished by many specific characteristics that arise because of the biological transformation of resources. Biological transformation essentially refers to the process of producing biological resources and, consequently, agricultural products. Companies engaged in agricultural activities will need to document accounting changes associated with agricultural operations over the course of the year, indicating that financial reporting must be adjusted to these circumstances. In particular, the specific characteristics of agricultural activities require a specialized accounting framework for a more efficient use of agricultural resources (Vukmirović et al., 2012). At the international level, the field of agriculture is regulated by the provisions of the International Accounting Standard (hereinafter IAS) 41 – *Agriculture*. Given that the application of the International Financial Reporting Standards (including IAS 41) is mandatory for public companies in the Republic of Serbia according to the Law on Accounting, those involved in these activities will need to become acquainted with this standard and implement it in their operational reporting. The aim of implementing IAS 41 – *Agriculture* is to enable the comparison of agricultural activities on a global level, which prescribes the accounting treatment and disclosure in reports.

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This should help public companies in Serbia to become more competitive on the international level and, consequently, operate more successfully. The aim of this paper is to analyze the presence and disclosure of biological assets in the financial reports of public companies listed on the Belgrade Stock Exchange. The following section of the paper will outline the fundamental legal and professional regulations regarding financial reporting related to biological assets. A literature review will be provided afterwards, along with the methodology and findings of the research. Following a brief discussion, the main conclusions and potential avenues for future research will be outlined.

## 2. BASIC PROVISIONS OF IAS 41 – AGRICULTURE

It should be highlighted that agriculture is defined in a slightly different manner in IAS 41, as compared to the official register of economic activities. Namely, according to the mentioned standard, agricultural activity involves managing biological transformation or collecting biological assets for sale, converting them into agricultural products, or generating additional biological assets (Deloitte, 2019). This definition can also be associated with the definition of biological assets; specifically, these assets represent a category of an entity's property and include resources such as living plants and animals. It could be highlighted that biological assets belong to renewable resources. The aim of the aforementioned standard is to establish accounting standards for agricultural activities, specifically the management of the biological transformation of biological assets into agricultural products. Biological transformation encompasses growth processes, changes in characteristics, production, and reproduction that result in qualitative and quantitative changes in the biological asset. On one hand, as previously mentioned, biological assets refer to living plants and animals, while on the other hand, agricultural products represent the harvested or collected outputs of biological assets. In this context, IAS 41 – *Agriculture* applies to agricultural products, particularly the harvested outputs of biological assets, and is applicable only at the time of harvest, whereas IAS 2 – *Inventories* or other relevant standards apply to products after harvest (IFRS, 2019; Fischer & Marsh, 2013; Deloitte, 2019). Based on the previous discussion, it can be concluded that, from the perspective of the standard, agricultural activities include only those that impact growth, development, and degeneration of biological assets, while other activities cannot be classified as agricultural. For instance, hunting wild animals or fishing in open waters cannot be classified as agricultural according to this standard, and, as such, the standard is not applicable to these activities (which is in contrast to the official register of economic activities of the Republic of Serbia).

A biological asset or agricultural product can be recognized in situations where reporting entity holds an asset under control resulting from prior actions. In addition, it is likely that future economic benefits will be received by the entity. Also, it is required that fair value or cost can be measured reliably. The standard assumes that the fair value of a biological asset can always be reliably determined, except when market price data is unavailable and when alternative fair value estimates are deemed unreliable. If an active market exists for a biological asset or agricultural product, the price established in that market serves as an appropriate basis for determining the fair value of the asset. The standard also permits the valuation of biological assets based on the concept of historical cost, which refers to the acquisition value or cost price (Savić & Obradović, 2020). The valuation of a biological asset is conducted during the following stages: initial recognition, the end of each reporting period, and at fair value less selling cost, unless fair value cannot be measured reliably. Additionally, agricultural products are measured at fair value less selling cost, but only at the point of harvest (IFRS, 2019; Deloitte, 2019).

## 3. LITERATURE REVIEW

Despite being an important sector in global economy, agriculture has been overlooked by regulatory authorities for long period of time. The standard previously mentioned, dedicated exclusively to the agricultural field, was published relatively recently, in December 2000. A substantial number of studies have examined the effects of implementing IAS 41 – *Agriculture* on the national economy, along with the advantages and disadvantages of transitioning from historical cost to fair value. In the following paragraphs, some of the most significant studies in the mentioned field will be presented. There are studies that have examined the ideological role of IAS 41 – *Agriculture* in legitimizing social conflict, particularly concerning companies that are required to adopt a fair value measurement model (Elad, 2007), or the increased volatility, manipulation, and subjectivity of reported earnings according to this standard (K. Herbon & J. Herbon, 2006; Penttinen et al., 2004; Dowling & Godfrey, 2001).

Dowling and Godfrey (2001) and Elad (2004) oppose measuring biological assets at fair value; therefore, they recommend using historical cost measurement for biological assets. Herbohn (2006) believes that the fair value used to measure a company's biological assets is inappropriate and overly academic. Elad (2004) emphasizes that the radical departure from the historical cost method leads to certain theoretical and practical issues that may affect its widespread acceptance, creating significant challenges in the implementation of various national regulations.



On the other hand, Barlev and Haddad (2003) and Athanasios et al. (2010) argue that valuing biological assets using fair value provides complete disclosure that aligns with transparency. These authors also emphasize that reports based on fair value draw shareholders' attention to the value of their capital and enhance management functions.

However, one of the common criticisms of this standard is the lack of clear provisions regarding the timing of the valuation of biological assets during the reporting period. Mates and Grosu (2008) previously confirmed and emphasized that IAS 41 – *Agriculture* does not provide specific information regarding how often biological assets should be assessed, concluding that evaluations must occur at each reporting date, as there are no existing regulations to mandate more frequent assessments of biological assets. Additionally, Aryanto (2011) points out that IAS 41 – *Agriculture* provides a generalized assessment of fair value for all biological assets, even though they serve different purposes, which often results in inaccurate information and consequently impacts the quality of financial reporting. In the context of territorial studies, Argilés and Slof (2001) note that the historical cost method is the predominant approach for measuring biological assets in the EU. Nevertheless, these authors advocate for the use of the fair value method for assessing biological assets. Argilés et al. (2009) analyzed the agricultural sector in Spain and indicated that there were no significant differences in the revenues of entities that use fair value to measure biological assets as compared to those that assess them based on historical costs, nor was there an increase in their volatility. The mentioned research gives additional information of incorrect accounting practices in the application of the historical cost method within the agricultural sector and summarizes that the fair value method seem to be an appealing tool for predominantly small farms in the European Union's agricultural sector. Koiv (2001) examined the effects of the standard on Estonia's agricultural sector, particularly addressing the difficulties encountered while developing financial reporting guidelines for the agricultural industry in Estonia. Sedláček (2010) examined the valuation of biological assets and agricultural production for companies operating in the Czech Republic, analyzing two approaches: the Czech approach and the international approach. The international accounting standards favor the principle of fair presentation, while the Czech financial reporting prefers the principle of prudence. The study also indicates that the historical cost method established in Czech financial reporting serves as an objective standard for the biological valuation of assets only at the time of purchase, while in subsequent periods, it operates asymmetrically. From the perspective of international reporting, IAS 41 – *Agriculture* advocates for the fair value model, which is regarded as the appropriate method for assessing biological assets and agricultural product.

Mates et al. (2015) and Feleagă et al. (2012) emphasize that financial reporting in agricultural companies operating in Romania is oriented in two directions. In this regard, there are companies here that implement IAS 41 – *Agriculture* retroactively and those that follow national accounting standards. The authors point out that the flexibility in choosing the method of valuing biological assets in Romania leads to further difficulties in ensuring comparability and objectivity in financial reporting for this category of assets. Regarding the Republic of Serbia, Savić i Obradović (2020) point out that there are considerable shortcomings in the recognition and accounting treatment of biological assets, particularly when applying the fair value concept as the basis for measurement. In addition, the authors note that the presentation of information in financial reports is not conducted in a reliable or relevant manner.

#### 4. METHODOLOGY AND RESEARCH RESULTS

According to the defined objective of the paper, research included all public companies listed on the Belgrade Stock Exchange at the certain moment and their financial statements for the 2017 reporting period. The research sample consisted of 582 public companies for which financial statements were publicly available. The financial statements were obtained from the website of the Business Registers Agency of the Republic of Serbia. The companies were classified into one of 18 sectors according to their registered activities. Subsequently, the values from the financial statements were converted to euro as a stable currency, using the average exchange rate of the National Bank of Serbia as of December 31, 2017.

The previously mentioned and explained biological assets are presented in the financial statements through several balance sheet categories, including Biological assets, Biological assets in preparation, and Advances for biological assets, Forests and perennial plantations, and Breeding stock. The following table presents the total disclosed values of the aforementioned categories categorized by sectors for public companies in 2017.

**Table 1.** Share of the total value of biological assets in euros in the financial reporting of public companies for the year 2017.

| Sector  | Biological assets | Biological assets in preparation | Forests and perennial plantations | Breeding stock | Total biological assets | Percentage share |
|---|-------------------|----------------------------------|-----------------------------------|----------------|-------------------------|------------------|
| <b>A - Agriculture, forestry, and fishing</b>                             | 481,054           | 78,270                           | 82,519                            | 320,265        | 962,107                 | 87.42%           |
| <b>B - Mining</b>   | 8                 | 0                                | 8                                 | 0              | 17                      | 0.00%            |
| <b>C - Manufacturing Industry</b>   | 64,024            | 5,330                            | 57,542                            | 1,152          | 128,048                 | 11.64%           |
| <b>F - Construction</b>   | 2,852             | 0                                | 2,836                             | 16             | 5,704                   | 0.52%            |
| <b>G - Wholesale and retail trade and repair of motor vehicles</b>        | 319               | 11                               | 308                               | 0              | 638                     | 0.06%            |
| <b>L - Real estate</b>  | 87                | 0                                | 0                                 | 87             | 173                     | 0.02%            |
| <b>M - Professional, scientific, innovative, and technical activities</b> | 1,913             | 0                                | 1,913                             | 0              | 3,827                   | 0.35%            |
| <b>Total</b>  | <b>550,257</b>    | <b>83,611</b>                    | <b>145,126</b>                    | <b>321,520</b> | <b>1,100,514</b>        | <b>100.00%</b>   |

Source: Authors' data.

As it can be observed, the most represented sector in terms of the value of biological assets are agriculture, forestry, and fishing, while the second position is held by the manufacturing sector. Other sectors either did not disclose the value of biological assets, leading to their exclusion from the table, or reported insignificant amounts. Regarding individual companies, 35 disclosed the value of biological assets, while 10 companies reported biological assets under preparation. On the other hand, 21 companies disclosed the value of forests and perennial plantations, while 13 disclosed the value of breeding stock. Out of the companies mentioned, 17 companies are from the agriculture, forestry, and fishing sector, representing half of the companies that report on biological assets. The category Advances for biological assets was not represented among the sampled companies in 2017. After analyzing the Notes to the financial statements, the research findings indicate that all legal entities that disclosed the value of biological assets utilized fair value for their valuation, along with additional explanations regarding fair value and the methods of measuring it. In addition, all companies disclosed information in accordance with IAS 41 – *Agriculture* requirements.

## 5. DISCUSSION

Based on the research conducted using the data from 2017, it can be presumed that public companies in the Republic of Serbia utilize fair value for the valuation and disclosure of biological assets. This is in accordance with IAS 41 and other regulations. In this regard, the results differ from the study conducted in the EU (Koiv et al.,

2001). Certainly, the importance of accounting regulations in the valuation and disclosure of this particular accounting group cannot be overstated (Beke-Trivunac, 2019). Reporting transparency in agricultural activities increases investor trust, leading to improved conditions for financing agricultural activities from both private and public funding sources (Cvetković & Marić, 2019).

## 6. CONCLUSION

This paper focused on biological assets as one of the accounting groups for which financial reporting is mandatory. The paper highlights the main provisions of IAS 41 – *Agriculture* concerning the recognition, valuation, and disclosure of information related to biological assets. The results show that information regarding biological assets is mainly disclosed by public companies operating in the Agriculture, Forestry, and Fishing sector, along with a few companies from the Manufacturing sector. From the perspective of valuing biological assets, the sampled companies employ fair value less estimated selling costs for their valuation, which aligns with professional and legal regulations. However, this is not the most commonly used valuation method in the region and the rest of Europe. Future research could explore how the transition from historical cost to fair value impacts small and medium-sized enterprises in the agricultural sector and whether alternative valuation methods might address some of the challenges identified in this study. Furthermore, broadening the scope of research to include other periods and more sectors could provide a more comprehensive understanding of the application of IAS 41 in practice. In



conclusion, while significant progress has been made in the valuation and reporting of biological assets in Serbia, continuous improvement in regulatory guidance and company practices will be essential to further enhance the quality of financial reporting in the agricultural sector.

## 7. LITERATURE

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