

# BIOLOGICAL ASSETS AND THE AGRICULTURAL PRODUCTS IN THE CONTEXT OF THE IMPLEMENTATION OF THE IAS 41: A CASE STUDY OF THE ROMANIAN AGRO-FOOD SYSTEM

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**Abstract:** Nowadays, when the contribution of agriculture and agro-food industry to the GDP is a significant, in Romania's case we appreciate that the economic aspects of this area also deserve a specific approach. The aim of this paper was to identify the incompatibility of the recognition and assessment criteria of agriculture production, biological assets and agriculture products imposed by the application of these standards in agro-food companies, and to analyze its effects concerning the financial position and performance of these entities. The paper takes into consideration the economic-financial harmonization process, which is now in full progress, both in the EU and other states, by applying the specific standards (IAS/IFRS) in the preparation of annual/interim financial reports. Finally, referring strictly to the case of Romania, after thorough research into the field in question, we suggest a presentation of the controversial assessment criteria provided by the IAS 41 standard, and also refer to the difficulties related to the implementation of this standard in the agro-food industry.

**Key words:** agriculture production; biological assets; IAS 41; assessment; fair value; cost.

**Acronyms used:** EEC – *European Economic Community*; IAS – *International Accounting Standard(s)*; IFRS – *International Financial Reporting Standard(s)*.

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## INTRODUCTION

With the acceleration of the accounting harmonization process derived from the implementation of IAS/IFRS, it was necessary to identify the criteria required in the preparation and reporting of the financial position and economic outcome. The evolution of these criteria has always been dependent on normative decisions in force that accompanied the implementation of IAS/IFRS both for large and for medium or small firms. Regarding the agro-food companies, the International Accounting Standard Board (IASB) issued a special standard IAS 41 – *Agriculture* (Feleagă et al., 2012) that can be applied exclusively or additionally, depending on the type of activities carried out by the entity (Fig. 1). IAS 41 was approved in December 2000 and entered into force for the financial year 2003.

The reason why it was necessary to issue an *ad-hoc* standard had been determined by certain activities regarding the agricultural activity that were excluded from the scope of other international accounting standards (e.g. IAS 2 – Inventories); events associated with agricultural activities were and still are difficult to be represented by an accounting model based on the measurement criteria of the historical cost and achievement concept, but it should be noted that IAS 41 is not the only one to be applied to financial statements of agro-food companies.

IAS 41 – *Agriculture* intervenes in the regulation of some important aspects for the accounting record of economic and financial operations of the agricultural entity (Adamo, 2004; Azzali et al., 2007). This standard establishes the classification and measurement rules of stocks of agricultural produce and biologic assets, expressing a

clear preference for the *fair value* measurement criteria against historical cost.

In the agro-forestry sector, where firms have a specific accounting procedure, most of the time the financial statements are prepared based on existing supporting documents provided by the entity, showing a structure of financial statements with additional posts, taking into consideration the sensitive operations that require forestry, technical and agriculture related knowledge, in addition to economic and managerial knowledge. This knowledge proves to be very important given the accounting documents deficiency and reduced volume of information provided by the management of agro-food companies.

Taking into account that the balance sheet should be a summary accounting document, i.e. to take into consideration the systematic and chronological record of the economic and financial operations of the entity, for agro-food companies, this component of the financial statement structure fails to allow the development of a credible informational system regarding its financial position and economic outcome.

**Table 1.** Examples of biological assets and agricultural produce resulting from the processing that occurs after harvest, offered by IAS 41.

Biological assets	Agricultural produce	Product resulting after harvest
Sheep	Fleece	Staple, carpets
Trees from a plantation	Lump	Timber
Plants	Cotton	Clothes, clothing
	Cane	Sugar
Dairy cattle	Milk	Cheese
Pigs	Housing	Sausages, processed bacon
Shrubs	Leaves	Tea, treated tobacco
Vine	Grapes	Wine
Fruit Trees	Fruit picked	Processed fruit

Periodically, the agro-food companies establish and develop financial statements presenting the situation of the assets, liabilities and capital, and the situation of the income and expenses. These statements are called annual (or interim, if reported quarterly or half-yearly) because they are reported at the end of a calendar or agriculture year.

In addition to the annual financial statements, the agricultural companies also prepare a set of financial statements, which are called estimated statements presenting the economic events that can be checked in a real or hypothetical situation, in this type of financial statements being also included the adequate or convenient investment analysis.

A major contribution to the uniformization of the records from the agricultural firms with those of other companies in other economic sectors, in order to develop common economic and financial indicators, was brought by Piccini (1988), Bartola and Arzeni (1995), Lounay (1967), Delfould (1971), Todea et al. (2005) and Budean (2008).

The estimated financial statements are designed to determine the probable profit that, under normal technical and economic conditions, can be obtained by an agro-food entity. Such financial statements do not necessarily have to use data from the company accounting, but primarily data on production, prices that can be obtained and costs incurred in a certain production context, in addition to a rigorous estimated calculation method.

In preparing the estimated financial statements, computational techniques derived from the following equation are used:  $PBV = [(CHD+Tx)+(Chs+D+BF)] = +/- R (1)$ , where  $PBV$  = gross value of production for sale;  $Chd$  = sundry charges;  $Tx$  = taxes and contributions;  $Chs$  = salary costs;  $D$  = amount of payable interest;  $BF$  = value of financial benefits;  $R$  = return on investment performed by the entity.

Thus, the analysis of the financial statements is oriented to accept various aspects of the economic management, in terms of financial, economic or patrimonial outcome, a distinction to be emphasized primarily due to the accuracy or

**Table 2.** Measurement of biological assets at the entry in an agricultural entity patrimony and in the subsequent financial years.

Initial registration	Financial year N	Financial year N +1	Financial year N +2
Fair value less estimated costs at the point of sale	Costs less accumulated depreciation and impairment losses	Costs less accumulated depreciation and impairment losses	Costs less accumulated depreciation and impairment losses
Initial registration	Financial year N	Financial year N +1	Financial year N +2
Fair value less estimated costs at the point of sale	Fair value less estimated costs at the point of sale	Fair value less estimated costs at the point of sale	Fair value less estimated costs at the point of sale

**Table 3.** Measurement of biological assets at the entry in an agricultural entity patrimony and in the subsequent financial years.

Initial registration	Financial year N	Financial year N +1	Financial year N +2
Costs less accumulated depreciation and impairment losses	Costs less accumulated depreciation and impairment losses	Costs less accumulated depreciation and impairment losses	Costs less accumulated depreciation and impairment losses
Initial registration	Financial year N	Financial year N +1	Financial year N +2
Costs less accumulated depreciation and impairment losses	Fair value less estimated costs at the point of sale	Fair value less estimated costs at the point of sale	Fair value less estimated costs at the point of sale

precision of data or information to be provided; these are closely interrelated and interconnected.

It is known that in the entity's economic environment the financial liquidity from internal or external sources, funding sources are invested in property assets consisting of fixed and circulating capital necessary to boost the production activity of goods and services by obtaining profit, enabling coverage of all production factors involved (Pacciani, 2005).

## MATERIALS AND METHODS

### **International Financial Reporting Standard IAS 41 - Agriculture: measurement and accounting of biological assets and agricultural produce**

IAS 41 defines the accounting treatment, the presentation of financial statements and information related to agricultural activities. According to this international standard, the agricultural production means the product obtained from an entity's biological asset during harvest; and the agricultural activity means the management by the entity of the biological transformation process of living animals or plants (biological assets) through their sale as agricultural produce or subsequent biological assets. In addition, IAS 41 defines the accounting treatment for biological produce during their growth, degeneration, production and procreation, and initial exhaust of agricultural product at harvest.

The measurement criterion required by IAS 41 is the *fair value*, less costs to sale, a *fair value* actually representing the initial value of the biological produce until harvest, unless the *fair value* cannot be reliably estimated, in which case there

is recourse to the cost criterion less accumulated depreciation and impairment losses.

The effects of the implementation of the IAS 41 and accounting issues in the agriculture sector has been studied and analyzed by many authors, such as Herbohn and Herbohn (2006), Elad (2004, 2007), Jansson and Fagerström (2011).

IAS 41 intervenes in the regulation of aspects that are significant for the recording into the accounting of the financial and economic operations of agricultural firms, specifying in advance how to proceed in order to identify the agricultural assets and define the biological assets. Regarding the identification of agricultural activities, IAS 41 defines them as the management of an entity that deals with the biological transformation of biological assets and whose object is their sale as agricultural produce or subsequent biological assets.

An agricultural activity may include various types of activities, such as growing livestock, forest exploitation, and annual or continual agricultural production activities, growing trees, floriculture and fish farming. IAS 41 specifies at the same time that, given the great diversity of these activities, there may be some common aspects, such as:

1) *Tendency to evolve*: living animals and plants may undergo biological transformations, which are actually connected to their status as living beings, animals or plants using natural resources, such as light, water, air and land, in order to alter biological characteristics both in quantitative and qualitative terms;

2) *Management of the transformation process*: this aspect facilitates the biological transformation, improving or at least stabilizing the conditions

**Table 4.** Duration of the working day depending on production place (*adapted after ISIA, 2012*).

Culture	Place of production	
	No. of days/ Ha - plane	No. of days/ha hills and mountains
Crops	15	20
Pasture	10	15
Cattle food	20	30
Cattle food from green corn	15	20
Sugar beet	20	-
Potatoes	30	45
Minimally processed climbing beans	365	420
Tomatoes for canning	50	50
Tobacco	100	100
Protected crops	400	400
Fixed conditioned greenhouses	800	800
Animal breeding		
Dairy cattle	15	20
Beef Cattle	2	5
Horses	12	12
Pigs for reproduction	10	12
Porkers	0.5	0.6
Dairy sheep	5	6
Sheep for meat	3	4
Rabbits for reproduction	2.5	3
Rabbits for Meat	30 days/50 pieces	30 days/50 pieces
Birds bred for eggs	1 day/40 pieces	1 day/40 pieces
Birds bred for meat	1 day/160 pieces	1 day/160 pieces ati
Bees	12 days/10 beehouses	12 days/10 beehouses
Intensive fishculture	730	730
Extensive fishculture	4	4
Nursery gardens and protected crops	Hours/Year, plain	Hours/Year, hills and mountains
Conditioned greenhouses	2250	2475
Unheated greenhouses and potted plants	720	792
Nursery gardens for fruit plants for seeds and roses	2250	247
Nursery gardens for shrubs and ornamental plants	600	660
Manufacturing industry	Working days have X products to be processed	Working days have X products to be processed
Vine in wine	0.3	0.3
Milk in butter	0.1	0.1
Milk in cheese	0.1	0.1

necessary for the process to take place, serving to distinguish agricultural activities from other activities;

3) *Transformations exhaust*: the quantitative and qualitative changes determined by biological transformations can be measured and monitored as a routine activity.

Regarding the definition of biological assets, this term refers to a living animal or plant, and a group of biological assets represents grouping similar living animals or plants. A biological asset can be sold, transformed into agricultural produce (trees turned into wood) or biological assets (e.g. sheep giving birth to a lamb). In addition to biological assets IAS 41 applies to agricultural produce representing the harvest of biological assets by the entity, but only until the harvest. From that moment another standard IAS 2 – *Inventories* intervenes, or any other international accounting standard considered appropriate for the situation.

The conditions imposed by IAS 41 on the recognition of a biological asset or agricultural produce (Examples – Table 1), consist in the fact that the entity must: control the asset as a result of some previous events; it is possible for that asset to produce future economic benefits to the entity; *fair value* or cost of the asset to be measured reliably.

The situation in which an agro-food entity is forced to implement the standards IAS/IFRS in drafting the financial statements is primarily determined by: the intention to orient towards a financial market in order to benefit from future economic development; openness of the entity capital to an institutional partner (mutual fund investment, *private equity*, *venture capital*); favor-

ing acquisition projects of a foreign company; wish to sell their business in a short period of time to an international investor, etc.

Returning to IAS 41, it was approved by the European Commission for homologation of international accounting rules applicable to European companies, but also to facilitate the convergence of criteria for drafting the financial statements related to resident companies with international ones.

The implementation of IAS 41 into the accounting of agricultural entities will certainly help to: use a common language on financial markets; confront the firms competing on the global market; improve relationships with banks and financial institutions.

### **Expanded results and discussions: controversies of measurement criteria provided in IAS 41 and difficulties in implementing them in Romanian agro-food companies**

Regarding the accounting and measurement criteria according to the *conceptual framework* of IASB, an entity must record a biological asset or agricultural produce, only if it has control over that asset resulting from a past event, if it is likely to generate future economic benefits and if the asset *fair value* or cost can be measured reliably.

According to IAS 41, the value of a biological asset must be measured based on its initial value when entering into the company patrimony in accordance with the *fair value* of a similar biological asset, which corresponds to the cost of sale, unless the *fair value* cannot be reliably estimated. Costs of sale incurred by those biological assets, excluding commissions paid to distributors or agents, the contributions owed to the monitoring



authorities and commodities exchange, taxes for transfer operations, etc. The costs of sale include transportation costs and other costs necessary to physically bring the asset at the point of sale.

The calculation of the *fair value* for a biological asset or agricultural produce may be facilitated by regrouping the biological assets or agricultural produce depending on certain characteristics, such as age or quality. The entity to which they belong, decides on these characteristics depending on those used and promoted on the market as a calculation basis for price.

An agricultural produce derived from the entity's biological assets should be measured at *fair value*, based on the evaluation of the estimated cost of sale, at harvest; this measurement is represented by the cost recorded at the date when IAS 2 or another accounting international stan-

dard will be applied. The reliance on cost criteria should be considered as an alternative, namely: in some cases the cost value can approximate the *fair value*; when little biological transformations have taken place, the initial cost criterion must be maintained; in this case the impact of biological transformation on price is not significant.

The recognition and measurement criteria promoted by IAS 41 can be summarized as follows (Fig. 2). As can be seen, the existing controversies between the measurement criteria either at *fair value* or at initial cost arise from subjective arguments required by IAS 41. The Issues to be highlighted concern the relationship between the living stock and their measurement criterion; reasons leading to abandoning the caution principle when the fair value is applied in measuring stocks (IAS 2), as well as the other difficulties arising from measurement at *fair value*.

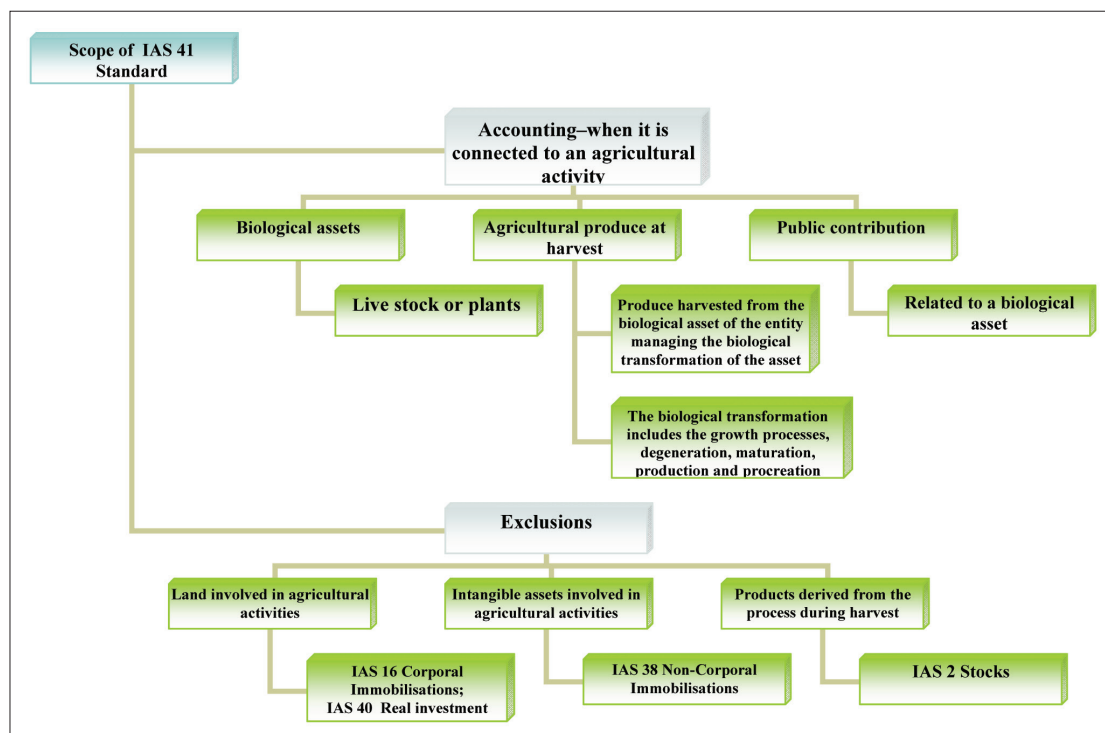


Fig. 1. Scope of the IAS 41 standard

Most of the time, in order to complete the *fair value*, estimation models and techniques are used, such as:

a) *Market Approach*: which consists in determining the values on current market transactions;

b) *Income Approach*: which consists in determining the values related to future benefits generated;

c) *Cost Approach*: which applies when both aforementioned methods cannot be applied.

The reasons for renouncing the principle of caution, for measuring the stocks and leading to predominantly choose the *fair value* measurement criteria can be found (Alexander and Arcer, 2006) - with some remarks - during the multi-annual period of agricultural production, in the sensitivity of the *fair value* to the market dynamic of animals and plant stocks.

The measurement of biological assets at the entry in an agricultural entity patrimony can be represented as follows (Table 2); for agricultural produce, the alternatives of the accounting registration at the entry into the entity patrimony and financial years will be as follows (Table 3).

In essence, the measurement criterion of agricultural produce is the same as the one indicated for the biological assets, but if for the last ones, IAS 41 allows the measurement at the cost criterion, if the *fair value* cannot be reliably estimated, for the agricultural produces, the *fair value* will be applied in all circumstances.

Actually, IAS 41 assumes that it is possible to permanently measure at the *fair value* the agricultural produces at harvest.

### **Difficulties in implementing the Standards IAS / IFRS in the Romanian Agro-food companies**

With reference to the Romanian system, keep in mind that “the financial accounting is oriented in two different directions. A number of groups and companies apply the International Financial Reporting Standards (IFRS), including IAS 41. Most companies still apply the provisions of the Decision no. 3055/2009 of the Ministry of Public Finance. These regulations are consistent with the Directive 478/660/EEC of the Council of Europe on the annual accounts of certain types of commercial companies and with Directive 783/349/EEC of the Council of Europe on consolidated accounts. However, accounting rules in Romania are converging to a number of issues with IFRS referential. The general criteria for recognizing the assets in national regulations are taken from the international conceptual framework regarding the preparation and presentation of financial statements. The provisions of IAS 41 are not directly reflected into the Romanian regulations” (Feleagă et al., 2012).

IAS 41 requires quite important restrictions on the registration of property in the balance sheet, but also on the information provided about the biological assets and agricultural produce that can be obtained.

Regarding the registration of elements into the financial statements, it has been established that an entity shall disclose separately the accounting value of their own biological assets, this can be an type of record, carried out on groups of homogeneous assets, such as living animals, plants, etc.

The variations of the biological assets fair value are recorded into the profit-and-loss account as separate components or explained in



the balance sheet. In the explanatory note, it is necessary to present the information regarding the nature and level of growth of biological assets.

IAS 41 encourages entities to distinguish assets as: consumable supplies, such as animal meat, cereals, etc.; fruit, such as dairy cattle, fruit trees, etc.; mature, presenting the needed characteristics to be collected; immature, not having the needed characteristics to be collected.

Little importance is given by the IAS 41 standard to issues with which the agricultural entities

must deal, namely: maximum annual working periods by activities and successive transformations (crops, livestock and processed agricultural products).

The working days are the ability to work on machinery and equipment used, on ancillary work, on manual work, on administration work (including sales), management, supervision and monitoring activities. Usually, one working day matches a number of 6.5 hours. For example, the duration of a working day depends on the place of production, as it can be seen in the table below (Table 4). Once the working time is calculated, the amount of compensations awarded for the work performed by the employees can be determined, depending on their role in the entity.

Returning to IAS 41, in determining the fair value and the effects resulting from the measurement, the entity shall: indicate the criteria taken into consideration in determining the *fair value* of biological assets and agricultural produce; present the *fair value* less the estimated cost of sale of agricultural produce harvested during the accounting year and determined at harvest; *fair value* change due to occurring physical or price changes.

The multiannual period of agricultural production determining a continuous recording in the entity's accounting determines a distribution of the economic and financial result between the financial years that were completed by the agricultural production.

A reconciliation between the changes occurring in the accounting value of biological assets between the time of entry into patrimony and end of the current accounting year, should include: profits or expenses derived from the change of *fair value*; increases due to purchases; decreases due to sales; reductions due to harvest; increases due to consolidation of enterprises;

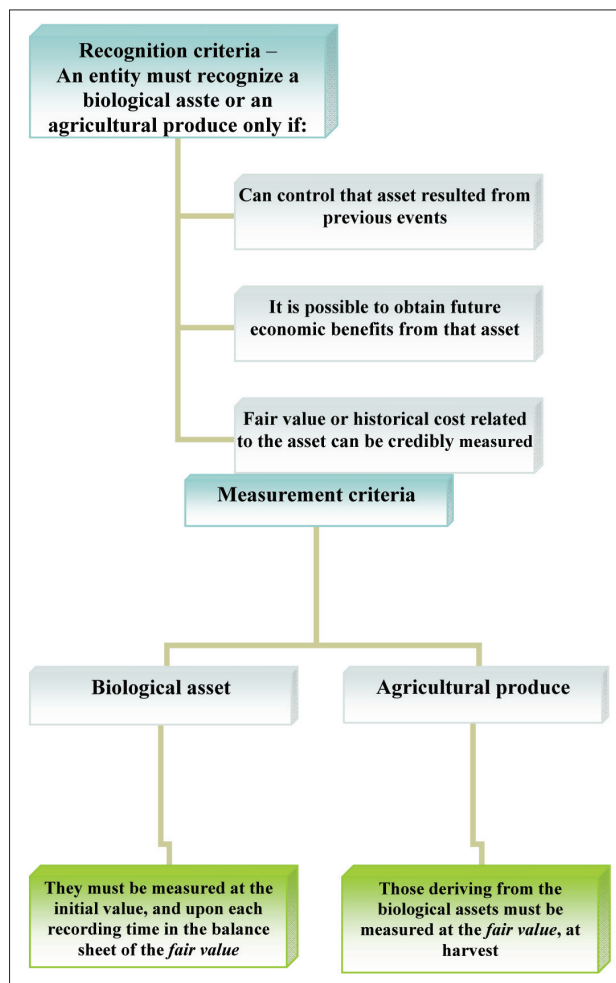


Fig. 2. Recognition and evaluation criteria of biological assets and agricultural produces in accordance with IAS 41

differences derived from the translation of financial statements by a foreign entity.

Choosing the *fair value* evaluation criterion means a uniform distribution in time of the outcome, whether livestock breeding is gradually increasing and if estimated prices are not decreasing (Epsetin and Jermakowicz, 2007).

## CONCLUSIONS

As can be noticed from our paper, IAS - *Agriculture* applies retrospectively so as to be able to capture the registration effects into the agro-food entities accounting of agricultural produce and biological assets, as if this accounting standard has always been used in the preparation and reporting of financial statements. Our investigations have allowed us to establish that the conflicts between the national Romanian accounting norms and IAS 41 are because agro-food companies reduce the importance of measurement under the historical cost in favor of the *fair value*. However, the concrete practice of *fair value* estimation is often impossible, the market price being the one reflecting the value of the agricultural produce concerned or biological asset, depending on certain conditions or criteria of differentiation, especially as some types of agricultural produce are frequently found in quotations from local exchanges.

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