Biological assets reporting: Is the increase in value caused by the biological transformation revenue?

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Abstract: Agricultural activity differs from other activities carried out by business units to achieve the profit. Agricultural activity is in comparison with other activities of business subjects dependent on the natural and environmental conditions, and therefore the agriculture specialization is narrowly connected with geographical position. The aim of the paper is to identify the possible obstacles in the practical application of the International Accounting Standard 41 (IAS 41) and to suggest the possible ways of their elimination. The comparative analysis of the currently applied rules for agricultural activity reporting and the analysis of the current accounting treatment of agricultural activity under the International Financial Reporting Standards (IFRS) were the starting point of the research. This part serves as the basis for own research in which the authors are trying to identify the specifics of agricultural production, biological assets and biological transformation. More suitable methods for their recognition, measurement and reporting were suggested as an alternative to the current treatments. At the end, the results are also confronted with contemporary scientific literature on that topic, which is not very broad. The main reason for the research of the authors in this area is the possible elimination of obstacles in the practical application of the IAS 41.

Key words: agricultural produce, biological assets, biological transformation, IFRS, revenue

Rural areas represent 91% of the area of 27 European Union (EU) member states and home for more than 56% of their inhabitants as mentioned by the European Commission (2007), which makes the rural development policy very important. Agriculture and forestry have the fundamental importance for the exploitation of farmland and the administration of natural sources in the rural areas of the EU as the platform for the economic diversification of rural areas. Agricultural activity differs from other activities carried out by business units to achieve the profit. Agricultural activity is in comparison with other activities of business subjects dependent on the natural and environmental conditions, and therefore the agriculture specialization is narrowly connected with the geographical position. Another fact, which significantly influences the extent and quality of agricultural production, mainly in the case of plant production, represents the significant dependence on weather conditions and other factors (pests, diseases, etc.), which can be influenced by the action of the human factor only in a restricted extent. As another factor which cannot be influenced, there is considered the biological character of agricultural production – it is necessary to respect the biological characteristics, e.g. the vegetation period, the length of the production cycle, etc., which usually overlap the period of one year. The fact that some products are further consumed by the agricultural enterprise itself could be considered as specific in agricultural production as well. Farm products may be used in the related activities, such as feeding hay and grain to livestock or poultry, or they may be marketed directly by the producer. The narrow connection with farmland which represents a scarce source is considered as a restrictive factor.

The specifics of biological character of transformation should be also reflected by the methodology for reporting the agricultural enterprises' activities. According to Sedláček (2010), in comparison with other economic branches, the agricultural activity is characterized by specific activities that require the appropriate accounting treatments. According to the International Accounting Standards Board (IASB) (2008), the nature of agricultural activity creates uncertainty or conflicts when applying the traditional accounting models, particularly because the critical event associated with the biological transformation that alters the substance of biological assets is difficult to deal with in an accounting model based on the historical cost and realization principle.

Supported by the Czech Science Foundation (Grant No. GAP403/11/0849).

Agricultural producers are operating in every form of business organization, from small farms to large publicly held corporations. According to the IASB (2008), most business organizations involved in agricultural activity represent small, independent, cash and tax focused family-operated business units, often perceived as not being required to prepare the general purpose financial statements. According to the European Commission (2010) there were 7.3 million commercial agricultural holdings in the EU-27 in 2007, with 6.4 million small holdings. The total farm labour force in the EU-27 represented the equivalent of 11.7 million full-time workers, of which 9.0 million worked on commercial holdings. Agriculture remains very much a family-oriented activity in the majority of Member States; almost four fifths (78%) of the total agricultural labour force represented farm holders or the members of their family. A different ownership structure in comparison with the majority of the Member States can be found in Slovakia (44%) and the Czech Republic (27%). Two fifths (an estimated 40.1%) of the total land area of the EU-27 was utilized as agricultural area (UAA) in 2007 according to the EUROSTAT. Even not withstanding the above mentioned fact about the great ratio of micro-entities (family farms) in agriculture, there is a number of big important agricultural enterprises traded on the stock exchange[1]. With respect to the specific characteristics of agricultural production and to the fact that there are agricultural enterprises traded on the stock exchange, it is necessary to ensure, that also the systems of financial reporting as the United States Generally Accepted Accounting Principles (US GAAP) and the IFRS, aimed at providing information for the present and potential future investors, should reflect those specifics.

METHODOLOGY

The aim of the paper is to identify the possible obstacles in the practical application of the IAS 41 and to suggest the possible ways of their elimination. The paper is divided into four parts. Firstly, within the framework of the theoretical background, the comparative analysis of currently applied rules for agricultural activity was done. There were selected four accounting systems for the comparative analysis – French, UK, USA and Australian. The Australian accounting system was selected because Australia was one of the first countries perceiving the need of a specific provision for agricultural activities and has reflected this in the accounting legislation. The French accounting system and methods for agricultural activity reporting were selected especially because the Czech accounting system (CAS) is significantly similar to the French one. The Plan Comptable General (PCG) and its chart of accounts have been enormously influential in a number of countries in Europe and elsewhere in the world. In Avenel's (1995) opinion, countries such as Belgium, Greece, Romania, Spain and the Francophone West Africa have accounting systems based upon the PCG as France has the largest agricultural sector in Europe, accounting for more than 20% of the EU farm output according to Elad and Herbohn (2011), which represents the second reason why the French reporting system was chosen. The UK GAAP was selected because it significantly represents the Anglo-Saxon approach to the financial reporting. Together with the continental approach, they are the most often applied financial reporting systems over the world. The reason for the selection of the USA was that it has some of the most comprehensive and detailed accounting and reporting requirements in the world.

The second part is represented by the analysis of the current accounting treatment of agricultural activity under the IFRS. The above mentioned parts of the paper served as the basis for the own research in which the authors are trying to identify the specifics of agricultural production (hereinafter as agriculture produce)[2], biological assets and biological transformation. More suitable methods for their recognition, measurement and reporting were suggested as an alternative to the current treatments. At the end, the results are also confronted with the contemporary scientific literature on that topic, which is

[1]AACo (Australian Agricultural Co, Ltd) – beef cattle company listed on the New York Stock Exchange (NYSE), Associated British Food – sugar cane plantation listed on the London Stock Exchange (LSE), Chiquita Brands International – bananas and other agriculture produce – listed on the NYSE Christian Dior, SA – vineyards (listed on the LSE, NYSE Euronext Paris), Del Monte Foods Company – fruits and vegetables (listed on the NYSE), HJ. Heinz Company – seed and vegetables (listed on the NYSE), LVMH (Luis Vuitton Moet Hennessy) vineyards – listed on the LSE and NYSE Euronext, Mondi – forestry (listed on LSE), Pernod Ricard SA – vineyards (listed on the NYSE Euronext), Plum Creek Timber Company – timber industry (listed on the NYSE), Unilever – oil palm and tea plantations (listed on the LSE), West Fraser Timber Co Ltd. – timber industry (listed on the NYSE) could be mentioned as examples.

[2]The authors strictly keep the terminology, which is used by the IFRS for the term agricultural production – therefore, the term agriculture produce has been used.

not very broad. The limited research activities in the accounting of agricultural produce, biological assets and biological transformation represent one of the main reasons, why the authors have selected that topic for their research.

THEORETICAL BACKGROUND

Agricultural accounting across the world

The specifics of agricultural production and biological transformation connected with that type of production are not taken into account by most of the existing accounting systems. Since 1998, there have been arising attitudes, which have been applied on the recognition, valuation and reporting of biological assets, transformation and biological production methodology. They can be considered as irregular, and can provoke the discussion on the possibility of the practical application and they can cause contradictory evaluations in relation to the fulfilment of the fundamental qualitative characteristic of information in financial reporting.

There can be identified a very different approach to the recognition, measurement and reporting of agricultural activity across the world. Several approaches used in the financial reporting of Australia, France, the UK and the USA are analyzed in this part. The Australian approach was selected due to the fact, that it reacted as one of the first the need of a specific reporting for agricultural activities and inspired the IASC (predecessor of the IASB) when creating the draft of the International Accounting Standard (IAS) 41 – Agriculture.

The French Plan Comptable General Agricole (PCGA) concerning agriculture approved the PCG in 1986. It gives the detailed guidelines for the agricultural transactions and presentation in financial statements. According to the PCGA, only the realized income may be recognized in the end of the financial year, the expenses relating to the particular financial years must be provided even if they crystallized after the end of the financial year, even before the financial statements are issued. The measurement in the financial statement s is based on the historical cost basis modified by prudence. Only fixed assets and investment may be revaluated to the market value, but the increase in value is subject to the capital gains tax.

The UK represents one of the first countries which have constituted the modern financial reporting. Financial reports are prepared in accordance with the UK Generally Accepted Accounting Practice (UK GAAP). Under the UK GAAP, the historic costs represent the most significant base for valuation, any gains or losses concerning the biological transformation of biological assets are not recognized before the point of harvest. Despite the intended convergence with the IFRS, neither in the UK GAAP nor in the FRSSE there has been incorporated any aspect of the IAS 41 yet.

Under the US GAAP, the measurement of agricultural activity is based on the historical cost. This principle requires measuring most assets and liabilities rather in the acquisition costs than in the fair market value. Information provided under this principle is supposed to be reliable and objective. It is not very relevant, because it does not recognize the current market value. Therefore, there is a trend towards the application of the fair value valuation in

Table 1. Comparative analysis of reporting on agricultural assets

Item	Australia (before 2005)	UK	France	Czech Republic	USA	IAS/IFRS
Reporting system	AASB	UK GAAP	PCG	CAS	US GAAP	IAS/IFRS
Agricultural activity reporting	AASB 1037	no special requirement	PCGA	no special requirement	SOP 85-3	IAS 41
Profit and loss statement structure	two-sided	vertical	vertical	vertical	vertical	vertical
Prevalent cost presentation	by function	by nature	by nature	by nature	by function	both ways of presentation
Prevalent biological assets measurement	net market value	historical cost	historical cost	historical cost	historical cost	fair value less cost to sell
Change in value reporting	in profit or loss	no changes are reported	no changes are reported	no changes are reported	no changes are reported	in profit or loss

AASB = Australian Accounting Standards Board

Source: own research based on Elad and Herbohn (2011

the US GAAP. The revenue recognition, matching the principle and the full disclosure principle are other relevant principles used in the financial statements preparation. Measurement of agricultural activity under the US GAAP is based on historical costs and the prudence principle.

The Table 1 demonstrates different attitudes towards the recognition, recording and valuation of agriculture produce and biological assets.

Current accounting treatment of agricultural activity in the IFRS

The International Accounting Standards Committee (IASC) had not solved the questions connected with the specifics of agricultural activity since it was established until 1994. It was connected with the fact stated in the IAS41-BC (IASB 2008), that most of the business entities acting in agriculture represent small family run enterprises focusing mainly on cash flows and taxes, even the IASB supplemented its program in 1974 by the project on agriculture. However, there existed also the arguments for the development of an accounting standard, which would take into account the specifics of agriculture in the recognition, measurement and reporting of transaction. This was mainly represented by the increase in the extent of the access possibilities to the foreign capital for that type of business. Other arguments according to the IASC were the international tendencies aiming at the deregulation, increasing the number of the emissions of shares and the increase of investments, which has lead to the commercialization of agricultural activities.

In 1999, the E65 – Agriculture was issued for comments. This Exposure Draft (ED) was based on a different approach to the agricultural assets measurement and agricultural activity reporting. The IASC received many Comment Letters concerning this ED. The designed approach to the reporting of biological assets and biological transformation process was criticized by many respondents, especially by the European Commission (EC). The EC did not support the E65 – Agriculture. In the view of the European Commission (2000), the draft failed in three fundamental fronts: conceptual underpinning, logical consistency and practicability. The draft was criticized as relying upon unproved assumptions (the existence of efficient markets for biological assets at all stages of growth, the possibility of a relatively reliable measurement of biological transformation for reporting purposes), and the application to all agricultural activities on the same basis. The E65 was not in accordance with the European Accounting Directives, especially the fair value measurement of biological assets. This approach was incompatible with the EC IV Directive requirements.

Despite the strong criticism of the E65 – Agriculture, a special standard concerning the agricultural production – the IAS 41– Agriculture was issued in February 2001. The IASC (1998, 2000, 2001) mentions that this standard was criticized from the side of many agricultural enterprises, accounting practitioners and the major professional accountancy bodies in the UK, USA, Canada and the EC.

In Elad's opinion (2004), the IAS 41 represents the most comprehensive and far-reaching departure from historical costs. He further mentions, that the IAS 41 is highly controversial, not only because it prescribes a full-fledged fair value accounting model for agricultural entities, but the departure from historical costs accounting is very radical and it is provoking a broad range of theoretical and practical problems which affects its adoption across the world. The fair value measurement is based on a presumption that the fair value is determinable for all biological assets. In spite of the fact that an active market for biological assets does not exist, the most recent market transaction price can be used for the fair value determination. Historical cost less the accumulated impairment losses is permitted in cases when the fair values cannot be determined reliably. The choice of the accounting policy is affected by the policies used under the national GAAP. This is a strong support for the conclusions made by Nobes (2006), that there are different national versions of the IFRS practice in the recent years. The fact that more possible methods of measurement of biological assets are in conformity with the IAS 41 makes an impediment of the comparability of financial information on biological assets across the countries. And according to Elad and Herbohn (2011), the fair value fails in enhancing the international comparability of the accounting practice.

The fair value measurement for all kinds of biological assets at all stages of growth has been criticized since the E65 – Agriculture was issued. According to Amen (2000), there is no difference between biological assets and other assets like machinery from the theoretical point of view. Therefore, biological assets have to be measured in the same manner as property, plants and equipment (IAS 16). Biological and other assets have to be measured at costs, or both have to be measured at the fair value. Different valuations for assets other than biological and biological assets are absolutely inappropriate. As a consequence, if the fair value measurement is selected, changes in the

fair values have to be considered in the same way as in similar standards.

There is an active market for biological assets and agricultural produce at the point of harvest. This is the best evidence of the fair value of biological assets or agricultural produce. The problem arises in case of the measurement of agricultural produce few month or even some years before the point of harvest. An active market exists only for mature products. Regardless of the measurement basis (costs or fair value), a jump in the value of biological assets will occur at some time. Amen (2000) supposes that biological assets and agricultural produce may be measured at the fair value if an active market exists and at costs otherwise. This approach differs from the IAS 16 treatment of the measurement of plants, buildings and equipment.

The problems with biological assets before the point of harvest at the fair value measurement were pointed out by Nishikawa (2000), as well. In his opinion, a detailed guidance about the reliable measurement of fair value with respect to the long-term biological assets is necessary when an active market does not exist.

Marking to market is not, according to the CIMA (2000), the common method for valuing inventory. Market values fluctuate, and the revaluation exaggerates the effect of these fluctuations in the accounts. Not only would the produce ready-for-sale be revaluated, but also the "work-in-progress" – the crops in the field or livestock. CIMA (2000) does not consider biological assets sufficiently different from other types of assets to justify this unique approach, particularly when there are also many practical difficulties in the relating market values (which are quoted in a standard form) to immature crops or livestock. Biological assets as any other assets would be measured and valued according to the established principle, the level of costs or the realisable value.

In the Hoffman et al. (2000) comment to the E65, the determination of fair values for biological assets is often very unreliable. In the cases of only one or two harvests per year, large price movements between harvests can be observed, caused by small trading volumes. In such cases, market prices are not a reliable basis for fair values of the growing goods. Moreover, during their growth, biological assets cannot be assessed by a market price, because very often there is no market for the "unfinished" commodities (e.g. green oranges).

Knechtle and Attenslander (2000) consider the determination of fair value often unreliable. Another difficulty arises from the fact, that even if a fair value could be determined, large risks are prevalent until the harvest (a recent example in Europe: growing timber). This is an important difference to financial assets and liabilities which are traded in regulated markets. Their default risk is much smaller. The potential of diseases and natural disasters misleads the user, if fair values of biological assets are recognised in the balance sheet. The range goes from smaller percentages of lost assets to the total damage of all biological assets of a company. This is especially the case in the branches with very long growth periods (e.g. timber).

On the other hand, there were many proponents of the fair value measurement in agriculture – e.g. the Institute of Chartered Accountants of Australia (ICAA), the International Federation of Accountants (IFAC) or the Danish Accounting Standards Committee. According to the ICAA (2000), the historical cost accounting does have the merit of reflecting the natural increase that is the essence of agricultural activity. The measurement based on fair value is a departure from this approach. The IFAC (2000) supports the use of the fair value approach to the measurements of living assets. The Danish Accounting standards Committee (2000) agrees that the biological assets should be measured at their fair value. In the few situations where the fair value does not exist, it should be allowed to measure biological assets at costs. In the agricultural sector, the measurement at costs would normally be difficult and misleading. This is due to the fact that the historical cost as a measurement basis does not take into consideration the value added by the biological process. On the other hand, they do not consider the "net present value" as an appropriate measurement basis for biological assets. Some problems exist in connection with perennial plants. It seems difficult to estimate a fair value at the balance sheet date, if the plants are not yet available for sale.

RESULTS

While most of the IAS/IFRS could be applied to all activities, some IAS/IFRS deal with the issues that arise in particular activities. There are industry-specific standards IFRS 6 – Exploration for and Evaluation of Mineral Resources, the IFRS 4 – Insurance Contracts, the IAS 40 – Investment Property and the IAS 41 – Agriculture. The IAS 41 – Agriculture was published in February 2001 and is effective since 1.1.2003. The final version was issued after the consideration that a special treatment for agriculture is needed. The Standard prescribes a special accounting treatment for the initial measurement of biological assets and agricultural produce at the point of harvest, a special

treatment for accounting for agricultural activity and for disclosure.

In Dvořáková's opinion (2008), the position of the IAS 41 is unique among all other standards using fair value. The IAS 41 requires using fair value in the measurement of biological assets and agricultural products of their own production, including semi-finished products. A different category of assets at the fair value measurement is supported by different external and internal users of the accounting information. The main reasons for departure from the historical cost to fair value could be found in the low information capacity of historical costs and in a higher profit distribution to owners due to the undervaluation of assets. In the case of the IAS 41, it is the contrary. Many information users are sceptical as for the use of fair value in agriculture. The fair value measurement is considered to be too academic, and to be an inappropriate method for the measurement of biological assets according to Herbohn (2006). Booth and Walker (2003) were concerned in the biological assets measurement in viticulture in Australia, and they highlighted practical difficulties in valuating biological assets at the fair value separately from the land on which they are located.

The requirements of the IAS 41 are not theoretically or practically compatible with most of the accounting models. The incompatibility in the Francophone countries was researched by Elad (2004). According to Argilés and Slof (2001), the historical cost is the prevalent measurement method within the EU. Compliance with the IAS 41 regarding the use of fair value and the recognition of unrealized gains or losses produces significant changes the ways of reporting in which the entities in the agricultural sectors in Europe, Africa and Asia measure biological assets and income. The American Institute of Certified Public Accountants (1996) and the Canadian Institute of Chartered Accountants (1996) are also opponents of the fair value measurement, and they recommend also the historic cost measurement of biological assets.

On the other hand, Lefter and Roman (2007) gather the IAS 41 as an important standard, which represents the starting point of a transition from the historical cost principle towards a fair value accounting. Argilés and Slof (2001) are the advocates of the fair value measurement for biological assets. In their opinion, it avoids the complexity of calculating costs of biological assets. The nature of farming makes the historical-based valuation of biological assets inherently difficult because they are affected by the procreation, growth, death, as well as the joint-cost situations. The allocation of indirect costs is another source of complexity for the cost calculation in agriculture. According to Athanasios et al. (2010), fair value of biological assets is asserted to be more relative and it faithfully depicts the reality of the biological transformation.

Agricultural activity is defined by the IAS 41 (IN 1) as "… the management by an entity of the biological transformation (processes of growth, degeneration, production or procreation that cause qualitative or quantitative changes in a biological asset – IAS 41.5) of living animals or plants (biological assets) for sale, into agricultural produce, or into additional biological assets." Biological assets include for example sheep, pigs, beef cattle, poultry, fish, dairy cows, trees or plants for harvest. The diversity in the accounting treatment of agricultural activity is based on the special nature of this activity which creates uncertainty or conflicts when applying the traditional accounting methods, because of the biological transformation and the difficulty of its recording by the traditional model based on the historical cost and realization. Biological assets differ from non-living assets because they change the biological form over their lives through growth, degeneration, production or procreation, resulting in changes in the future economic benefits. The future economic benefits embodied in biological assets may also change in the absence of the changes in the biological form, because of their prices change. Measuring of biological assets based on their fair value ensures that the effects of both biological changes and price changes are recognized in the financial reports. On the other hand, according to some opponents of a special treatment for agriculture, for example Naumann (2000) the management of agricultural transformation is not so unique, nor is it sufficiently different from the management of the usual manufacturing processes to justify a separate standard The author further mentions, that the fact that sunshine, air and sometimes water are "free of charge" is also not a reason to require special accounting rules for agricultural assets and the agricultural transformation could have been within the scope of existing standards.

Theoretically, there are more possibilities how the changes in the fair value of biological assets could be reported:

– all changes are reported in the net profit or loss for the period,
– all changes are reported in equity until the asset is sold or consumed, then the biological asset is removed from equity and reported in the net profit or loss for the period,
– all changes are reported in equity until the harvest, then the biological asset is removed from equity and reported in the net profit or loss for the period,

– the physical changes of biological assets are reported in the net profit or loss, the price changes reported in equity until the asset is sold or consumed,
– all changes are reported in equity and never reported in the profit or loss for any period.

The principle of the standard is in accordance with the first mentioned possibility. Increases or decreases in the fair value of biological assets are recognized as the grow of assets and not solely as the harvest or sale. The changes in the fair value are caused by the qualitative or quantitative changes in biological assets, and due to the price changes. All of them are recognized in the income statement, irrespective whether the assets are sold, as gains or losses in the financial year in which they occur. This approach is consistent with the accrual principle declared in the Conceptual Framework of the IFRS. The increase or decrease in the fair value of biological assets is supposed to be fundamental for understanding of an entity's performance (IAS 41, BC 38). On the other hand, reporting of the changes of fair value in net profit and loss indicates a cash flow which is not just earned and could cause some pressure of stockholders for dividends.

As mentioned by Nishikawa (2000), the E65 – Agriculture preferred reporting of the changes in the fair value of biological assets in equity. In order to avoid any inconsistency materializing from this approach, he suggested that costs directly related to the sustenance of biological assets (except administration cost) should not be reported in the net profit or loss when incurred, but such costs should be charged directly to equity until the harvest, and it should be removed from equity and reported in the net profit or loss for the period at the harvest. Further, the author mentions that the carrying amount of biological assets in the balance sheet should be their fair value, and that the resulting change in the fair value of biological assets should not be reported in the net profit or loss. The main reason for that is that it takes time for some biological assets to reach the form in which they might be readily convertible into cash in the market. In addition to this, in determining the fair value of biological assets for which an active market does not exist, more estimation elements as compared to financial instruments inevitably need to be taken into consideration. Moreover, agricultural activities are inherently highly susceptible to natural disasters and diseases, and as a result, the change in the fair value of biological assets has a relatively low probability of reflecting in the expected cash flows rather than in other assets. He believes that the change in the fair value of biological assets prior to the realization is not an indicator of performance of an enterprise engaged in agricultural activities.

As was discussed on the G100 forum (2000), a requirement for unrealised gains and losses to be recognised in the income statement would have a particularly severe impact on industries such as the forest industry, where the growing cycle is generally between 10 and 80 years. In this respect, the forest industry is very different from many others (such as those heavily involved with the property investments or financial instruments, or indeed most other agricultural industries) and the impact of recognising unrealised gains and losses in the income statement can be exacerbated when the entities are increasing the total plantation area.

Despite the fact that the idea of valuation adjustments reporting in the profit and loss account may seem revolutionary, significant problems could arise. For example, unrealised profits cannot be paid out as dividends. To be accounted for the unrealised gain or loss as a part of equity as a revaluation surplus and charging it in the profit and loss account when the biological asset is sold could eliminate the problem.

As mentioned by Knechtle and Attenslander (2000), the fair value will definitely create difficulties if all changes of fair values are directly recognised in the income statement. The fair value method originates from financial products, which have a relatively small default risk. Applied to biological assets, in many cases the price risks and the harvest risk will result in unrealistic income statements. Also, they re-affirm the belief that the realisation is an important criterion for the recognition of earnings, and the continued drive to recognise unrealised gains as income can only lead to imprudent and unreliable financial statements.

The IAS 41 – Agriculture prescribes the basic accounting treatment of biological assets and the initial measurement of agricultural produce gained from the entity's biological assets at the point of harvest. It does not deal with the produce after the harvest, which is in the scope of the IAS 2 - Inventories or other applicable standards. Long ageing and maturation processes are similar to biological transformation, but they are not within the scope of the IAS 41. According to the IASB, the requirements of the IAS 2 or other standards are also applicable for such processes accounting. The standard philosophy is based on the theory that the nature of agricultural activity extremely differs from other business activities described by other standards (IAS 2 – Inventories, IAS 16 – Property, Plant and Equipment, IAS 18 – Revenue or IAS 11 – Construction Contracts). Agricultural activity is influenced by many factors associated with the biological transformation and its management is quite different from other ac-

tivities. To manage some conditions of the processes of biological transformation is not within the scope of a business entity, for example weather. This is the main reason why the increases or decreases in the biological assets are not reported as revenues under the IAS 18 – Revenue or the incurred costs under the IAS 2 – Inventories, and only the changes in their fair values less the estimated costs to sell are reported as gains or losses.

Despite the strong opposition to the measurement in fair value, under the IAS 41.12 and 13, a biological asset and agricultural produce harvested from the entity's biological assets shall be measured at their fair value less costs to sell, as proposed in the E65. Costs to sell are the incremental costs directly attributable to the disposal of an asset, excluding finance costs and income taxes (IAS 41.5). They include the commissions paid to brokers and dealers, transfer taxes and duties paid to regulatory agencies or commodity exchanges. They do not include the cost of their transportation to the market, because it is supposed to be included in their fair value, or income taxes and finance costs.

The methods of the recognition, measurement and reporting of biological assets and agricultural produce were used by the IASC to respect specifics of agricultural activity. The fair value based measurement is a prevalent way of measurement used in agriculture. The fair value hierarchy for the measurement of biological assets stipulated in the IAS 41 is following:
– an active market price of the asset,
– the most recent market transactional price, in case no existence of an active market,
– market prices for similar assets, adjusted to reflect differences,
– sector benchmarks,
– present value of the expected future net cash flows from the asset.

The measurement in cost is not a suitable tool for the measurement of biological assets; it is limited by a number of situations. It may approximate the fair value in the following cases:
– a little biological transformation has taken place since the initial cost incurred,
– the impact of the biological transformation on price is immaterial.

Initial recognition of biological assets under the IAS 41 and its impact on profit or loss

Biological assets are measured at the fair value less the estimated cost to sell for the initial recognition. Under the IAS 41, biological assets shall be measured at their cost only on the initial recognition for biological assets for which the market-determined prices or value are not available and the alternative estimates of the fair value are unreliable. Usually, there arises the initial recognition. The purchase costs of biological assets are often higher than their fair value less costs to sell; the transaction expenses create a loss. In case when the biological assets used for the biological transformation are purchased, there arises the profit or loss from the revaluation on the real value decreased by the estimated sell costs. In practice, those situations are usually characterized by the loss, for the real value is decreased by the estimated cost to sell and the assets entering the process of the biological transformation are usually purchased for the price iterating to their real value.

A special case of the biological assets recognition represents the birth of two new animals. The gain could arise in case of the generation of a new biological asset, for example a calf or a piglet and its recognition. The application of real value for that purpose is based on the basic principles of that standard. It is possible to consider as the obstacle the lack of information for setting the real value. This is connected with the fact, that there is no market with the newly born animals (the market for those animals exists from a certain age), and other ways of the real value determination in the hierarchy of the standard are not easily applicable in practice. Sector benchmarks (i.e. the value of an animal expressed per 1 kilogram of meat) are considered to be more suitable. Although, as it is obvious from the Table 1, most of the national GAAP require for the valuation of agricultural produce the application of historical costs; in that case the costs on newly born animals cannot be reliably determined, therefore costs are not applied for that purpose and accounting units proceed according to the IAS 41.

Measurement after recognition

Changes in the fair value of biological assets due the biological transformation and price changes are reported from period to period as gains or losses. The question is whether the methods correspond to the principles and characteristics required by the conceptual framework. The recognition of an increase in the real value of biological assets due to the biological transformation and due to the changes in prices with the impact on profit or loss is connected with the changes in profit or loss, which are not caused by the activity of the enterprise and therefore its realization

is not always completely probable (accidental death, the influence of unfavourable weather conditions, change in market conditions). There arises the situation, in which a higher profit is reported, but its achieving is not completely probably and consequently that amount is the subject of distribution among the shareholders in the form of dividends and shares in profit. According to Dvořáková (2008), this causes the erosion of the substance of the enterprise. Based on the identification of negatives of the above mentioned method, the authors consider the following possibilities as the methods for their elimination:

– the recognition of the difference in the real value in the balance sheet with the subsequent recognition of profit or loss at the moment of its realization
– reporting of agricultural assets to the moment of their realization in the historic prices and own costs with stating the real value of biological assets to the moment of the completion of financial statements in the supplement; this is substantial mainly for biological assets with a long production cycle (i.e. timber)

Many subsequent costs relating to agricultural activity during the biological transformation process are incurred. They usually include planting, weeding, irrigation, feeding, harvesting, or slaughtering costs. Some of these costs are capitalized under many national GAAPs, especially those relating to the development of immature plants or livestock up to the productive stage. The other expenditures are the expenses in the period when incurred. The IAS 41 does not prescribe any treatment of the subsequent expenditures on biological assets. It is up to the decision of the management to determine the way of their recording, or the selection of the types of costs suitable for capitalization. There are different ways for biological assets and agricultural produce recording to respect all rules within the scope of the IAS 41 and the rules within the scope of the Conceptual Framework. It can be expected that the biological transformation process reporting in each country will be influenced by the already applied methods of reporting in accordance with the national GAAP.

The same impact on the reported data in agriculture can be identified. It is shown in the Table 2.

All gains and losses arising under the IAS 41 – Agriculture are disclosed on the aggregated basis. Gains and losses could be disclosed in the income statement or in the notes. An entity should describe each group of biological assets. In accordance with the IAS 41, there are two main groups of biological assets: consumable biological assets, which are harvested as agricultural produce (livestock for the production of meat, livestock for sale, crops as maize or wheat, trees grown for timber) and bearer biological assets which are the biological assets other than the consumable biological assets (livestock for milk production, grape vines, fruit trees). Assets in this group are not agricultural produce, but they are self-regenerating. In case of the harvest of the biological produce from consumable assets, the biological assets valuated at the FVLCS are transformed into agricultural produce, which is also valuated at the FVLCS. The difference between the FVLCS of biological assets and the FVLCS of agricultural produce represents the gain or loss. The costs connected with the harvest of the biological production are recorded as the costs of the period or can be capitalized, similarly as the costs incurred during the transformation of biological assets. The level of the reported gain or loss and the structure of items in the income statement are dependent on the method of reporting the costs connected with the harvest. On the contrary to the consumable assets, in the case of the agricultural produce harvest from bearer assets, the biological assets remain valuated at the FVLCS. It is necessary to mention that the FVLCS decreases

Table 2. Methods of the agriculture activity reporting comparison

Item of costs	Recording as capitalisation		Recording as period costs	
Initial recognition of biological assets (purchased)	biological assets/cash	2000	biological assets/cash	2000
	loss/cash	500	loss/cash	500
Direct labour incurred on biological asset (1000)	biological assets /cash	1000	expenses/cash	1000
Change in fair value of biological assets FV at the end of the year (3500)	biological assets/gain	500	biological assets/gain	1500
	gain	500	gain	1500
Net impact on profit or loss	osts	0	costs	1000
	impact on P/L	–500	impact on P/L	–500

Source: own calculation

after the harvest due to the division of agricultural produce from those assets. The agricultural produce in the form of fruit, milk or hop is valuated in the FVLCS and the gain is arising.

Agricultural produce harvested from biological assets is measured at the fair value less the estimated costs to sell (FVLCS) for the initial recognition. This measurement is the costs at the date when the entity applies the IAS 2 – Inventories or other standard for further processing.

The Standard IAS 41 – Agriculture does not comprise the methodology for the reporting during the biological transformation and the selection of the method for reporting of biological assets in the biological transformation and agricultural produce harvested from biological assets is within the competence of the enterprise. It should consider a wide range of factors, which can influence its decision about the method. As it is clear from the above mentioned text, the enterprise can apply one of the stated methods for reporting agricultural activity. Those methods are represented mainly by the capitalization of costs and recording the costs as the period costs. The influence of both above mentioned methods on the level of the profit or loss recorded for the particular period is equal, as it is shown in Table 2. However, the selection of the method influences the structure of the recorded costs and the level of the reported gain and loss.

The enterprise has to evaluate the extent of the agricultural activity and mainly its share in the total costs, revenues and profit or loss recorded for the whole period during the selection of the method for reporting agricultural activity. In case that the agricultural activity does not represent a substantial share, the selection of methods should be done mainly with respect to the time demands and labour demanding needed for that method. It can be expected, that in that case, the method will be significantly influenced by the methods comprised in the national GAAP. This corresponds with the conclusions made by Nobes (2006).

In case that the costs, revenues and profits or loss connected with agricultural produce represent a significant share in the extent of the total activity of the accounting unit, it should select the method mainly with respect to the principles and qualitative characteristic required by the IFRS conceptual framework. It is necessary to mention that the selection of the methodology (capitalization or costs of period) influences the structure of the costs and the total level of gain and loss, which has an influence on the indicators of the financial analysis connected with the evaluation of the performance of the enterprise. If the costs incurred in accord with agricultural activity are recorded as the period costs, the decrease of the cost profitability is taking place, while in the case of the costs capitalization under the same conditions, the cost profitability is higher. The above mentioned can remarkably influence the external users of those information in their economic decisions. However, the authors mention that in case the agricultural activity is considered to be analogical to other subjects of activity and while keeping the basic principles of the conceptual framework, it would be more suitable to record all the costs on agricultural activity as the period costs. Contrary to this is the fact, that the increase in agricultural assets due to the biological transformation is not recorded according to the IAS 41 as the revenue, but in the net value in the form of the gain or loss. Therefore, the costs incurred by the enterprise in connection with biological assets do not have their reflection in the form of the corresponding revenues. The indicators describing the performance of the company would not provide the external users with the true and fair view and this situation could lead to the misleading economic decisions.

The capitalization of the costs incurred during the period in connection with the biological transformation into the fair value could be under the above stated conditions the tool, which would eliminate the negative impacts of the recording of costs incurred in connection with their transformation as the cost of the period.

According to the authors, the application of both mentioned approaches differs towards agricultural activities recording and reporting. These methods as the results of the practical application of the IAS 41 demand a very high respect to the determination of the fair value of agricultural assets during their life. It was already pointed out by the respondents during the discussion in the process of the standard preparation. Also Aryanto (2011) does not consider some of the biological assets (bearer biological assets) as suitable for the valuation at the FVLCS. The measurement at fair value less costs to sell and the recognition of differences in the changes of fair value less cost to sell in profit or loss would lead to a misleading information. This is due to the fact that the revenue associated with these assets will be never earned and realized. Examples of biological assets that are not held for the capital appreciation or sale is represented by stud cows and laying hens. Both animals in this example are the biological assets that are used only to produce other biological assets. In the case of the laying hens, when the hens are still laying eggs, the increase in the fair value does not reflect the unrealized income, because it will never

be realized. And furthermore, after these hens no longer lay eggs, they are usually disposed off because they have no more value.

Moreover, the way of the IFRS application is in a number of countries remarkably influenced by the national GAAP as mentioned by Nobes (2006). Therefore, a number of enterprises follow those attitudes, if the IAS 41 enables it. According to Elad and Herbohn (2011), this is namely remarkable in the case of the application of the fair value for the measurement of biological assets, for which there is no active market. The IAS 41 sets the hierarchy of possibilities how to determine the fair value in those cases and in some cases it does not forbid the application of the historical costs principle.

The measurement at the fair value comprises the influence of the biological transformation and price changes as well. As it shows the fundamental philosophy of the conceptual framework and individual standards as well, the increases in fair value due to the price are recorded in the majority of cases in equity. They appear in the profit or loss in the moment of its realization, while the decrease in the fair value is in the majority of cases recorded in the profit or loss statement. The reporting of all price influences in the case of agricultural assets in accordance with the IAS41 in the profit or loss statement before their realization is considered to be inconsistent.

The practical application of the standard is connected with many obstacles and its full application is practically impossible. This is supported by the conclusions of Elad and Herbohn (2011), who mention that there are a number of modified applications differing in the individual countries (the application is significantly influenced by the national GAAPs). The application of the historical costs for the measurement represents the way of measurement, which is deeply rooted in the majority of countries in the practical application; therefore, it is difficult for the majority of enterprises to abandon that method. Moreover, the practical application of that method in connection with the measurement of agricultural assets with no existing active market is connected with the minimal requirements on the input information. On the contrary, the fair value measurement of agricultural assets in the process of the biological transformation is connected with the risk, whether the process will be successfully finished.

Therefore, the authors call for softening of the conditions required for the fair value measurement in the cases, when there is no active market for biological assets (forests, sowed fields, trees with unripe fruits, etc.). In those cases, the fair value is irrelevant for the economic decisions for external users – the application should be taken into account only in the case of the consideration of the possible sell of the enterprise or its part. In those cases, the authors recommend the possibility to measure the biological assets, which are the subject of the unfinished biological transformation, at historic costs. The forests with respect to their very long reproductive cycle in comparison with other agricultural assets are the only exception. In this case, the literature suggests the fair value measurement the forests in the notes, including the quantification of the influence of the biological transformation and the price for the year-over-year comparison.

The measurement of biological assets with no active market at the fair value does not represent a serious problem. The problem connected with the selection of a suitable method of recording the changes in the fair value of an asset in the particular period could arise. The present methodical approach for the reporting based on the IAS 41 is based on reporting in the profit or loss statement. Could this approach be considered as consistent with the basic principles declared in the conceptual framework and applied in the individual standards? With regard to the facts influencing the fair value of biological assets (the influence of the biological transformation and the influence of the price), the quantification of those individual influences could be considered as rational. The influence of the biological transformation should be reported in the profit or loss in the period, when the biological transformation took place in the form of gain or loss. The change in the fair value of the agricultural assets due to the price fluctuation should, on the contrary, be reported in accordance with the prudence principle – i.e. in the form of the revaluation reserve as a part of equity, while the decrease should be reported as the costs of the period, in case that there has not been made any revaluation reserve.

The measurement at the fair value in the time of harvest serves as the initial measurement in the case of the further agricultural produce, which is reported in accordance with the IAS 2 or as the period costs in the period connected with revenues in the case of its further sale are reported.

CONCLUSION

The conclusions of the authors positively evaluate the fact that the IASB considers the agricultural activity so different from other activities performed in order to reach the profits that the methodical treatments of the recognition and reporting of biological assets, the biological transformation and agricultural

produce reflect the specifics. As a result, the IAS 41 – Agriculture was published in 2000. The main aim of the standard was considered to be the application of specific methods, which would reflect the specifics of agriculture and also enabling their easy practical application. While the standard reflects the specifics of agricultural produce, it is questionable, whether also the second requirement can be considered as fulfilled. Already in the approving process, there has arisen the discussion connected with the possibilities and reasons for the determination of the fair value, mainly in the case of agricultural produce in such a stage of the biological transformation, when there is no active market. The final diction of the standard did not take into account any of these comments and arguments. According to Booth and Walker, (2003), Herbohn (2006) and Lefter (2007), the practical application has proved that those comments had a real basis. That represented the main reason for the research of the authors in the area of the possible elimination of the obstacles in the practical application of some requirements set by the standard when preserving respecting of the specifics of agricultural produce, the basic principles for the completion of financial statements declared in the conceptual framework and consequently reaching the maximal information value of the indicators of agricultural activity for the economic decision of external users.

Although the application of the IAS 41 in individual states is influenced by the national GAAP and therefore the problems connected with the application can differ in the individual states, the authors have focused on the key problems for the international comparison of enterprises. It is represented by the methods for reporting the costs incurred in connection with biological assets, the measurement of biological assets during the transformation process and the measurement of agricultural produce.

The solution could be represented by the harmonization of the biological transformation reporting methods. The standard does not solve the method of reporting the costs incurred in connection with the transformation of biological assets, and different treatments used by the reporting subjects can lead to a different structure of the incurred loss and to influencing of the financial analysis indicators in the area of the enterprise performance evaluation. Further, it is necessary to consider the requirements to measure the biological assets with no active market at the fair value and also to respect the principles of the conceptual framework and the logic applied in the standards. It would be appropriate to separate the influence of the biological transformation and the price fluctuation on the total change in the fair value.

Acknowledgements

The results introduced in this paper are a part of research project supported by the Czech Science Foundation via grant No. GAP403/11/0849 – US GAAP and IAS/IFRS convergence with respect to the adjustment of methodical procedures of the financial analysis.

REFERENCES

Amen M. (2000): Comment Letter on Exposure Draft E65 – Agriculture No. 13. [online]. Available at http://media.ifrs.org/CommentsE65.zip (accessed 5.12. 2011).

American Institute of Certified Public Accountants (1996): Audits of Agricultural Producers and Agricultural Cooperatives. AICPA, New York.

Argilés J., Slof E. (2001): New opportunities for farm accounting. The European Accounting Review, *10*: 361–383.

Aryanto Y.H. (2011): Theoretical Failure of IAS 41: Agriculture. (April 13, 2011) [online]. Available at http://ssrn.com/abstract=1808413 (accessed 5.12. 2011).

Athanasios V., Stergios A., Laskaridou E.C. (2010): The importance of information through accounting practice in agricultural sector-European Data Network. Journal of Social Sciences, *6*: 221–228.

Booth P., Walker R. (2003): Valuation of SGARAs in the wine industry: time for sober reflection. Australian Accounting Review, *13*: 52–60.

Canadian Institute of Chartered Accountants (1986): Comptabilité et Information. Financière des Producteurs Agricoles. CICA, Toronto.

CIMA (2000): Comment Letter on Exposure Draft E65 – Agriculture No. 39 [online]. Available at http://media.ifrs.org/CommentsE65.zip (accessed 5.12. 2011).

Danish Accounting standards Committee (2000): Comment Letter on Draft Statement of Principles: Agriculture. International Accounting Standards Committee, London [online]. Available at http://www.ifrs.org/Archive/Pages/Archive-IASB-Project-Comment-Letters.aspx

Dvořáková D. (2008): Finanční účetnictví a výkaznictví podle mezinárodních standardů IFRS. (Financial Accounting and Reporting under international standards IFRS.) 2nd ed. Computer Press, Brno; ISBN 978-80-251-1950-1.

EC (2000): Comment Letter on Exposure Draft E65 – Agriculture No. 58 [online]. Available at http://media.ifrs.org/CommentsE65.zip

EC (2010): Evropská komise – politika rozvoje venkova 2007–2013 htm [online]. Available at http://ec.europa.eu/agriculture/rurdev/index_cs (accessed 5.12. 2011).

Elad Ch. (2004): Fair value accounting in the agricultural sector: some implications for international account-

ing harmonization. European Accounting Review, *13*: 621–641.

EU farm structure [online]. Available at http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Farm_structure (accessed 5.12. 2011).

G100 (2000). Comment Letter on Exposure Draft E65 – Agriculture No. 61 [online]. Available at http://media.ifrs.org/CommentsE65.zip (accessed 5.12. 2011).

Herbohn K.F. (2006): Accounting for SGARAs: A stock take of practice before compliance with AASB 141 Agriculture. Australian Accounting Review, *16*: 63–77.

Hoffman F., Schneider E., Dangerfield A. (2000): Comment Letter on Exposure Draft E65 – Agriculture No. 5 [online]. Available on http://media.ifrs.org/CommentsE65.zip

IASB Foundation Education (2008): A Guide Through International Financial Reporting Standards (IFRSs) 2008: Including the Full Text of the Standards and Interpretations and Accompanying Documents Issued by the International Accounting Standards Board as Approved at 1 July 2008: with Extensive Cross-references and Other Annotations. International Accounting Standards Committee Foundation, London; ISBN 978-1-905590-68-1.

IASC (1998): Comment Letters on Draft Statement of Principles: Agriculture. International Accounting Standards Committee, London [online]. Available at http://www.ifrs.org/Archive/Pages/Archive-IASB-Project-Comment-Letters.aspx

IASC (2000): Comment Letters on Exposure Draft, E65: Agriculture. International Accounting Standards Committee, London [online]. Available at http://www.ifrs.org/Archive/Pages/Archive-IASB-Project-Comment-Letters.aspx

IASC (2001): International Accounting Standard IAS 41: Agriculture. International Accounting Standards Committee, London [online]. Available at http://www.ifrs.org/Archive/Pages/Archive-IASB-Project-Comment-Letters.aspx

ICAA (2001): Comment Letter on Draft Statement of Principles: Agriculture. International Accounting Standards Committee, London [online]. Available at http://www.ifrs.org/Archive/Pages/Archive-IASB-Project-Comment-Letters.aspx

IFAC (2000): Comment Letter on Draft Statement of Principles: Agriculture. International Accounting Standards Committee, London [online]. Available at http://www.ifrs.org/Archive/Pages/Archive-IASB-Project-Comment-Letters.aspx

Knechtle A., Attenslander J. (2000): Comment Letter on Exposure Draft E65 – Agriculture No. 7 [online]. Available at http://media.ifrs.org/CommentsE65.zip (accessed 5.12. 2011).

Lefter V., Roman A.G. (2007): IAS 41 Agriculture: Fair Value Accounting. Theoretical and applied Economics, *5*: 15–22.

Nishikawa I. (2000): Comment Letter on Exposure Draft E65 – Agriculture No. 24. [online]. Available at http://media.ifrs.org/CommentsE65.zip (accessed 5.12. 2011).

Naumann K.P.(2000). Comment Letter on Exposure Draft E65 – Agriculture No. 28 [online]. Available at http://media.ifrs.org/CommentsE65.zip (accessed 5.12. 2011).

Nobes C. (2006): Survival of international differences under IFRS: towards a research agenda. Accounting and Business Research, *36*: 233–245.

Sedláček J. (2010): The methods of valuation in agricultural accounting. Agricultural Economics – Czech, *56*: 59–66.

Arrived on 18th October 2011

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