



International Congress on Economics, Management and Business Studies

Hosted Online from New York, USA

Date: 23rd September, 2026

Website: <https://econferencia.com>

RISK-BASED AUDIT OF BIOLOGICAL ASSETS: A CLASSIFIER OF TYPICAL MISSTATEMENTS AND INTERNAL CONTROL INDICATORS

Akhmetova Salima Seitovna

Doctoral Researcher, Tashkent State University of Economics,
Tashkent, Uzbekistan

Abstract

The paper proposes a risk-based methodology for auditing the biological assets of agricultural enterprises, whose share in total assets rose from 10–32 to 19–40 per cent in the three Uzbek enterprises studied over 2022–2025. Drawing on IAS 41, ISA 315 and ISA 540, biological transformation, valuation uncertainty and internal control weaknesses are treated as one system of audit risks within a four-stage audit sequence. A classifier of five types of typical misstatements and a system of nine internal control indicators with measurement units and control frequency are developed. The results have been adopted by the Ministry of Agriculture of Uzbekistan.

Keywords: Biological assets, IAS 41, fair value, biological transformation, risk-based audit, typical misstatements, internal control indicators, agriculture.

Introduction

Agriculture remains a strategic sector of the economy of Uzbekistan, and its financial reporting and audit are being brought into line with international standards: Presidential Resolutions PQ-4611 [1] and PQ-282 [2] extend the application of IFRS, the International Standards on Auditing have been recognised by Cabinet of Ministers Resolution No. 171 [3], and IAS 41



International Congress on Economics, Management and Business Studies

Hosted Online from New York, USA

Date: 23rd September, 2026

Website: <https://econferencia.com>

"Agriculture" forms part of the national set of IFRS under Order No. 61 of the Minister of Finance [4]. Biological assets are therefore measured at fair value less costs to sell, and their audit must meet the ISA requirements on risk assessment and accounting estimates.

Biological assets differ from all other assets by their capacity for biological transformation: growth, degeneration, production and procreation change their quantity and value continuously. The international literature has shown that fair value measurement in agriculture is subjective and volatile and that active markets for many categories of assets are missing or thin [5; 6; 7; 8; 9; 10]. How the auditor should identify the risks specific to such assets, which misstatements to expect and which evidence to rely on has received far less attention; in Uzbekistan the work of B.Yu. Mengliqulov [11] on the cost accounting and audit of livestock is one of the few dedicated studies.

In the three enterprises examined here, the share of biological assets in total assets rose over 2022–2025 from 18 to 27 per cent at "Mehnat Baxtli Sut" LLC, from 32 to 40 per cent at "Indorama Agro" LLC and from 10 to 19 per cent at "Yangi Toshkent Konserva" LLC, so the balance sheet item most exposed to estimation uncertainty is also the fastest-growing one, while its control and audit are still organised under the general procedures applied to inventories and property, plant and equipment. The aim of this paper is to propose a risk-based audit methodology that treats these three sources of risk as a single system.

Materials and Methods

The study draws on national legislation, IAS 41, ISA 315, ISA 320 and ISA 540 [12], the financial statements of the three enterprises for 2022–2025 and the working documents of the 2024 financial audit of "Mehnat Baxtli Sut" LLC (120 person-hours, planned audit risk 5 per cent, planned materiality 2 per cent).



International Congress on Economics, Management and Business Studies

Hosted Online from New York, USA

Date: 23rd September, 2026

Website: <https://econferencia.com>

Observation, scientific abstraction, analysis and synthesis, grouping, and systemic and comparative analysis were applied.

Results and Discussion

The analysis of audit practice showed that misstatements in the accounting of biological assets arise from three interrelated sources. The first is biological transformation itself: births, weight gain, disease and death of animals and the vegetation and harvesting of crops occur continuously, so the closing balance diverges from the assets physically present whenever the changes are documented late. The second is valuation uncertainty: where there is no active market, fair value under IAS 41 depends on the model chosen by management, the input data and the discount rates, and ISA 540 requires the auditor to assess the reasonableness of every such assumption [12]. The third is the internal control system: in the enterprises studied, inventory counts are taken only at the year-end and often on a sample basis, and live weights and offspring are not recorded regularly, which under ISA 315 raises the assessed risk of material misstatement at the assertion level.

On this basis the audit of biological assets is organised as a four-stage sequence. At the first stage the auditor identifies the characteristics of the audit object – the type of biological assets, their place in the production process, the stage of their biological transformation and the external factors acting on them. At the second stage the audit risks are assessed: the likelihood of incorrect recognition, measurement, documentation and presentation is determined for each group of assets, and the procedures that respond to the identified risks are selected. At the third stage evidence is collected from inventory data, accounting documents, biological monitoring results, expert opinions and electronic sources; at the fourth



International Congress on Economics, Management and Business Studies

Hosted Online from New York, USA

Date: 23rd September, 2026

Website: <https://econferencia.com>

stage the discrepancies found are summarised, their effect on the statements is evaluated and recommendations are made.

The second stage is supported by a classifier of typical misstatements (Table 1), which groups the errors met in practice into five types and links each to the procedure by which it is detected.

Table 1. Classifier of typical misstatements in the accounting of biological assets

Type of misstatement	Content of the misstatement	Detection procedure in the audit
Classification errors	Biological assets recorded as inventories or property, plant and equipment	Review of the accounting policy and primary documents
Valuation errors	Fair value determined incorrectly (wrong method, unjustified discount rates, outdated market data)	Analysis of the valuation methodology and market data
Existence errors	Assets physically absent or incompletely recorded	Physical inventory and observation
Transformation errors	Growth, offspring, yield or natural losses reflected incorrectly	Analysis of biological indicators
Documentation errors	Primary documents maintained incompletely or late	Testing of the document flow

Source: developed by the author.

Existence and transformation errors are closely related, since a difference between the recorded and the actual herd or crop usually originates in undocumented biological change, while documentation errors – weights not recorded, offspring registered late – reduce the sufficiency of audit evidence.



International Congress on Economics, Management and Business Studies

Hosted Online from New York, USA

Date: 23rd September, 2026

Website: <https://econferencia.com>

With the classifier the auditor can trace each misstatement to its cause and decide on the extent of further substantive procedures.

Because the audit opinion rests on the evidence generated inside the enterprise, the third element of the methodology is a system of internal control indicators (Table 2), which covers the existence, movement, biological change and change in value of the assets, the produce obtained, the level of income and the consistency of records through nine measurable indicators with a defined unit and control frequency.

Table 2. Recommended internal control indicators for biological assets

No.	Indicator	Unit	Control frequency
1	Number of biological assets	head / units	Monthly
2	Crop yield	centner per hectare	End of season
3	Milk yield	litres	Monthly
4	Live-weight gain	kg	Monthly
5	Share of animal mortality	%	Quarterly
6	Change in fair value	thousand UZS	Quarterly
7	Output of agricultural produce	tonnes	End of season
8	Inventory discrepancies	units	Annually
9	Profitability ratio	%	Quarterly

Source: developed by the author.

Compared with the existing practice, in which only the inventory count is present, the system adds the monitoring of biological transformation, productivity indicators and expected economic benefits and makes the control of fair value changes complete. The indicators are corroborated by veterinary and zootechnical



International Congress on Economics, Management and Business Studies

Hosted Online from New York, USA

Date: 23rd September, 2026

Website: <https://econferencia.com>

records, laboratory conclusions, electronic identification of animals, GPS tracking and remote sensing of crop areas and, for breeding stock and perennial plantations, by the opinions of veterinarians, agronomists and appraisers, which the auditor is nevertheless obliged to evaluate critically. The methodology has been adopted by the Ministry of Agriculture of the Republic of Uzbekistan (certificate No. 03/23-3/1-05/2348 of 16 April 2025).

Conclusions

1. Biological transformation, valuation uncertainty and internal control weaknesses form a single system of risks in the audit of biological assets; assessing them together, as ISA 315 and ISA 540 require, is the precondition for a well-founded audit opinion.
2. The four-stage sequence – identification of the object, risk assessment, evidence collection, evaluation and reporting – allows the audit to be planned and performed on a risk basis and extends it to the diagnosis of biological and economic processes.
3. The classifier of five types of typical misstatements and the system of nine internal control indicators give the auditor a structured detection tool and a continuous source of verifiable evidence, raising the reliability of reporting on biological assets under IAS 41 and the evidential basis of the audit.

References

1. Resolution of the President of the Republic of Uzbekistan No. PQ-4611 of 24.02.2020 "On additional measures for the transition to International Financial Reporting Standards". URL: <https://lex.uz/uz/docs/-4746047>
2. Resolution of the President of the Republic of Uzbekistan No. PQ-282 of 15.09.2025 "On measures to improve the financial accounting system in



International Congress on Economics, Management and Business Studies

Hosted Online from New York, USA

Date: 23rd September, 2026

Website: <https://econferencia.com>

-
- accordance with international requirements and standards". URL: <https://lex.uz/uz/docs/-7728924>
3. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 171 of 11.04.2022 "On the procedure for recognising International Standards on Auditing for application in the Republic of Uzbekistan". URL: <https://lex.uz/docs/5952173>
 4. IAS 41 "Agriculture". Annex 26 to Order No. 61 of the Minister of Finance of the Republic of Uzbekistan of 10.11.2022 on recognition of IFRS for application in the Republic of Uzbekistan. URL: <https://lex.uz/uz/docs/6312360>
 5. Elad, C. Fair value accounting in the agricultural sector: some implications for international accounting harmonization. *European Accounting Review*, vol. 13, no. 4, 2004, pp. 621–641.
 6. Herbohn, K.F. Accounting for SGARAs: A stock take of practice before compliance with AASB 141 Agriculture. *Australian Accounting Review*, vol. 16, no. 2, 2006, pp. 63–77.
 7. Argilés, J.M., García-Blandón, J., & Monllau, T. Fair value versus historical cost-based valuation for biological assets: predictability of financial information. *Revista de Contabilidad – Spanish Accounting Review*, vol. 14, no. 2, 2011, pp. 87–113.
 8. Sedláček, J. The methods of valuation in agricultural accounting. *Agricultural Economics – Czech*, vol. 56, no. 2, 2010, pp. 59–66.
 9. Gonçalves, R., Lopes, P., & Craig, R. Value relevance of biological assets under IFRS. *Journal of International Accounting, Auditing and Taxation*, vol. 29, 2017, pp. 118–126.



International Congress on Economics, Management and Business Studies

Hosted Online from New York, USA

Date: 23rd September, 2026

Website: <https://econferencia.com>

-
10. Arbidane, I., & Mietule, I. Problems and solutions of accounting and evaluation of biological assets in Latvia. *Entrepreneurship and Sustainability Issues*, vol. 6, no. 1, 2018, pp. 10–22.
 11. Mengliqulov, B.Yu. Chorvachilikda biologik aktivlarni saqlash xarajatlari hisobi, tannarx hisoblash va auditi metodologiyasini takomillashtirish [Improving the accounting, cost calculation and audit of biological asset maintenance costs in livestock farming]. DSc dissertation. Tashkent, 2023. 203 p.
 12. IFAC. Handbook of International Quality Control, Auditing, Review, Other Assurance, and Related Services Pronouncements. Vol. I. New York: IFAC, 2014.