

**MANAGEMENT OF INCREASING PLUM  
COMPETITIVENESS THROUGH FERTILIZER  
APPLICATION**

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**Chișinău - 2026**

**MINISTRY OF EDUCATION, CULTURE AND RESEARCH OF REPUBLIC OF MOLDOVA**

**Tehcnical University of Moldova  
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MBA Management in Agribusiness Microqualification Program**

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**”\_\_\_\_\_” \_\_\_\_\_ 2026**

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## ABSTRACT

This master's thesis examines fertilizer application management as a tool for improving the economic efficiency and competitiveness of horticultural production. The research is designed as a case study of C.Î. "Verifruit", focusing on Stanley plum production and the economic substantiation of fertilization decisions. The topic is relevant because agricultural enterprises need to use production inputs more efficiently under conditions of high input costs, market volatility, and increasing requirements for fruit quality and traceability.

The aim of the research is to assess fertilizer application management in plum production and, through a comparative analysis of different fertilization schemes, to substantiate opportunities for increasing economic efficiency and product competitiveness at C.Î. "Verifruit". The methodology combines literature analysis and synthesis, a case-study approach, financial and economic analysis, comparative analysis, recalculation of efficiency indicators, sensitivity analysis, and managerial interpretation of the results. The information base includes the enterprise's technical and economic data, technological budgets for four fertilization schemes applied in the 2019 agricultural year, and official financial statements available for 2021–2025.

The comparative results show that, under the conditions of 2019, treatment 4 – monoammonium phosphate (N12P52) 100 kg/ha + potassium chloride (60% KCl) 100 kg/ha + urea (46.3% N) 100 kg/ha – achieved the most favorable combination of indicators among the alternatives analyzed: a yield of 19.08 t/ha, sales revenue of MDL 85.86 thousand/ha, profit of approximately MDL 34.55 thousand/ha, a unit production cost of about MDL 2.69/kg, and a return on costs of approximately 67.3%. The analysis also shows that a higher total quantity of active nutrients does not automatically lead to superior economic efficiency. Because the original study did not document an unfertilized control, experimental replications, randomization, or statistical tests, treatment 4 is interpreted as the best-performing option observed under the study conditions rather than as evidence of universal biological superiority.

The author's contribution consists of verifying and reconciling the economic data for the fertilization alternatives, recalculating comparable competitiveness indicators, introducing sensitivity analysis, and developing an eight-stage managerial model: diagnosis, planning, budgeting, implementation, monitoring, economic evaluation, decision, and improvement. The proposed model links orchard nutrition with the cost per kilogram of marketable fruit, profitability, quality, and traceability, providing C.Î. "Verifruit" with a practical mechanism for annual fertilization decision-making.

**Keywords:** fertilizer management; plum; competitiveness; economic efficiency; unit cost; profitability; traceability.

# CUPRINS

|                                                                                                                                     |           |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>INTRODUCTION</b>                                                                                                                 | <b>6</b>  |
| <b>I. THEORETICAL FOUNDATIONS OF FERTILIZER APPLICATION MANAGEMENT AND ENHANCING THE COMPETITIVENESS OF AGRICULTURAL PRODUCTION</b> | <b>8</b>  |
| 1.1. The Essence and Scope of Fertilizer Management                                                                                 | 8         |
| 1.2. General Principles of Soil Fertilizer Application                                                                              | 10        |
| 1.3. Basic Fertilizers and Their Role in Increasing the Productivity and Competitiveness of Agri-Food Products                      | 13        |
| <b>II. CHARACTERISTICS OF THE ORGANIZATIONAL AND DEVELOPMENTAL CONDITIONS OF C.Î. “VERIFRUCT”</b>                                   | <b>19</b> |
| 2.1. The Organizational Conditions and Management System of C.Î. “Verifruit”                                                        | 19        |
| 2.2. Economic and Financial Analysis of the Operations of C.Î. “Verifruit”                                                          | 22        |
| <b>III. FERTILISER MANAGEMENT AND ENHANCING THE COMPETITIVENESS OF FRUIT AT THE „Verifruit” CO-OPERATIVE</b>                        | <b>27</b> |
| 3.1. Storage and management of fertilisers at the „Verifruit” Co-operative                                                          | 27        |
| 3.2. Analysis of economic efficiency in the application of different fertilisation systems and assessment of fruit competitiveness  | 31        |
| 3.3. Fertiliser application management and improving fruit competitiveness                                                          | 35        |
| <b>CONCLUSIONS AND RECOMMENDATIONS</b>                                                                                              | <b>42</b> |
| <b>BIBLIOGRAFIE</b>                                                                                                                 | <b>46</b> |
| <b>STATEMENT OF RESPONSIBILITY</b>                                                                                                  | <b>49</b> |
| <b>ANEXE</b>                                                                                                                        | <b>50</b> |
| ANEXA 1. Datele de bază ale variantelor de fertilizare analizate în anul de referință                                               | 50        |

## INTRODUCTION

In the context of fruit tree cultivation technologies, fertilizer management is one of the factors that can directly influence orchard productivity, production costs, and, consequently, the economic performance of the enterprise. Fertilizer management involves not only determining the type and quantity of fertilizers applied, but also making managerial decisions regarding the relationship between costs incurred, nutrient requirements, production levels, and the economic outcome of the operation.

The relevance of this topic stems from the need to identify managerial solutions that enable horticultural enterprises to use fertilizers rationally and select fertilization schemes that ensure a favorable balance between resource consumption, productivity, unit production cost, and profitability. The issue is relevant from both a technological and an economic perspective, as applying a larger quantity of fertilizers does not automatically lead to greater economic efficiency. The decision must be based on a comparison of the additional costs with the resulting effects on the harvest, revenue, and profit.

The research problem consists of determining how the management of different fertilization schemes can contribute to increasing the economic efficiency and competitiveness of plum production within an agricultural enterprise.

The subject of this research is the economic and productive activity of the “Verifruit” State Enterprise, with a focus on the plum production process and the management of fertilizer application. The enterprise serves as the practical basis for a comparative analysis of fertilization options and an assessment of their economic effects.

The research topic concerns the economic and managerial relationships that arise in the process of planning, implementing, and evaluating various fertilization schemes, as well as their influence on the productivity, costs, profitability, and competitiveness of plum production.

The purpose of the research is to evaluate the management of fertilizer application in plum production and, through a comparative analysis of various fertilization schemes, to identify opportunities for increasing economic efficiency and the competitiveness of production within the “Verifruit” Agricultural Enterprise.

To achieve this goal, the following objectives were established: to examine the theoretical foundations of fertilizer management and competitiveness; to characterize the organizational conditions and management system of the “Verifruit” Agricultural Enterprise; to assess the economic and financial situation; to analyze the management of fertilizer storage and administration; to compare the four schemes applied to the Stanley plum variety; to evaluate productivity, unit cost, revenue, profit, and profitability; to identify the variant with the most favorable economic results under the analyzed

conditions; and to formulate managerial measures to improve the fertilization process and competitiveness.

The research methodology is based on an applied approach, conducted in the form of a case study on the “Verifruit” Agricultural Enterprise. The research process utilized methods of analysis and synthesis, the comparative method, statistical and economic-financial analysis, as well as the analysis of economic efficiency indicators. The applied component of the research is based on comparing the results obtained from different fertilization schemes used in the cultivation of the Stanley plum variety.

The information base of the research consists of scientific and specialized literature relevant to the fields of management, competitiveness, and fertilization of agricultural crops, as well as economic, technological, and production data related to the activities of C.Î. “Verifruit.”

The applied analysis utilizes information regarding the structure and operations of the enterprise, agricultural land area, production output, fertilizer consumption, production costs, and the economic results associated with the analyzed scenarios.

The practical value of the research lies in the possibility of using the results of the comparative analysis in the enterprise’s decision-making process, particularly for selecting fertilization schemes, optimizing production costs, and improving economic efficiency indicators. The approach used can also serve as an analytical model for other horticultural operations seeking to base their technological decisions on economic grounds.

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