



INFLUENCE OF FERTILIZATION ON FRUIT PRODUCTION AND STORAGE CAPACITY IN SOME APPLE VARIETIES

Orsolya BORSAL¹, Raul-Adrian BEREA¹, Lehel LUKÁCS², Sándor RÓZSA¹, Cornel NEGRUȘIER^{3*}

¹University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Faculty of Horticultural and Business in Rural Development, Department of Horticulture and Landscape Architecture; ²Horticultural Research Station Cluj-Napoca, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca; ³ University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Faculty of Agriculture, Department of Soil Sciences, Corresponding author's e-mail: cornel.negrusier@usamvcluj.ro

Abstract: Apple fruits are one of the most commonly consumed fruits that can be enjoyed almost all year round. Proper fertilization in the first year of production helps trees to grow properly. Positive effects of fertilization were confirmed by tree growth parameters and yield, and both physical and chemical characteristics of the fruit. Moreover, it has been demonstrated that fruits harvested from fertilized trees had a longer shelf life and preserved much better compared to those harvested from unfertilized trees.

• Introduction

In order to obtain high quality fruits, it is imperative to apply fertilizers according to maintain the proper nutritional balance in fruit trees. The current research has been carried out to investigate the influence of fertilization in three apple varieties from the first year of production.

• Material and method

To validate the hypothesis of this research 4-years-old apple trees of three varieties, namely, 'Pinova', 'Idared' and 'Generos' (**Figure 1**) were selected from a family orchard situated in Păuca, Sibiu, Romania.

Tree growth parameters and yield: annual growths, trunk cross-sectional area (TCSA), yield efficiency and fruit weight, firmness, soluble solid content, pH, water content of fertilized and unfertilized apple trees and fruits were examined.

(46°00'37"N 23°53'22"E).

• Results and discussions

Fertilized trees exhibited a better performance in comparison to the unfertilized trees in all cultivars. Fruit quality was higher in fertilized trees. The greatest performances were recorded in Pinova and Generos variety.

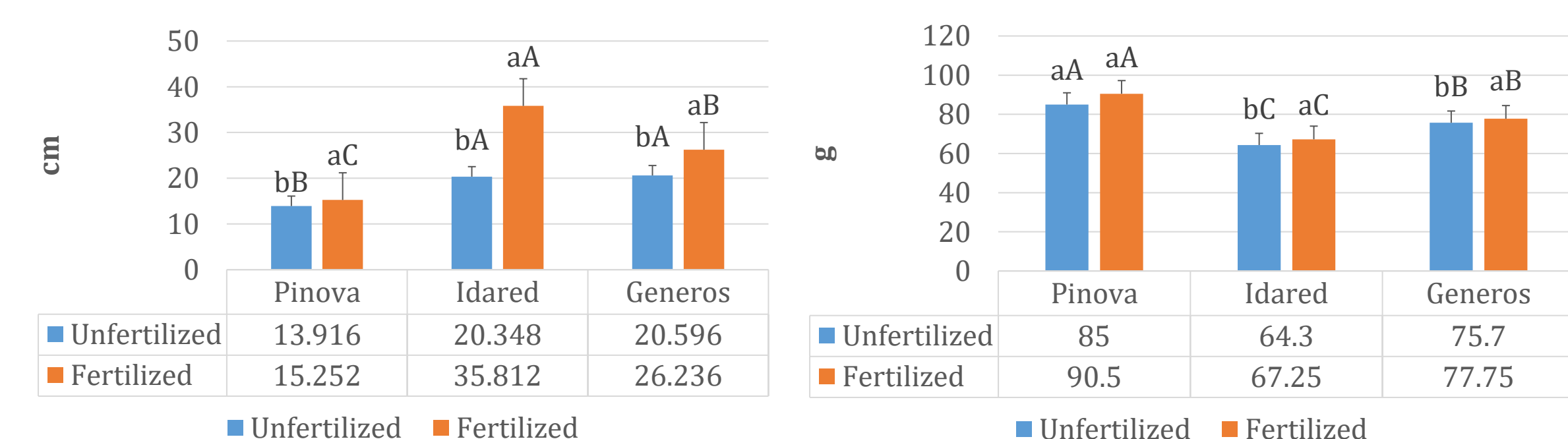


Figure 2. Average annual shoot growth

Figure 3. Average fruit weight

Fertilized trees beared fruits with a higher storage capacity than the unfertilized ones. Generos and Pinova had the longest shelf life maintaining all the fruit qualities.

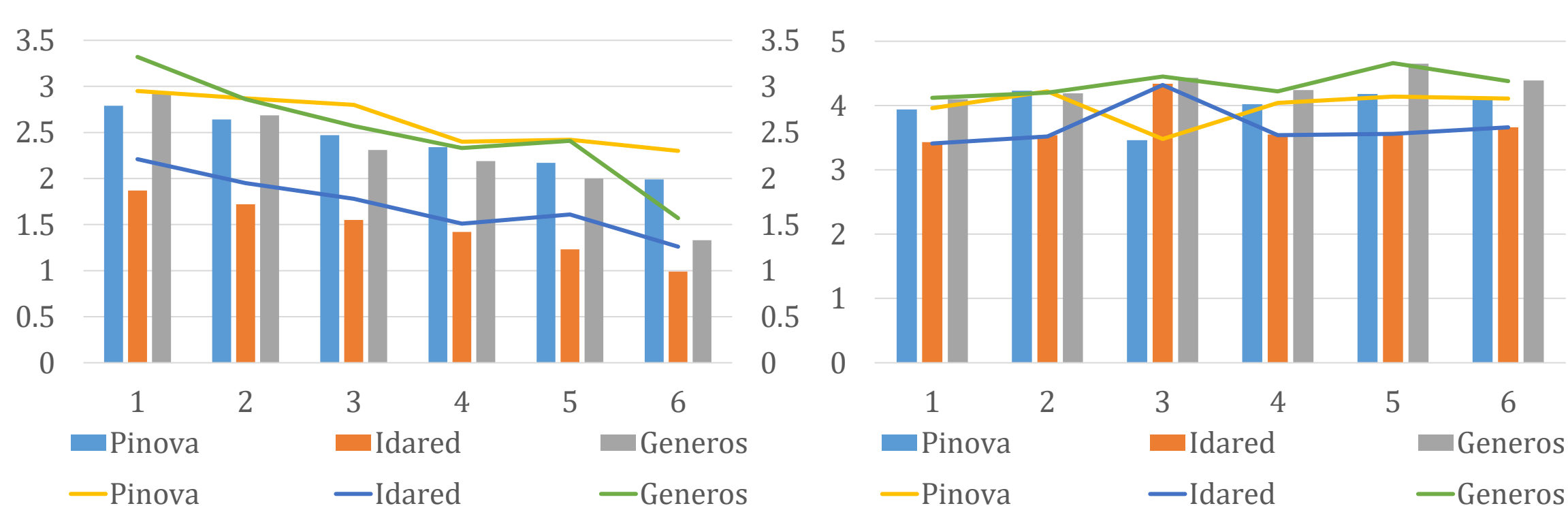


Figure 5. Dynamics of fruit firmness during 6 month of storage

Figure 6. Dynamics of fruit pH during 6 month of storage

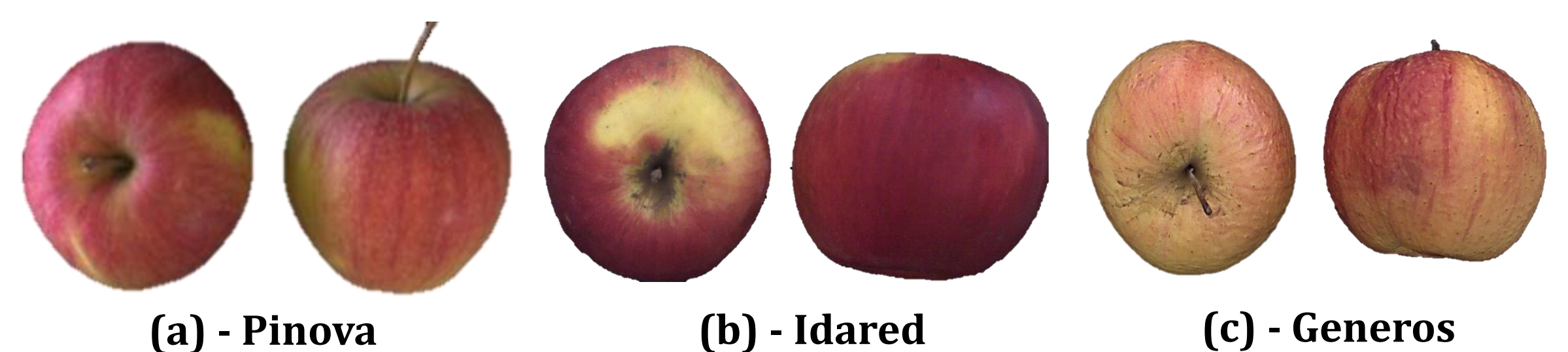


Figure 1. Apple varieties used for this study – (a) Pinova; (b) Idared; (c) Generos

Fertilization plan, pest and disease management

Month/BBCH						
March	1 st - Kupferol, Ovipron + Mospilan, 25 th - Cupridin 50 WP, 7 th - Manure (15 kg/tree)					
April		15 th - Chorus 50, Karate Zeon - Pinova, 18 th - Chorus 50, Karate Zeon Idared, 28 th - Chorus 50, Karate Zeon Idared				
May			1 st - Kumulus DF, 27 th - May - Affirm, Karate Zeon, 6 th - Liquid Fertilizer from Cow Manure (10 L/tree)			
June				3 rd - Folig		
July						
August						
September					15 th - Luna Experience, Decis 25 WG (45 gr/ha)	29 th - Harvest

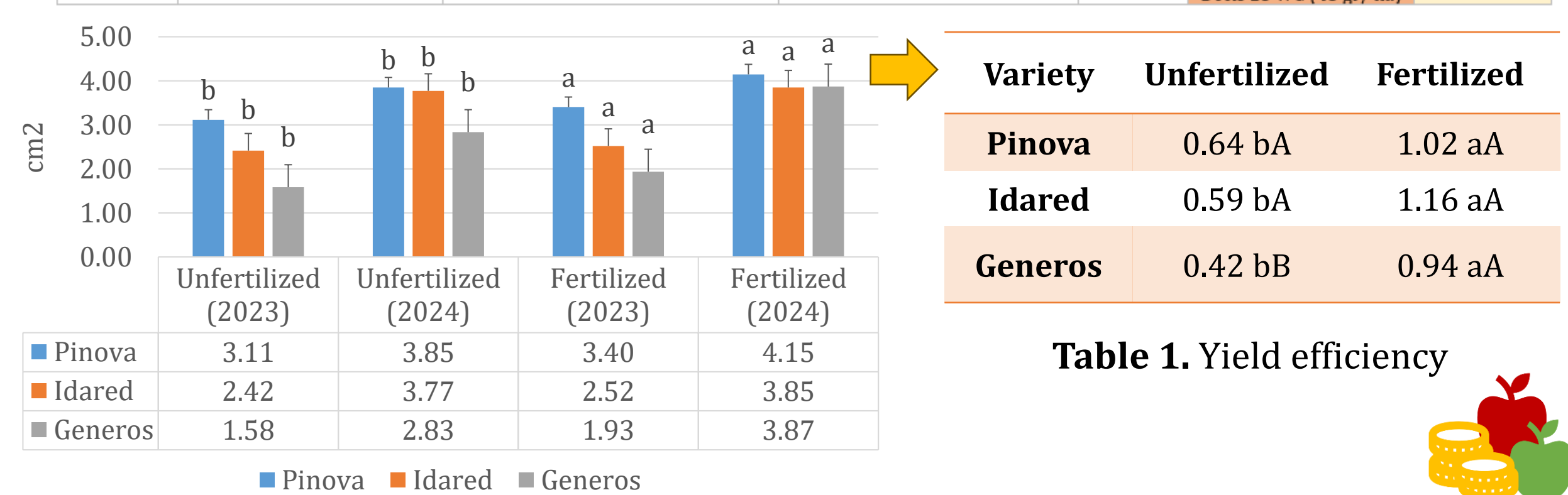


Figure 4. Average trunk cross sectional area

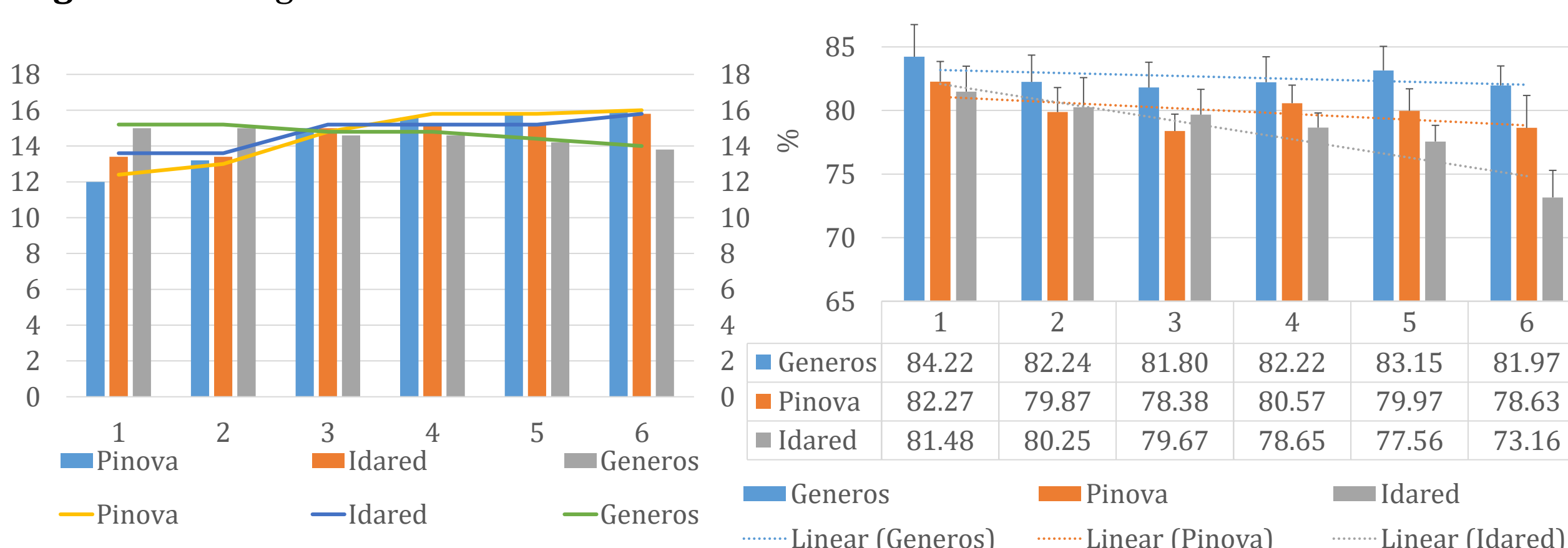


Figure 7. Dynamics of total soluble solid content during 6 month of storage

Figure 8. Dynamics of water content during 6 month of storage

Conclusions

Generos it is recommended to be cultivated due to its growth performance, fruit quality, yield efficiency and storage capacity.