

# THE INFLUENCE OF STORAGE METHODS ON THE FRUITS QUALITY IN SOME APPLE VARIETIES WITH GENETIC RESISTANCE TO DISEASES

*DORIN SUMEDREA, ALINA FLOREA, COMAN RADU,  
MAZILU IVONA, MĂDĂLINA BUTAC*



- **The temporary storage of fresh fruit as long as possible without qualitative depreciation and significant quantitative loss is a basic measure for the rhythmical supply of the market and the provision of a healthy diet.**
- **The objective of preservation is to keep fruit fresh as long as possible after harvesting, without major physical, chemical or biological changes in their composition.**
- **The knowledge of the physiological and biochemical processes that are produced in the fruits from the moment of their setting up to the harvest and during the preservation, in correlation with the external factors (climatic and technological), is a top research issue in the context of increasing the importance of fresh fruit consumption on human health.**
- **Conservation consists of a set of operations performed to maintain the quality of the products over a period of time, characteristic of each species and variety, in order to prolong the consumption period.**
- **The storage capacity is the acquisition of a product to maintain its quality after harvesting.**



# MATERIAL AND METHODS

## Varieties studied:

- Dalinette
- Goldrush
- Florina
- Idared (Control)

## Storage methods:

- Classical storage - low temperature (2-4°C) and high humidity (90-95%)(Control)
- Controlled atmosphere storage (AC):
  - Janny MT box storage
  - Paliflex controlled atmosphere box-pallets (FCE)





# MATERIAL AND METHODS

## Fruit evaluation moments:

- January
- February
- March

## Fruit determinations:

- Weight (g)
- Soluble solids content (% Brix)
- Firmness (N or HPE units)





# APPLE VARIETIES STUDIED – WITH GENETIC RESISTANCE TO SCAB





# STORAGE METHODS

- **Classical storage** - low temperature (2-4°C) and high humidity (90-95%)
- **Controlled atmosphere storage (AC)** - optimum storage conditions for fruit depend on the maturity stage, temperature and shelf life as well as interactions between the various components of the storage atmosphere ( $O_2$ ,  $CO_2$ , etc.).
  - **JannyMT** - offers the possibility to control the temperature and humidity inside the box, but also  $O_2$  and  $CO_2$ . More precisely, it consists in setting the optimal  $O_2$  (2-3%) and  $CO_2$  (2-5%) gas concentration and the temperature (2-4°C) and humidity (95-100%) parameters.





# STORAGE METHODS

## Controlled atmosphere storage (AC)

- Paliflex controlled atmosphere box-pallets (FCE) - control the temperature (2-4°C) and humidity (95-100%) inside the box, but also O<sub>2</sub> 2-3% and CO<sub>2</sub> (2-5%).

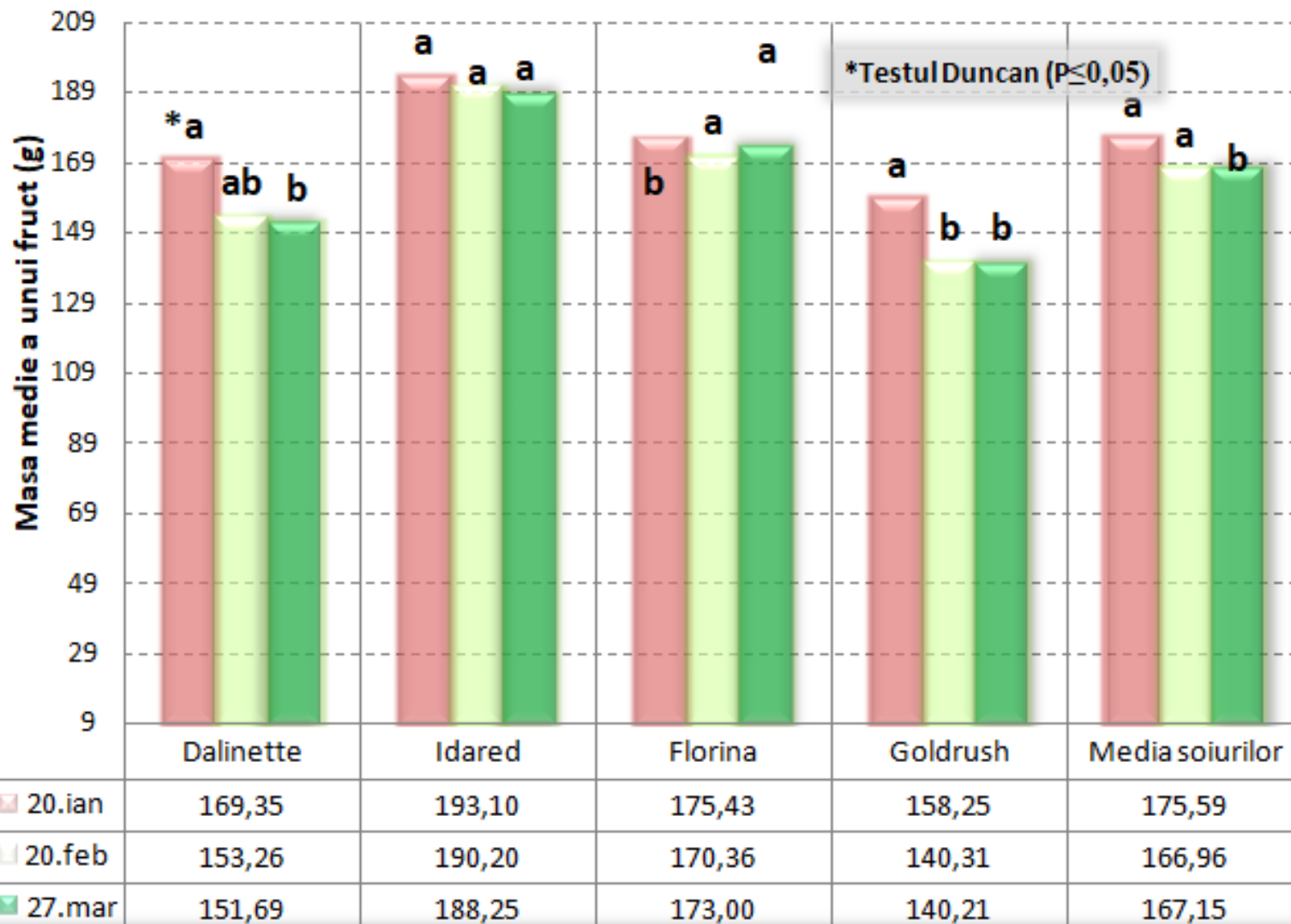


# FRUITS SAMPLES STORED BY THE JANNYMT AND FCE METHODS



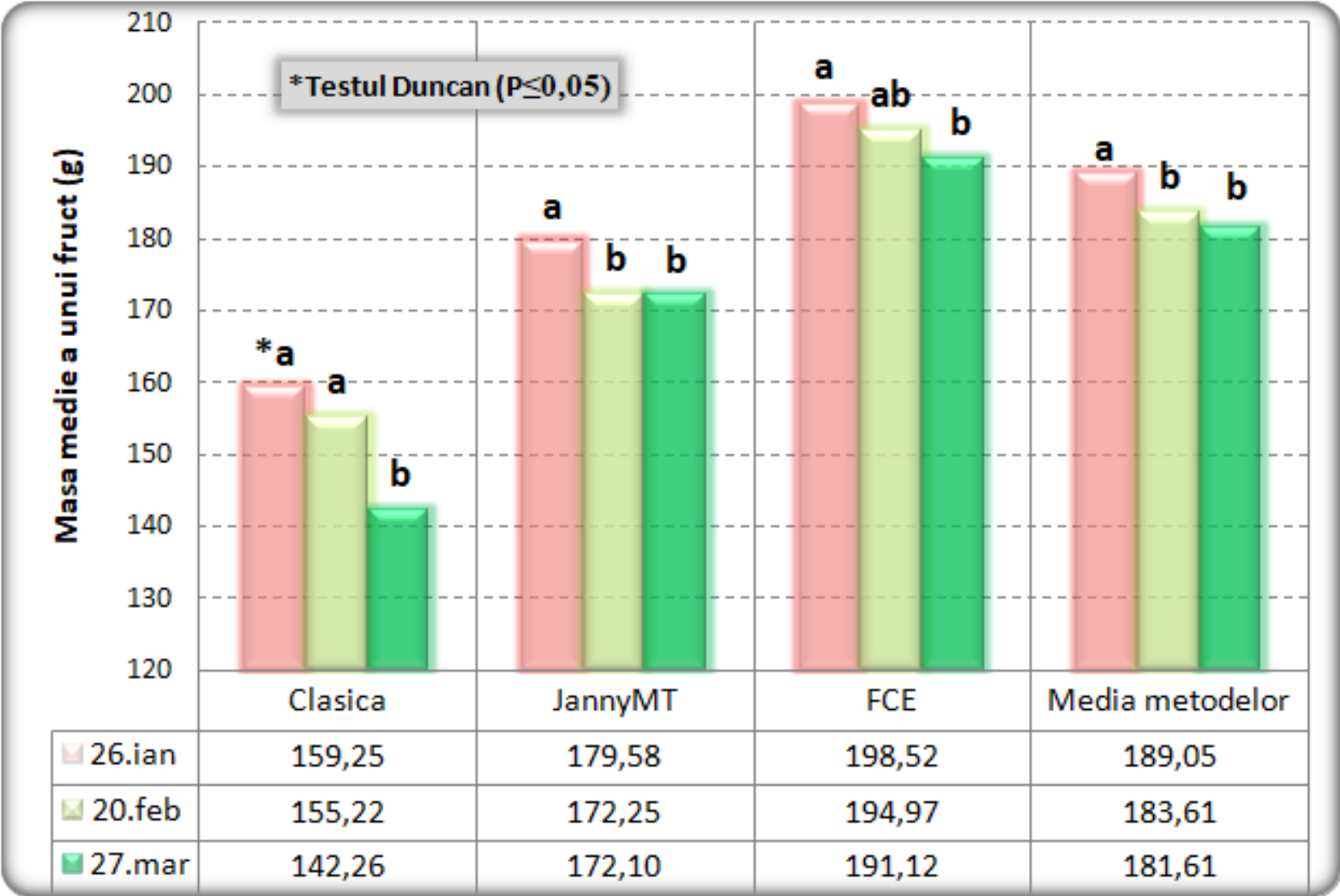


# The influence of the evaluation moment of samples on the fruits average weight, depending on the variety



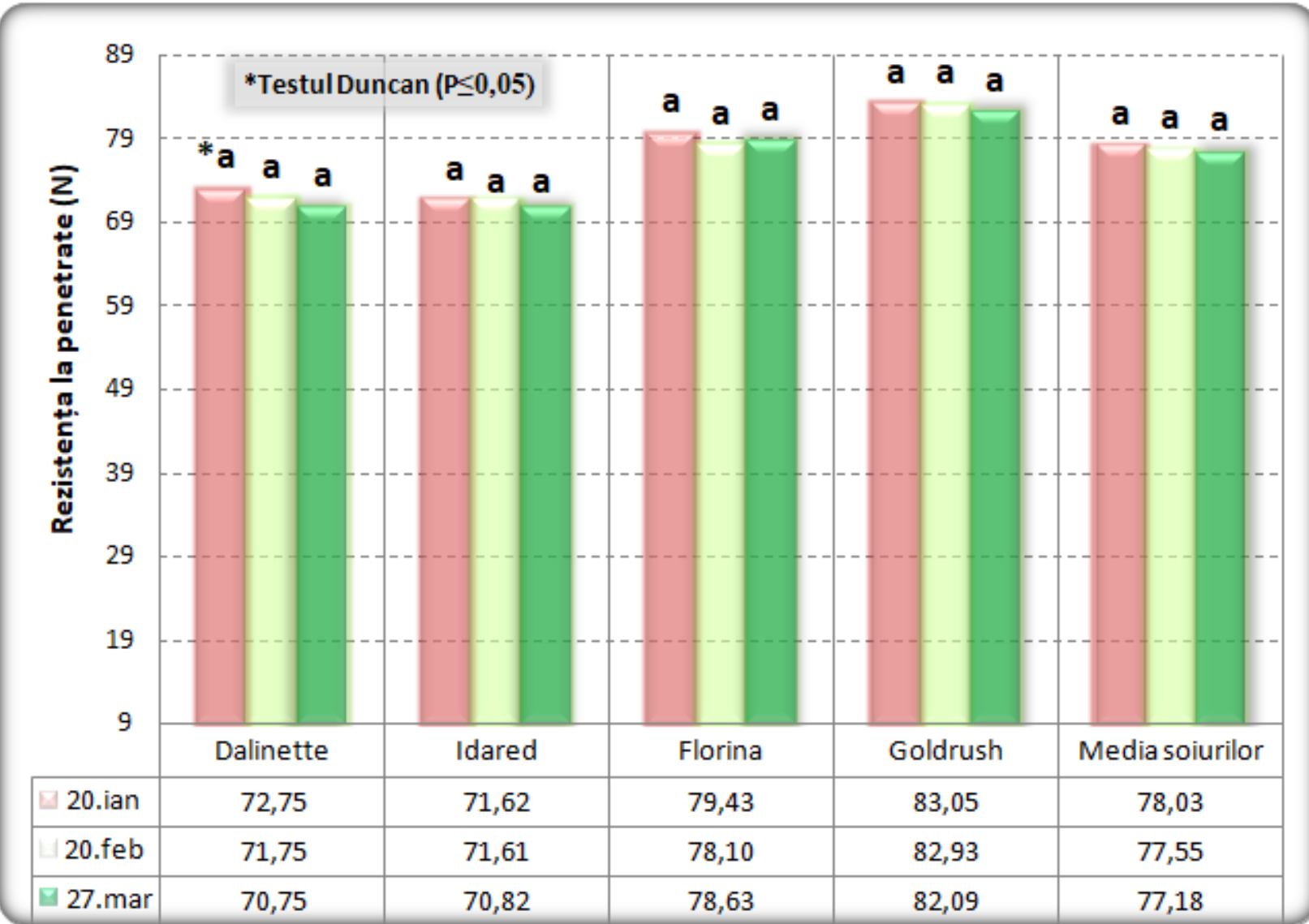


# The influence of the evaluation moment of samples on the fruits average weight, depending on the storage method



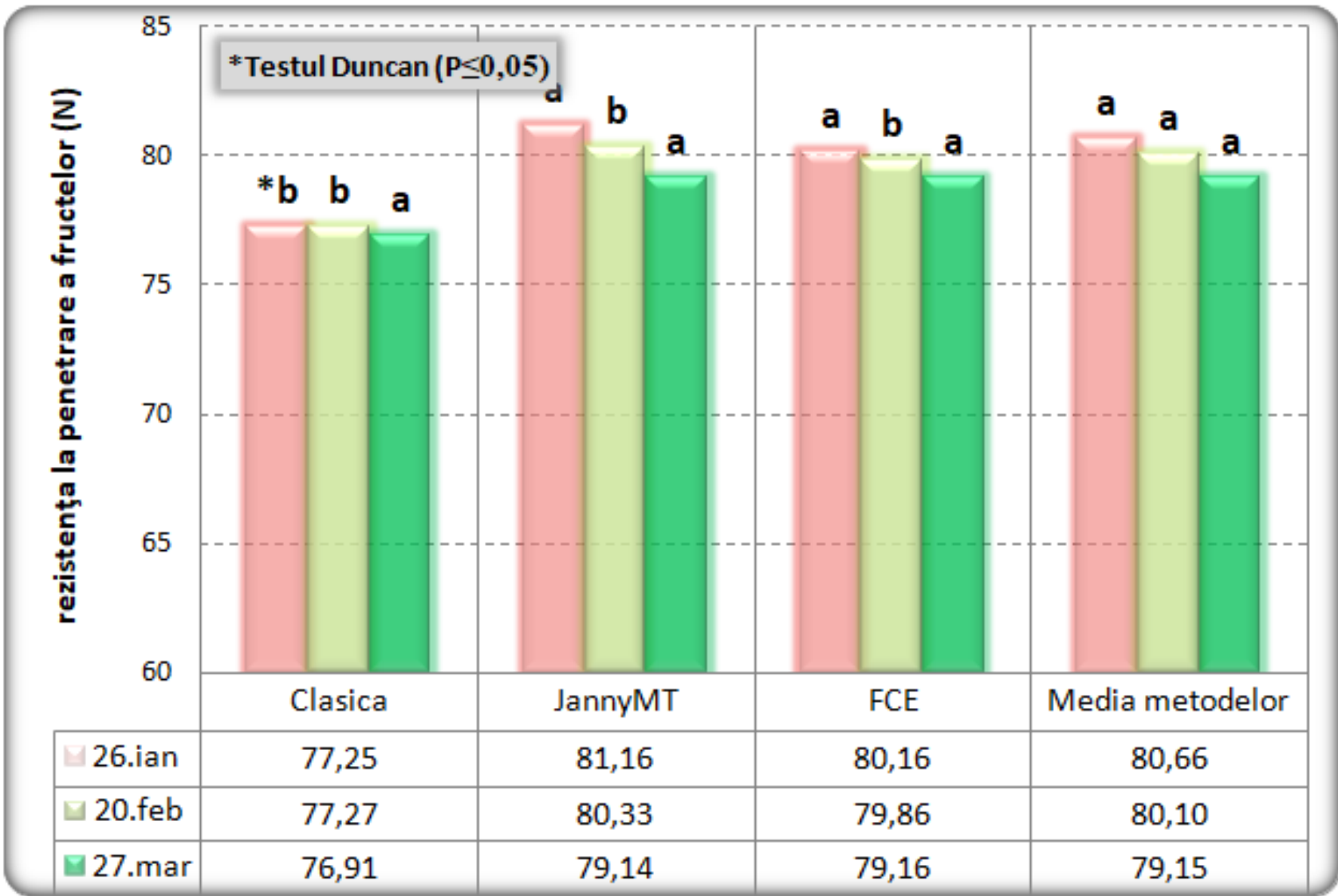


# The influence of the evaluation moment of samples on the fruits firmness, depending on the variety



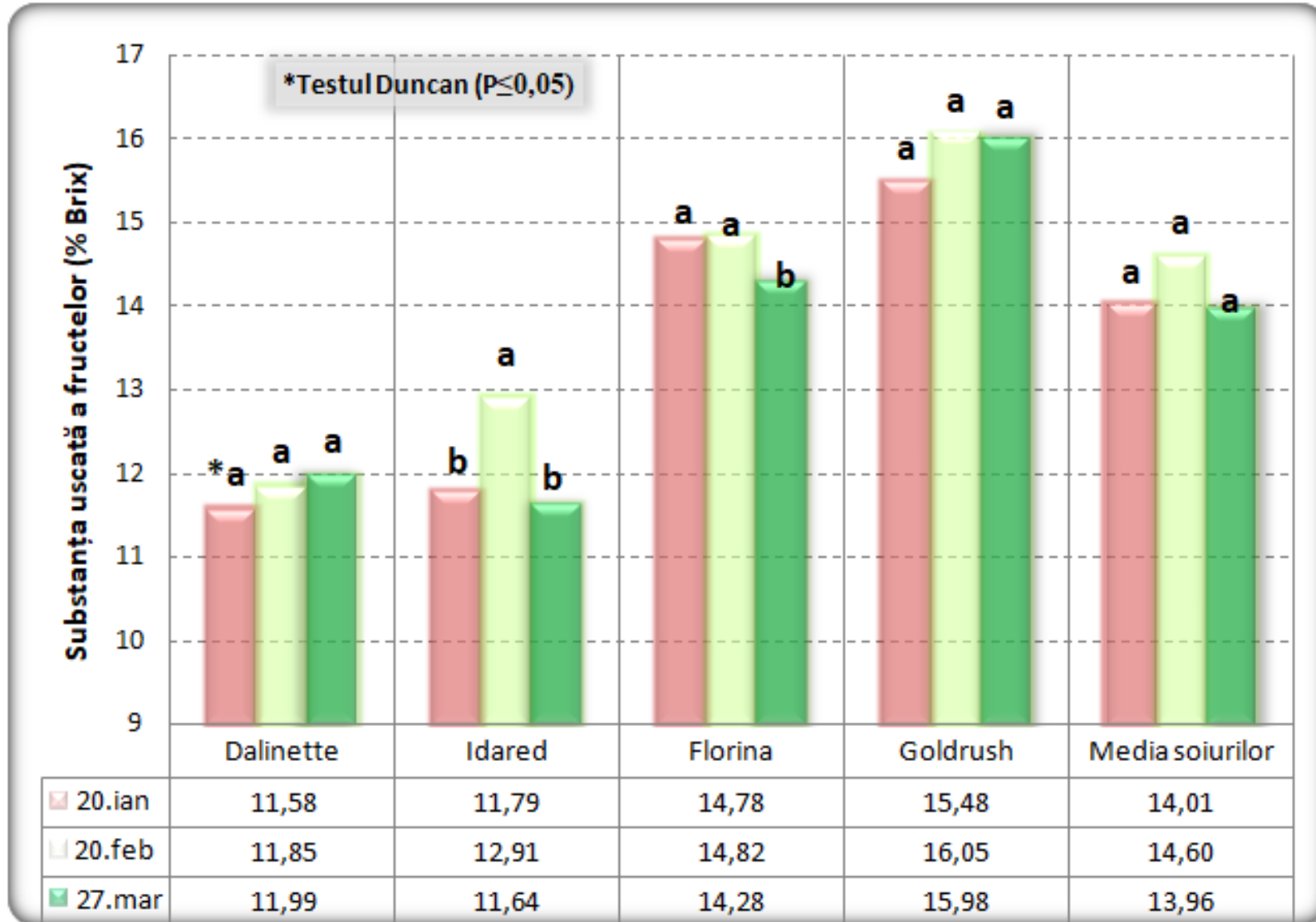


# The influence of the evaluation moment of samples on the fruits firmness, depending on the storage method



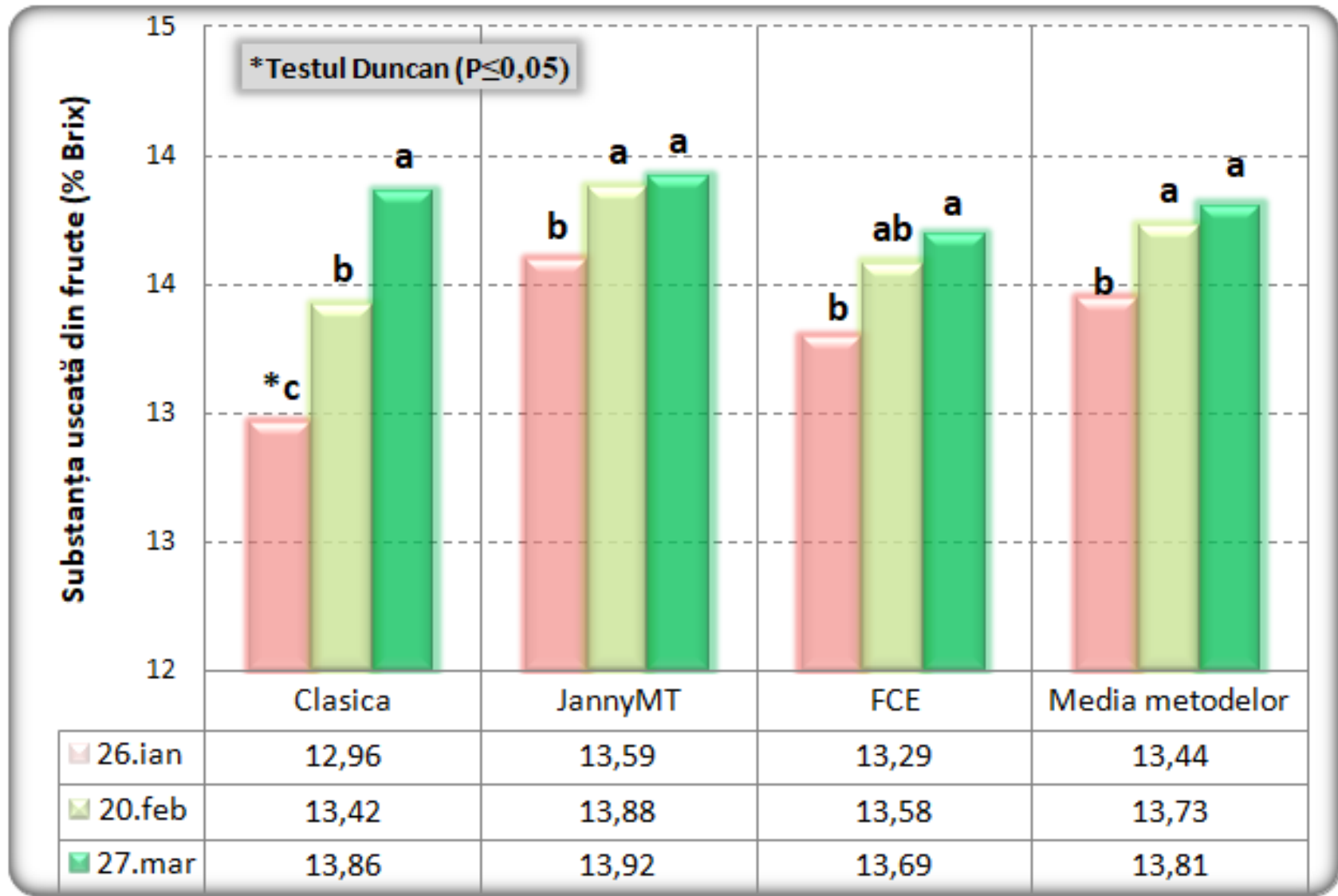


# The influence of the evaluation moment of samples on the fruits soluble solids content, depending on the variety





# The influence of the evaluation moment of samples on the fruits soluble solids content, depending on the storage method





# CONCLUSIONS

- **The controlled atmosphere storage method, Janny MT and Palliflex, prolongs the shelf life of the fruit.**
- **For all apple varieties studied, weight loss was lower for JannyMT and Paliflex storage methods than for the classical method.**
- **The fruits firmness decreases during storage and the fruits soluble solids content increases.**



**THANK YOU FOR YOUR  
ATTENTION!**



*This work was supported by a grant of the Romanian Ministry of Research and Innovation, CCCDI – UEFISCDI, project number PN-III-P1-1.2-PCCDI-2017-0662, within PNCDI III.*