



Effect of storage conditions on the quality of the lettuce leaf rosettes (*Lactuca sativa* L.)

INTRODUCTION

In Poland, the most commonly grown butter head lettuce, less popular lettuce is iceberg lettuce and leaf rosettes lettuce. Currently, the popular salad mixes red lettuce is due to the presence of anthocyanins. Extension of demand fresh lettuce can be achieved by short-term storage. The rate of change in the stored material is dependent on temperature, relative air humidity and gas composition of the atmosphere. One possibility is the storage of controlled atmosphere lettuce. Leafy vegetables can be stored in a controlled atmosphere composed of 0% of CO₂ and 3% O₂ and 3% CO₂ and 1% O₂. Such conditions allow longer storage period of up to four, or even six weeks.



Photo 1. Lettuce in field cultivation

MATERIAL AND METHODS

In the years 2009 - 2010 the experiments were conducted. The aim of the experiment was to evaluate the influence of storage conditions on the quality of lettuce leaf rosettes stored in the form of whole and sliced. The study was taken two cultivars of lettuce Versai and Kitare from Rijk Zwaan Company. The plants were stored for two and four weeks under the following conditions: NA – the temperature of 1 - 2° C, ULO 1, 5% O₂, 1, 5% CO₂ % O₂ KA 3, 1, 1 5% CO₂, 5% O₂, 10% CO₂. After harvest and after storage the dry matter content, total sugars, vitamin C, carotenoids, flavonoids and phenolic acids were determined.

The obtained results were analysed statistically with the analysis of variance at the significance level of $\alpha=0,05$ (programme ANOVA 3 and ANOVA 2). The comparison of means was done using the Tukey's test.



Photo 2. 'Kitare' cultivar



Photo 3. 'Versai' cultivar

RESULTS

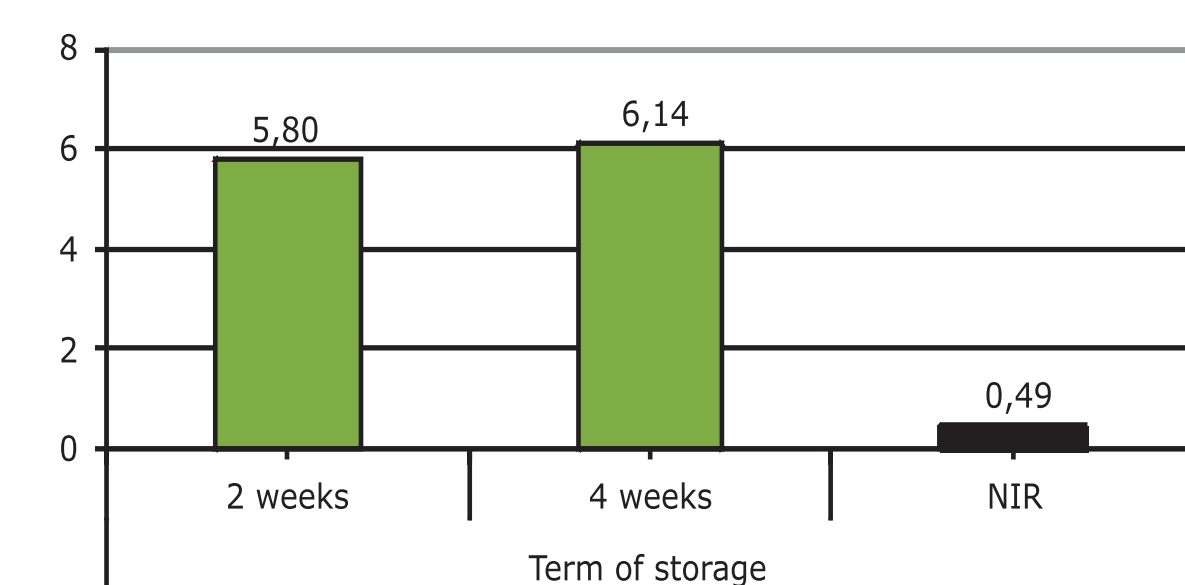


Figure 1. The influence the term of storage on contain of dry matter in whole rosettes of lettuce

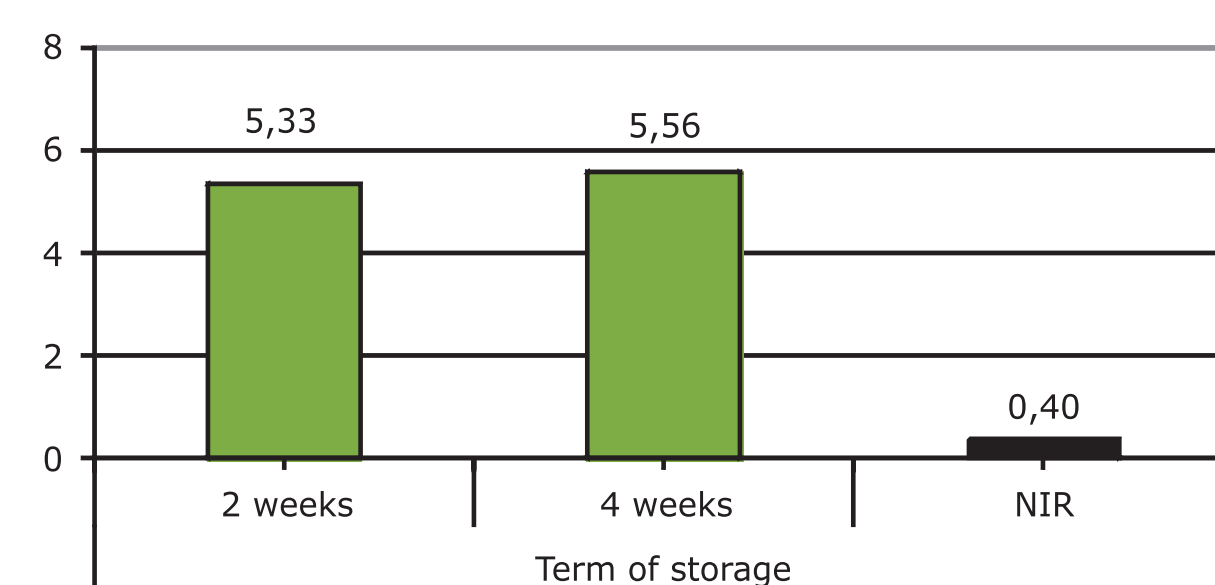


Figure 2. The influence of term of storage on dry matter in sliced lettuce

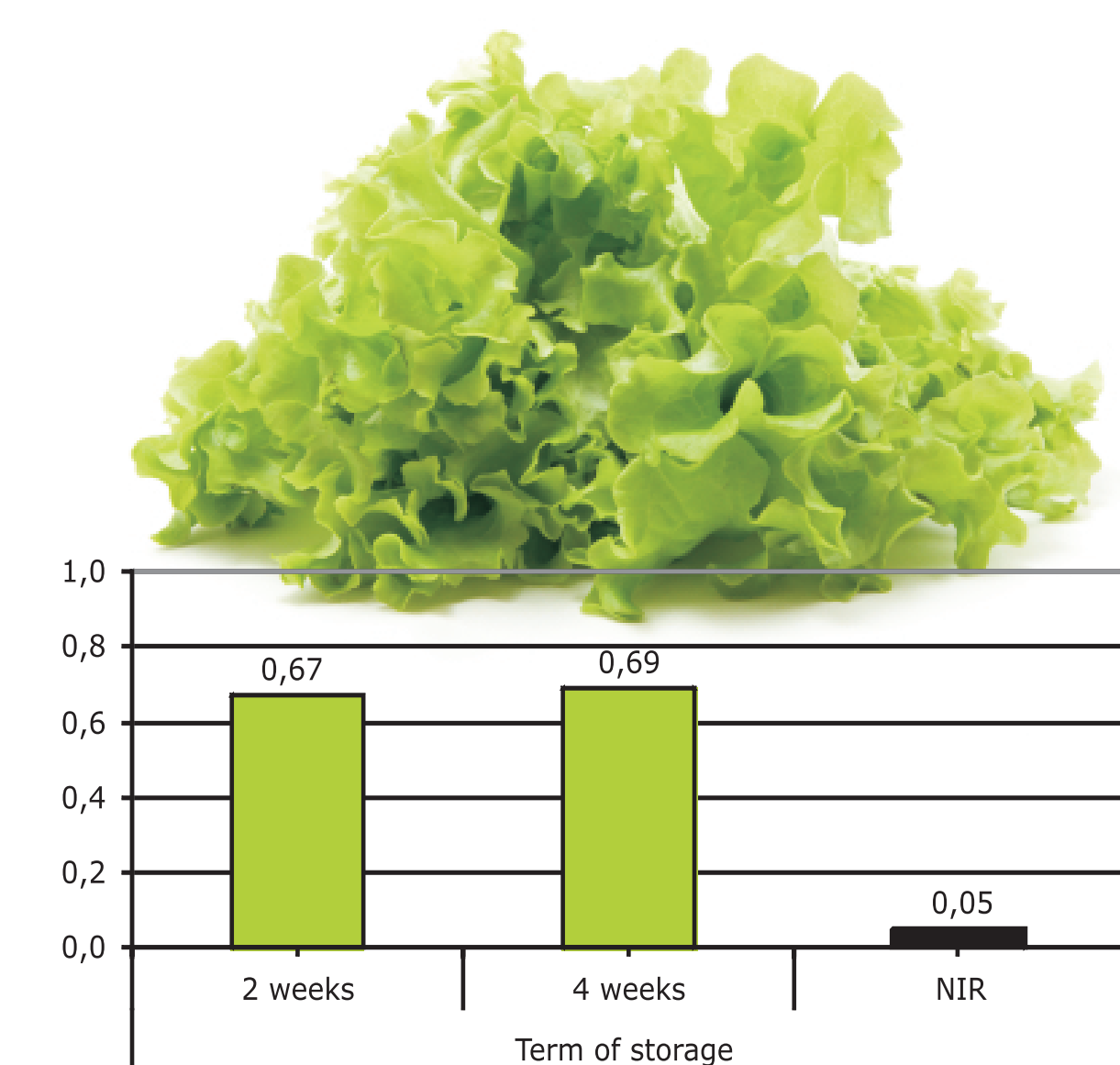


Figure 7. The influence of term of storage content of sugar total in whole rosettes of lettuce

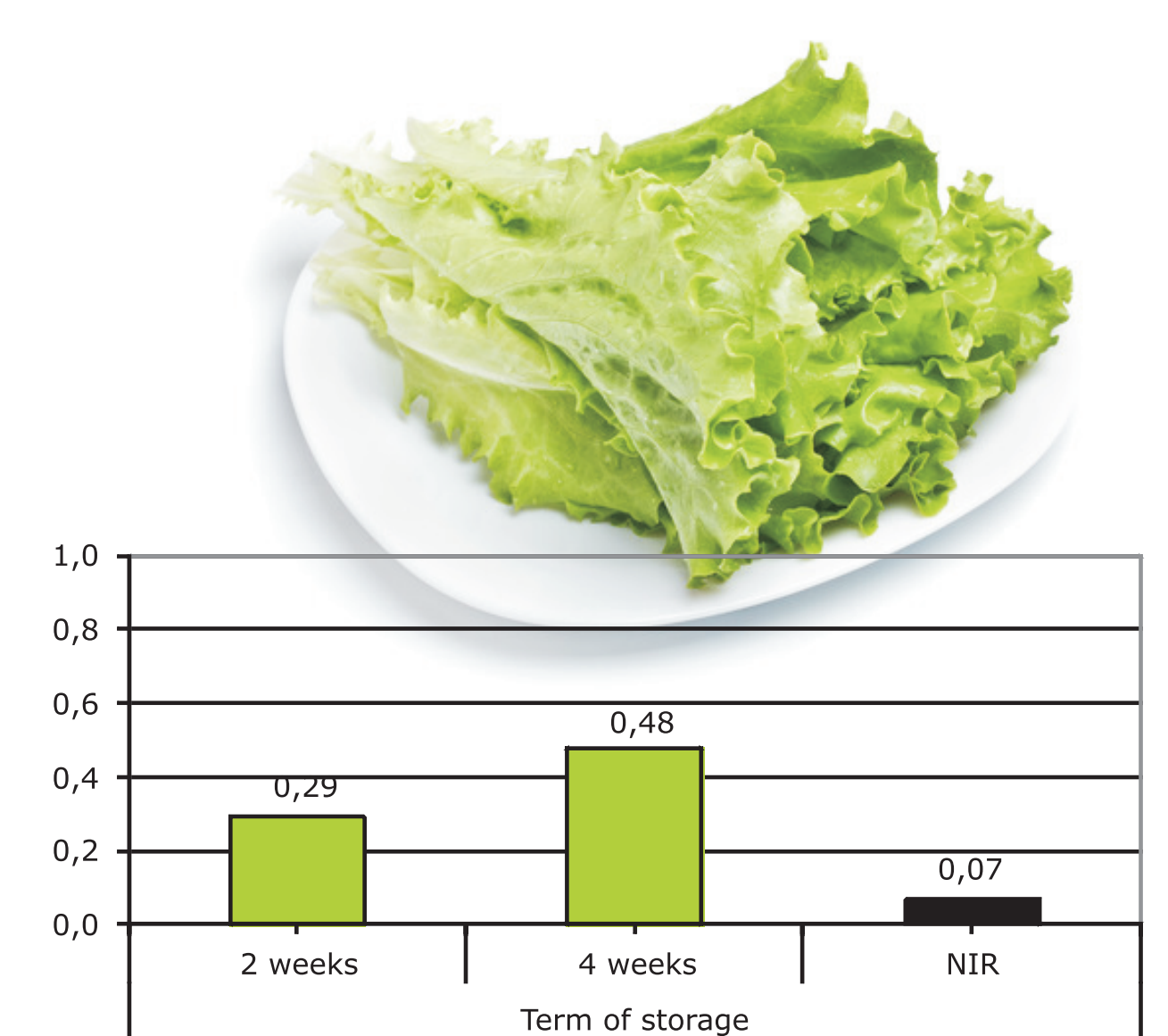


Figure 8. The effect of term of storage on content of total sugars in sliced lettuce

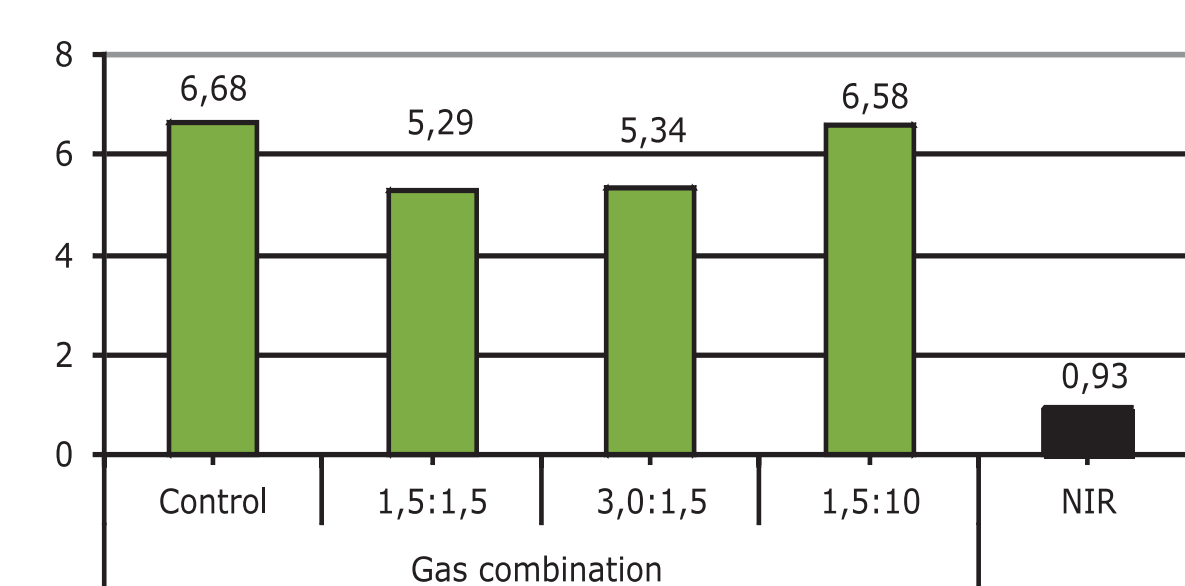


Figure 3. The effect of gas combination on dry matter in whole rosettes of lettuce

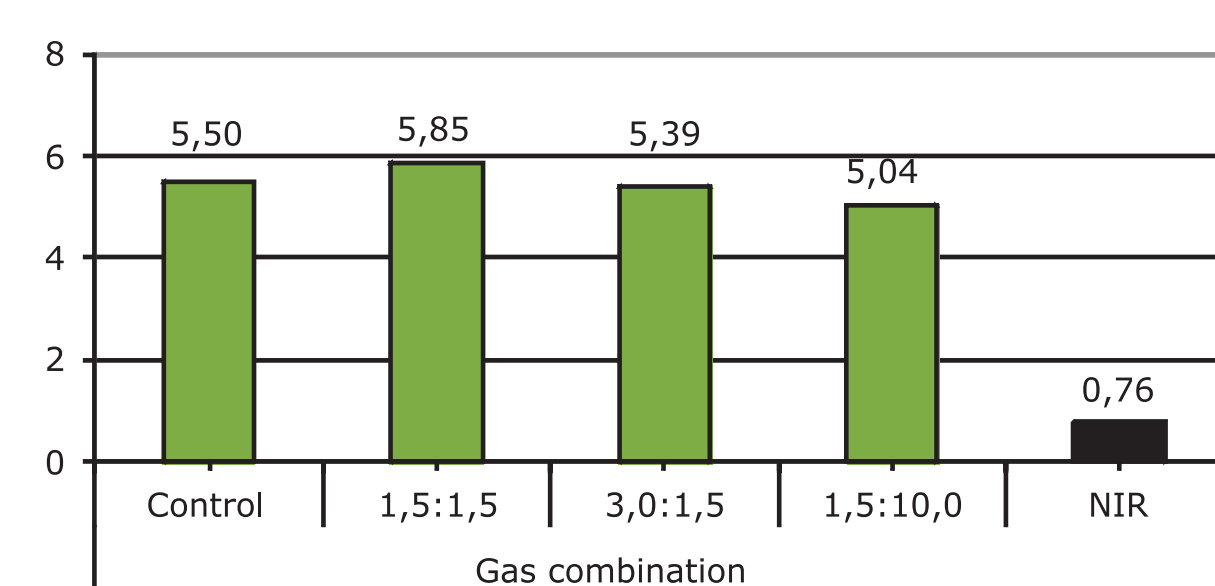


Figure 4. The effect of gas combination on dry matter in sliced lettuce

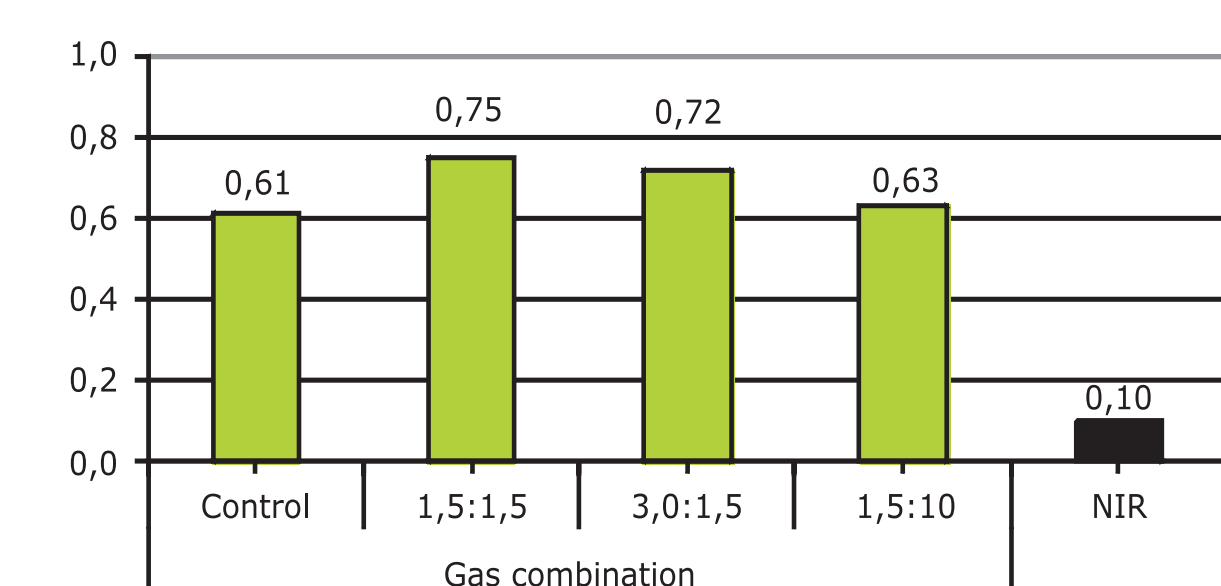


Figure 9. The effect of gas combination on content of sugar total in whole rosettes of lettuce

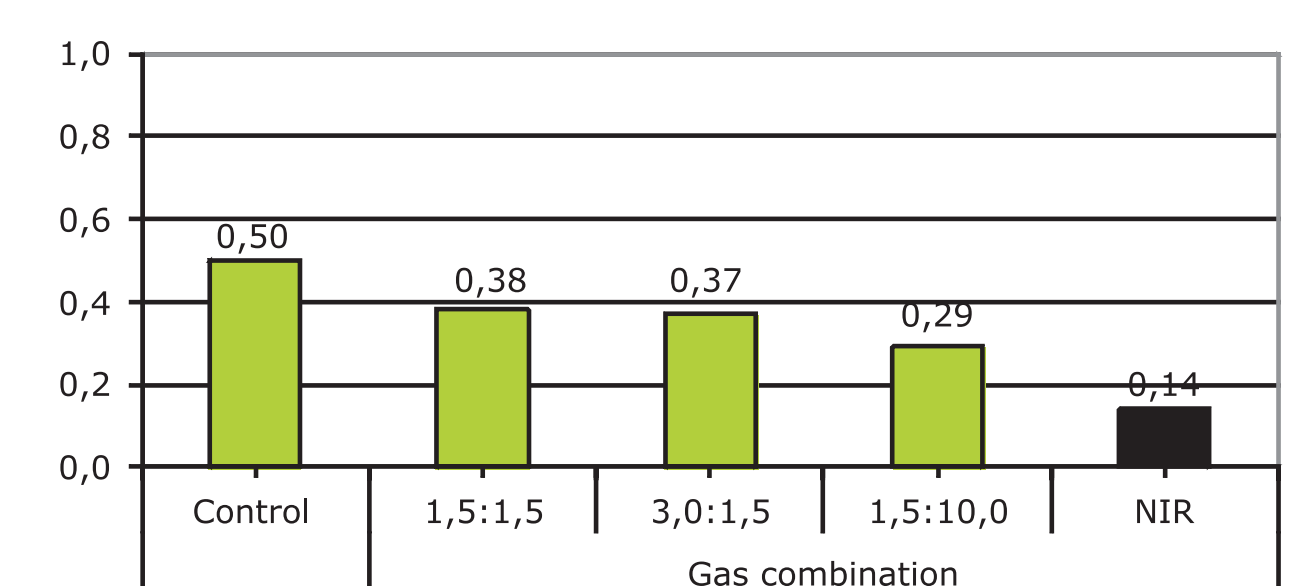


Figure 10. The effect of gas combination on content of total sugars in sliced lettuce

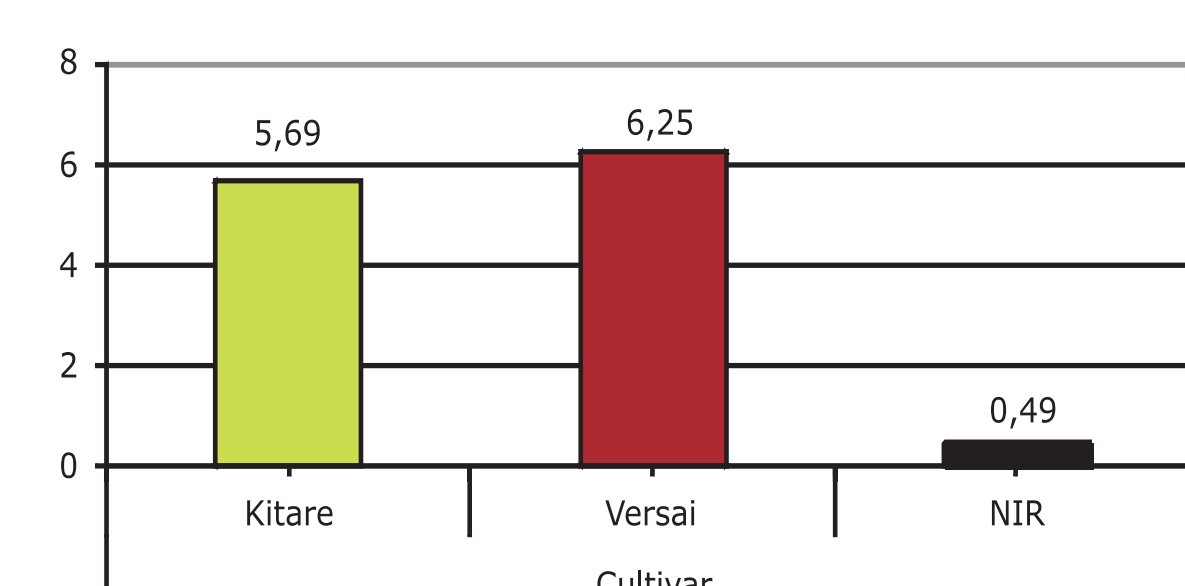


Figure 5. The influence of cultivar on dry matter in whole rosettes of lettuce

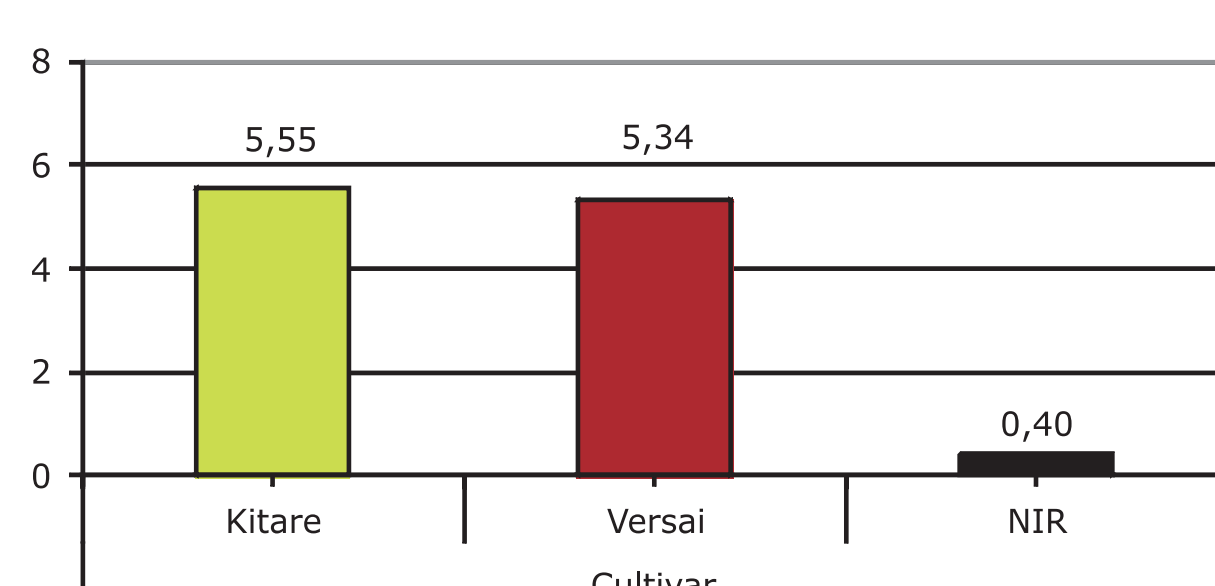


Figure 6. The influence of cultivar on dry matter in sliced lettuce

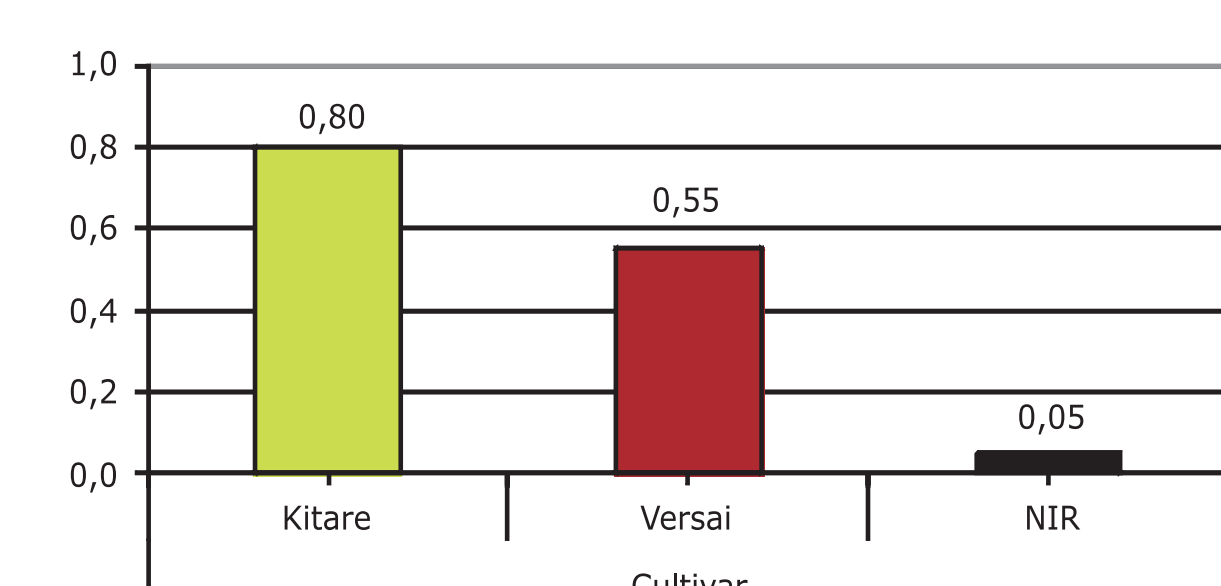


Figure 11. The influence of cultivar on content of sugar total in whole rosettes of lettuce

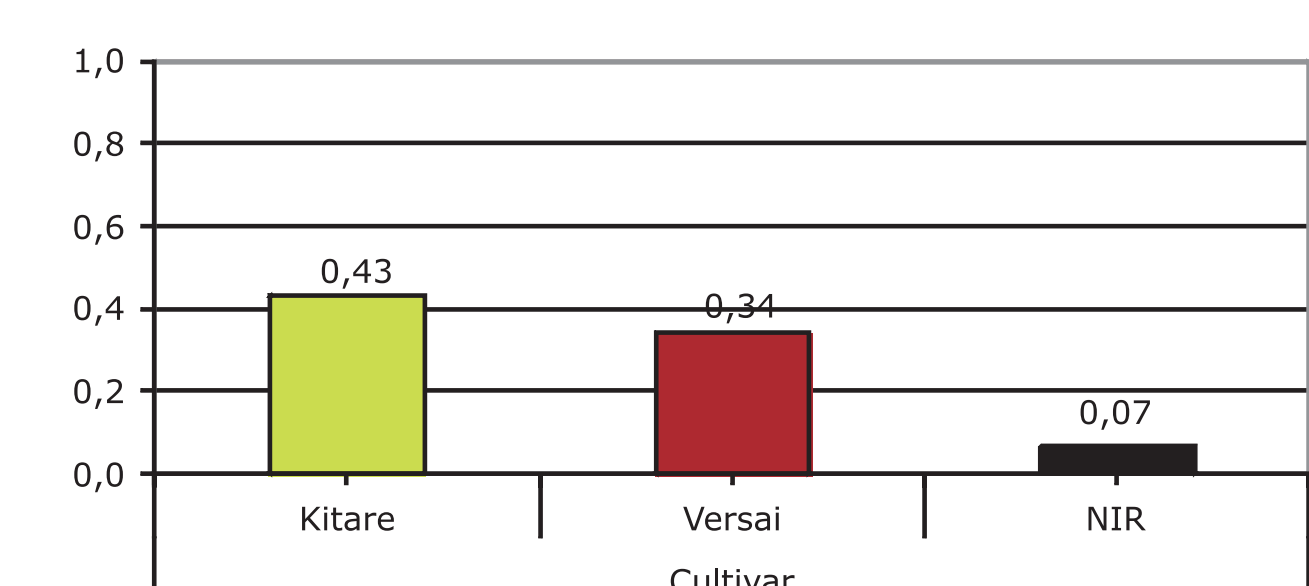


Figure 12. The influence of cultivar on content of total sugars in sliced lettuce

CONCLUSIONS

1. Our results indicate that the storage of lettuce resulted in a reduction of dry matter and a decrease in sugars and vitamin C. During storage, there was an increase flavonoid content.
2. The least favorable conditions for the storage of lettuce leaf rosettes are the natural atmosphere and controlled atmosphere on the composition of 1,5:10,0.

ACKNOWLEDGMENT

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