

Reddish-purple sweetcorn: changes in quality characteristics during ambient and refrigerated storage

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Reddish-purple sweetcorn: changes in quality characteristics during ambient and refrigerated storage

1. Introduction

- * The effect of temperature on key quality characteristics of sweetcorn
- * The new development of reddish-purple sweetcorn accession
- * The lack of information about storage temperature on the key quality characteristics of reddish-purple sweetcorn

2. Materials and methods

3. Results

- * The effect of storage time and temperature on anthocyanin content
- * The effect of storage time and temperature on sugar, starch and moisture content

4. Conclusion

1. Introduction

1.1. The effect of storage temperature on key quality characteristics of sweetcorn

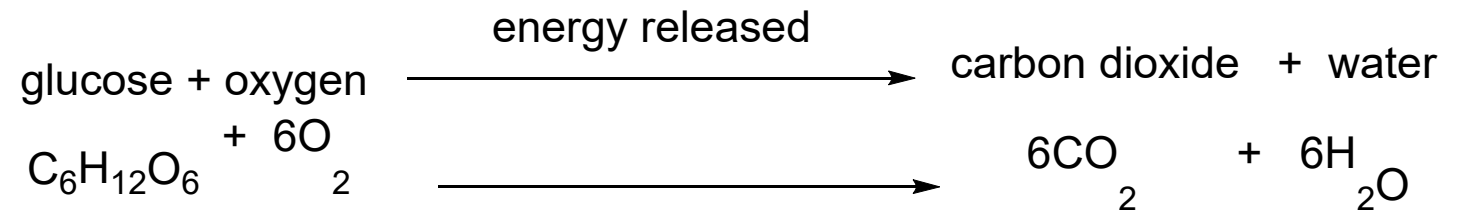
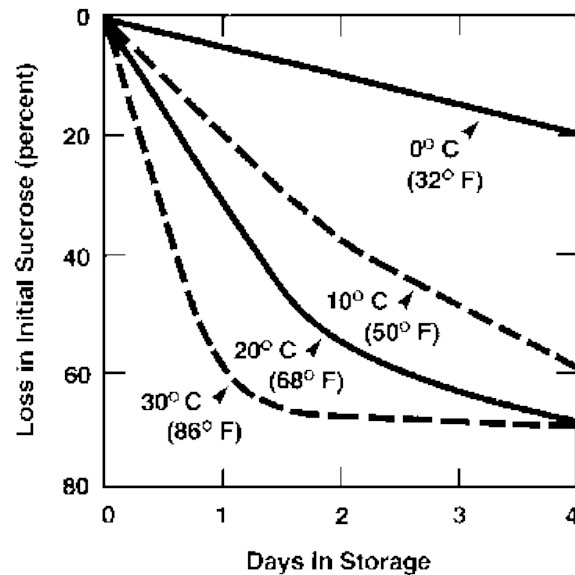


Figure 2: Sucrose loss of sweetcorn cobs stored at 0, 10, 20 and 30°C during 4 days of storage (Source: USDA handbook No. 66: The Commercial Storage of Fruits, Vegetables, and Nursery Stocks.).

Geetha, H., Palanimuthu, V., Ranganna, B. J. I. J. o. P., & Technology, P. H. (2014). A study on shelf-life extension of freshly harvested sweet corn cobs (*Zea mays* var. *Rugosa*). 5(2), 131-135.

The effect of storage temperature on key quality characteristics of sweetcorn

Table 2.7: Respiration rates of sweetcorn in temperatures ranging from 0 to 25°C
(Source: Brecht, 2002).

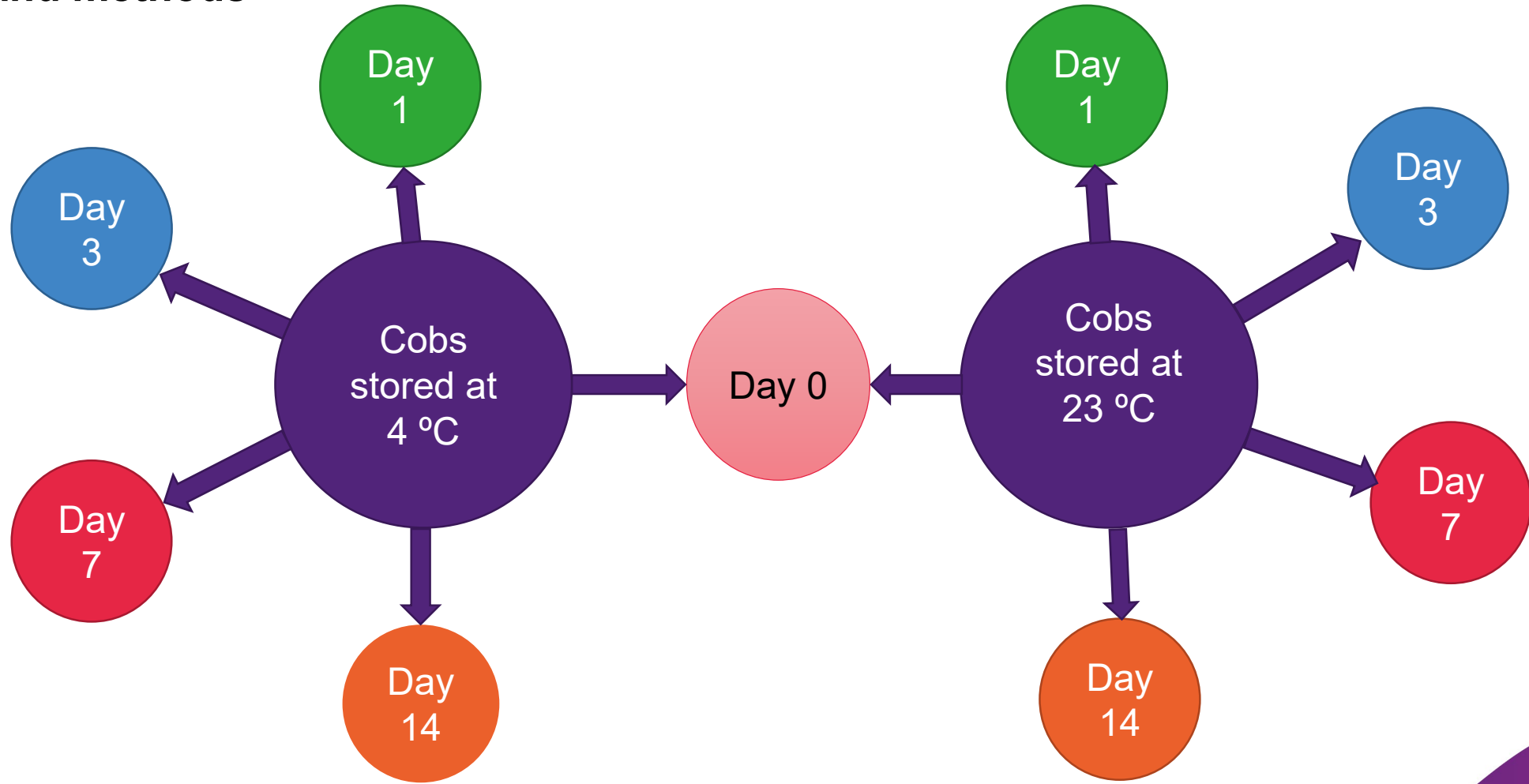
Temperature	mg CO ₂ kg ⁻¹ h ⁻¹
0°C	30 to 51
5°C	43 to 83
10°C	90 to 120
15°C	142 to 175
20°C	210 to 311
25°C	282 to 435

The new development of reddish-purple sweetcorn accession



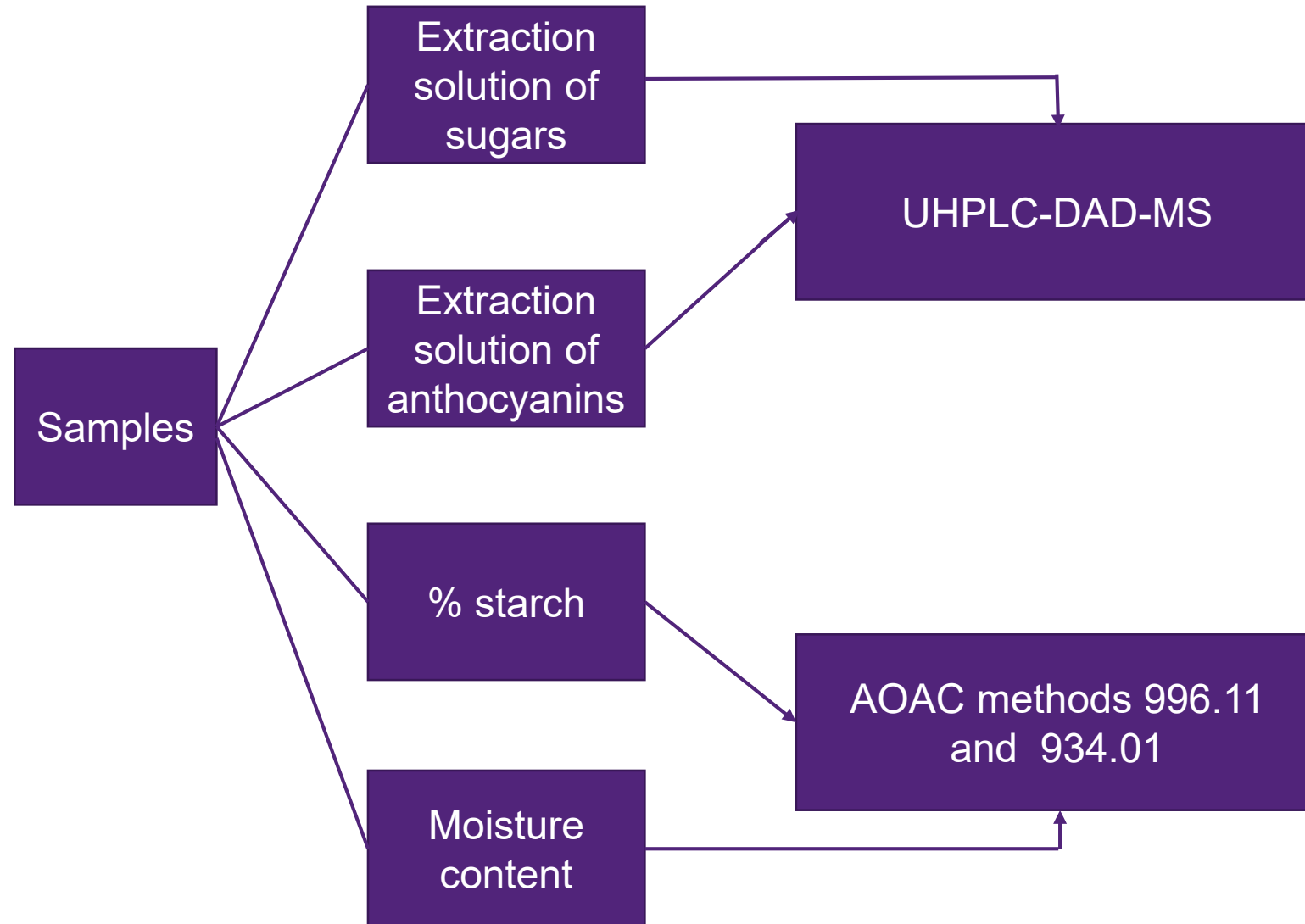
Figure 4: the new development of reddish-purple sweetcorn accession (eating stage) with inclusion of an active anthocyanin biosynthesis pathway in white sweetcorn and its mature cobs

Materials and methods



Cobs were stored at 2 temperatures (4 & 23 °C), 5 withdrawal times (0-14 days), assessment of: anthocyanin, sugar, starch, moisture content

Materials and methods



Results: The effect of storage time and temperature on anthocyanin content

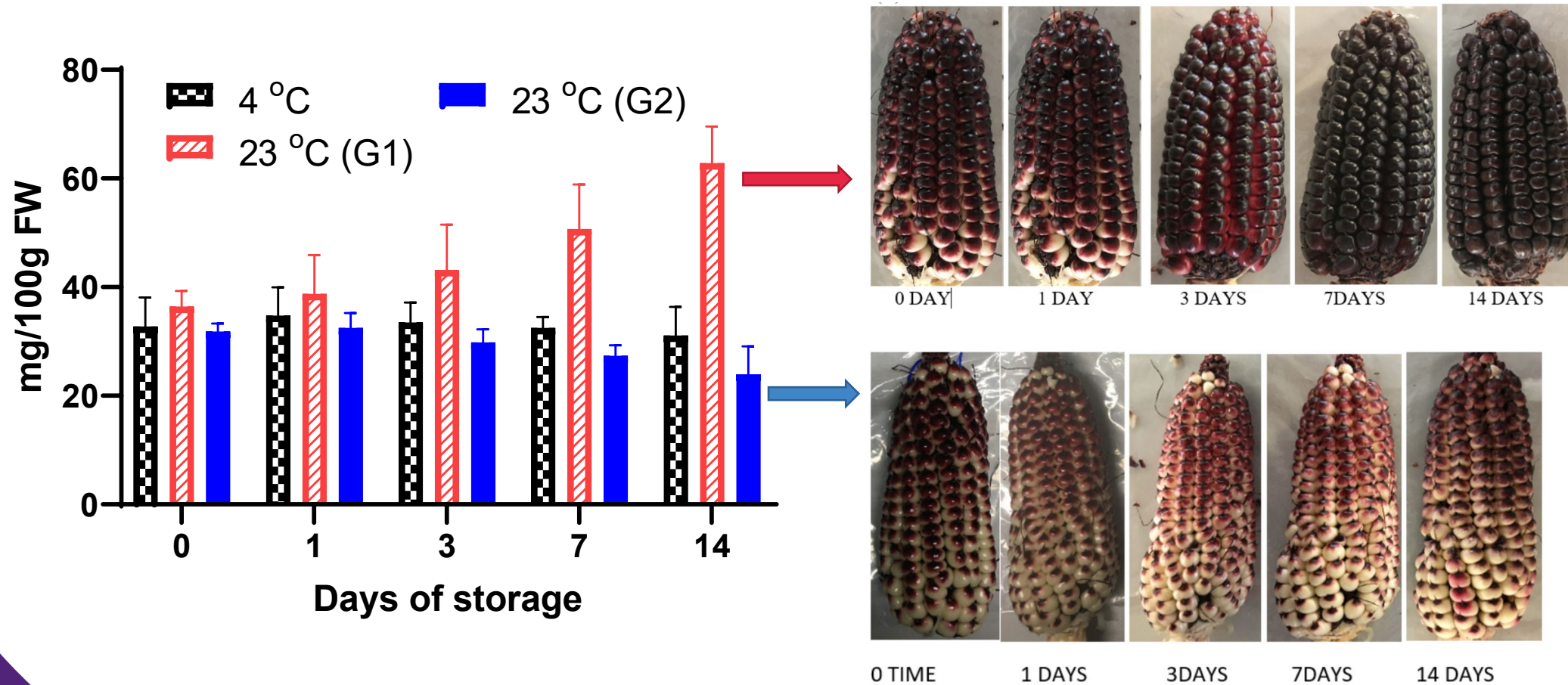


Figure 5. Total anthocyanin concentrations of reddish-purple sweetcorn (26 DAP) during 14 days storage at 23 °C and 4 °C

Results

The effect of storage time and temperature on sugar content

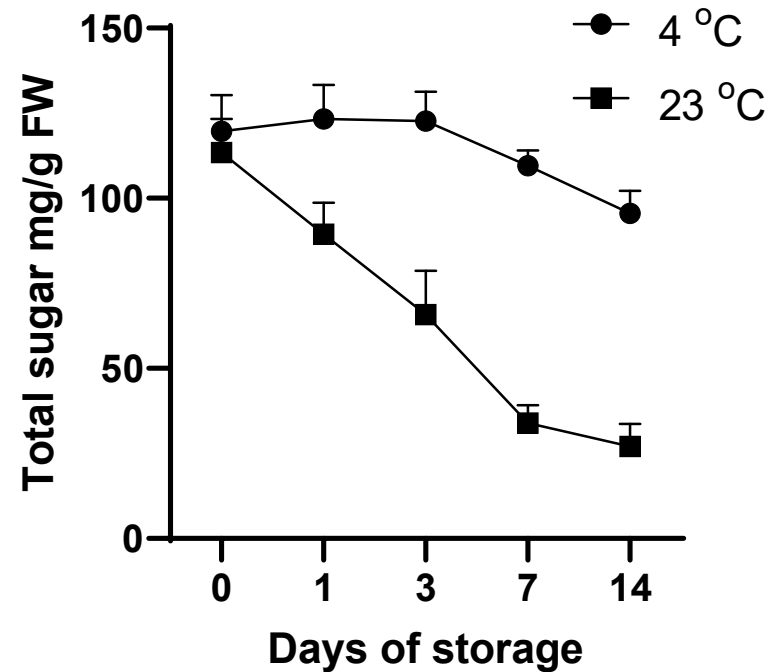


Figure 6. Total sugar content of reddish-purple sweetcorn (26 DAP) during 14-day storage at 23 °C and 4 °C (n=3).

Results

The effect of storage time and temperature on starch content

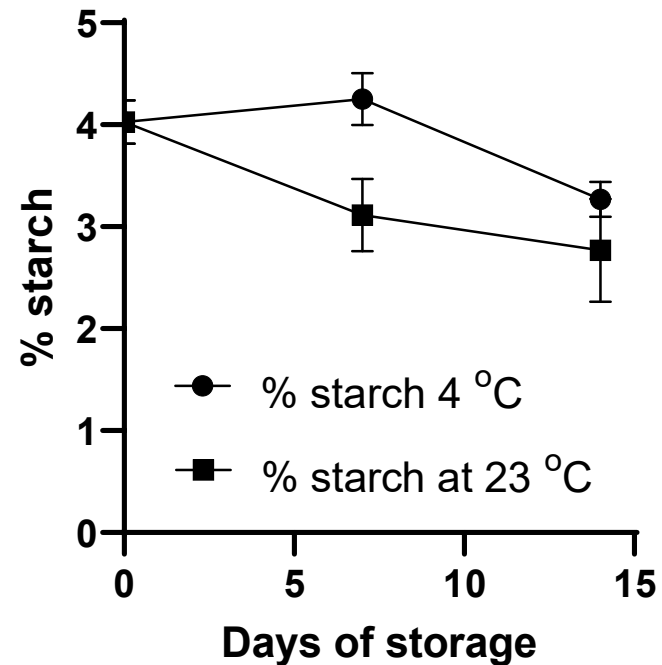


Figure 6. Total starch content of reddish-purple sweetcorn (26 DAP) during 14-day storage at 23 °C and 4 °C (n=3).

Results

The effect of storage time and temperature on moisture content

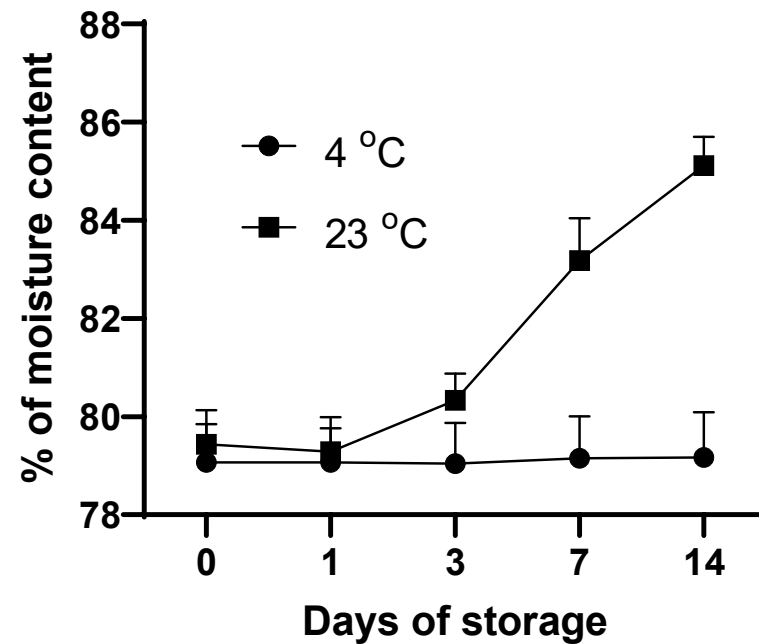


Figure 7. Total moisture content of reddish-purple sweetcorn (26 DAP) during 14-day storage at 23 °C and 4 °C (n=3).

4. Conclusion

1. Storage of reddish-purple sweetcorn for 14 days at 23°C significantly increased ($P < 0.05$) kernel anthocyanin concentration in half of the cobs from 36.4 mg/100g at day 0 to 62.8 mg/100g FW, and concurrently decreased sugar from 116.6 mg/g to 27.0 mg/g FW, while anthocyanin content in half of the cobs went down from 31.9 mg/100g FW to 23.9 mg/100g FW.
2. No significant change in anthocyanin was observed, and the rate of decline in sugar concentration was significantly reduced, declining 20% after 14 days at 4°C.
3. Storage temperature was also observed to significantly affect total starch, moisture content.

Thank You!



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