Hermida-Carrera, C, Kapralov, MV and Galmés, J

Rubisco catalytic properties and temperature response in crops.

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Figure 2. Simulated CO$_2$ assimilation potential of Rubisco ($A_{Rubisco}$) for the C$_3$ and C$_4$ species at 15 ºC, 25 ºC and 35 ºC and at values for the chloroplastic CO$_2$ concentration ($C_c$) of (A) 250 μbar and (B) 150 μbar. Equations used to calculate $A_{Rubisco}$ were those described in the biochemical model of C$_3$ photosynthesis (Farquhar et al. 1980), as explained in Materials and Methods. The bars represent the minimum value of $A_c$- and $A_j$-limited $A_{Rubisco}$. Asterisks (*) above the bars indicate $A_c$-limited $A_{Rubisco}$ (absence of * indicate $A_j$-limited $A_{Rubisco}$). The rate of electron transport was considered 60, 150 and 212 μmol m$^{-2}$ s$^{-1}$ at 15 ºC, 25 ºC and 35 ºC, respectively. The concentration of active Rubisco sites was assumed invariable at 25 μmol m$^{-2}$ for all the species and environmental conditions. The values used for the Rubisco kinetic parameters ($k_{cat}$, $I^*$ and $K_c^{air}$) are those shown in Tables 1 and S1.
Rubisco (mol m$^{-2}$ s$^{-1}$)

$A_{\text{Rubisco}}$ (μmol m$^{-2}$ s$^{-1}$) for various plants at different temperatures:

- **A**
  - 15 °C
  - 25 °C
  - 35 °C

- **B**
  - 15 °C
  - 25 °C
  - 35 °C