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Supplementary material for

Stratospheric aerosol climate intervention could reduce crop nutritional value

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Table of Contents

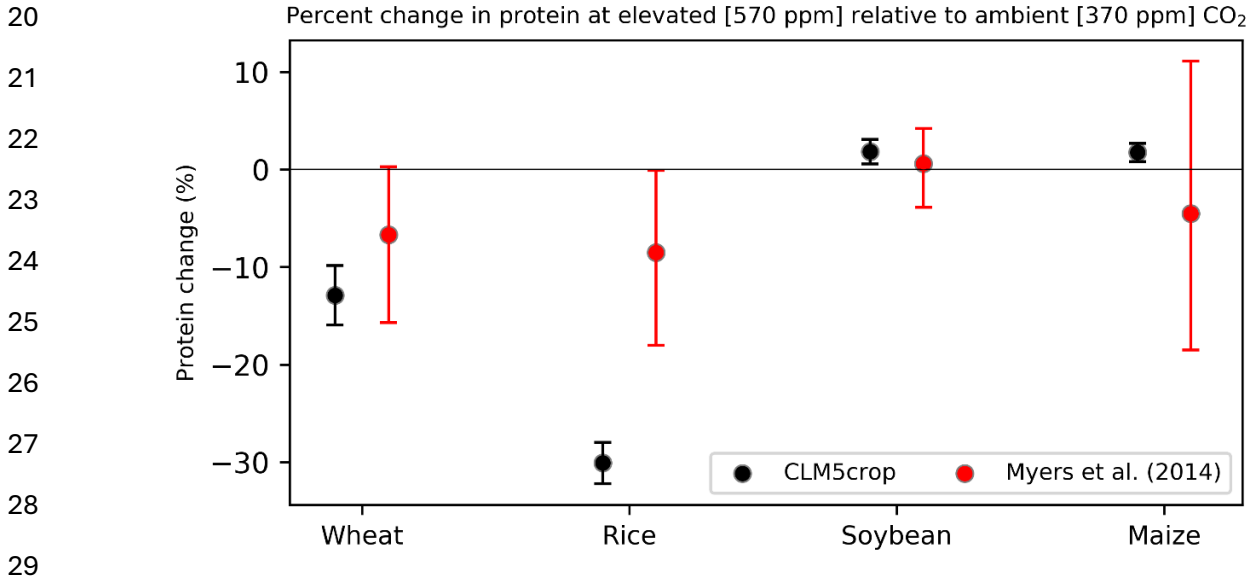
15 **Supplementary Fig 1.** CLMcrop evaluation of elevated CO₂ on crop protein.

16 **Supplementary Fig 2.** CLMcrop evaluation of elevated temperature on crop protein.

17 **Supplementary Fig 3.** Same as Figure 2, but for LPJ-GUESS

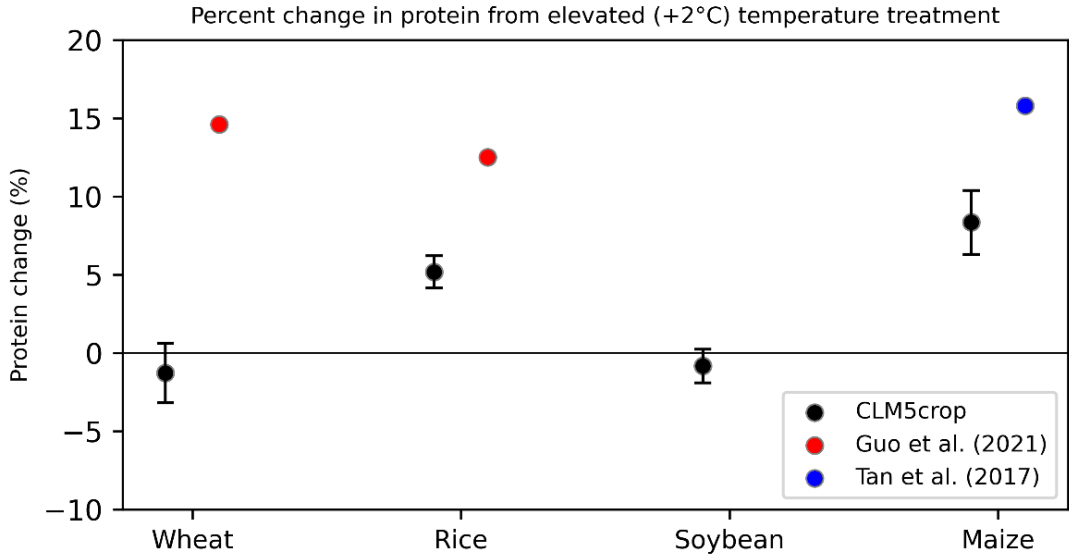
18 **Supplementary Fig 4.** Same as Figure 2, but for pDSSAT

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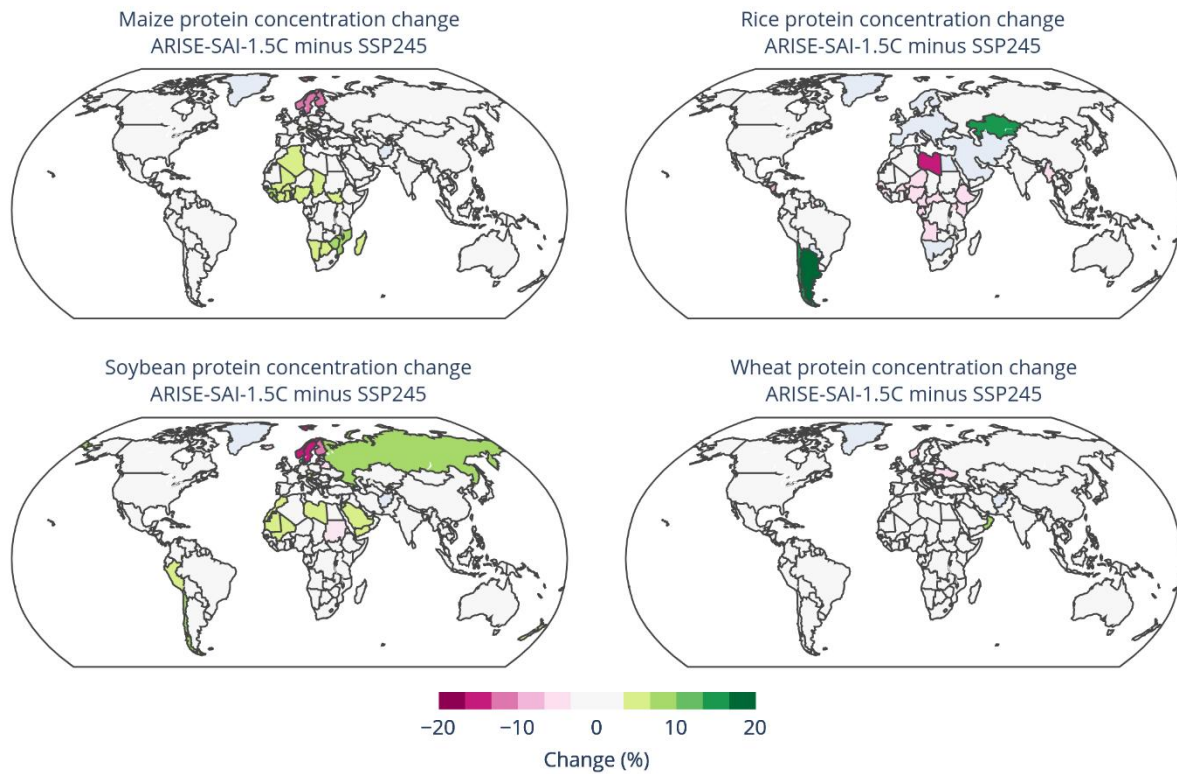


30 **Supplementary Fig. 1** | Relative protein concentration changes from the isolated effect of elevated
 31 CO₂ in CLMcrop for wheat (masked over Australia), rice (masked over Japan), soybean (masked
 32 over United States), and maize (masked over United States). Masked locations follow Myers et al.
 33 (2014). Atmosphere forcing for CLMcrop was from years 2016-2020 of SSP2-4.5 CESM2 output
 34 for both the elevated and ambient scenarios. Error bars for CLMcrop represent the standard
 35 deviation of interannual protein changes for each crop during this 5-year period. Myers et al.
 36 (2014) values represent the mean protein change across cultivars, with error bars representing the
 37 95% confidence interval range across cultivars.

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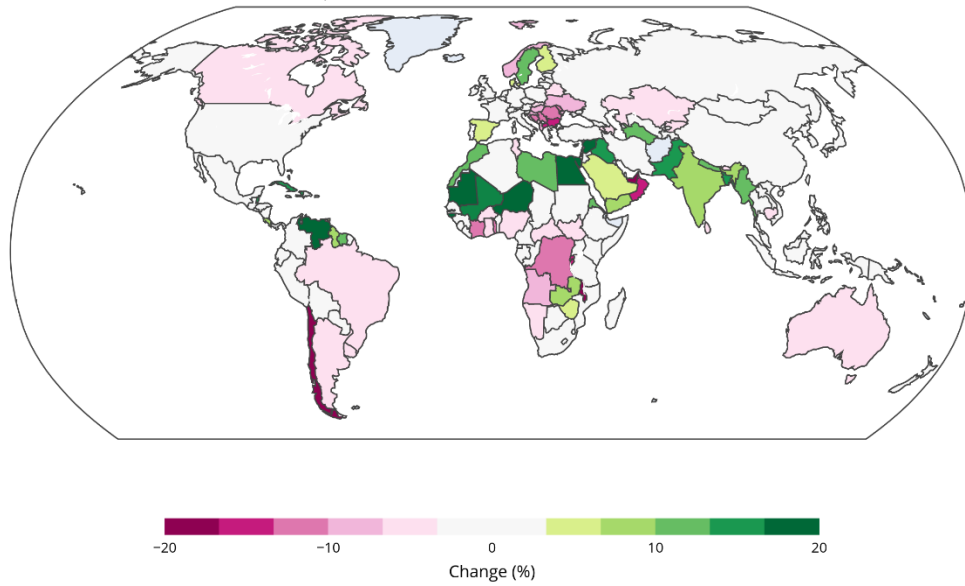


Supplementary Fig. 2 | Relative protein concentration changes from the isolated effect of increasing temperature by 2°C for wheat, rice, soybean, and maize. Atmosphere forcing for CLMcrop was from years 2016-2025 of SSP2-4.5 CESM2 output, with the elevated temperature simulation adding a uniform 2°C to surface temperature inputs at each grid cell and time step. Results for CLMcrop are global averages. Error bars for CLMcrop represent the standard deviation of interannual protein changes for each crop during this 10-year period.



56
 57 **Supplementary Fig. 3** | Maps of percent change to crop protein concentration for individual
 58 nations under ARISE-SAI-1.5C relative to SSP2-4.5 during the years 2060-2069 as simulated by
 59 LPJ-GUESS.
 60

Maize protein concentration change
pDSSAT ARISE-SAI-1.5C minus SSP245



61
62 **Supplementary Fig. 4** | Maps of percent change to maize protein concentration for individual
63 nations under ARISE-SAI-1.5C relative to SSP2-4.5 during the years 2060-2069 as simulated by
64 pDSSAT.

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