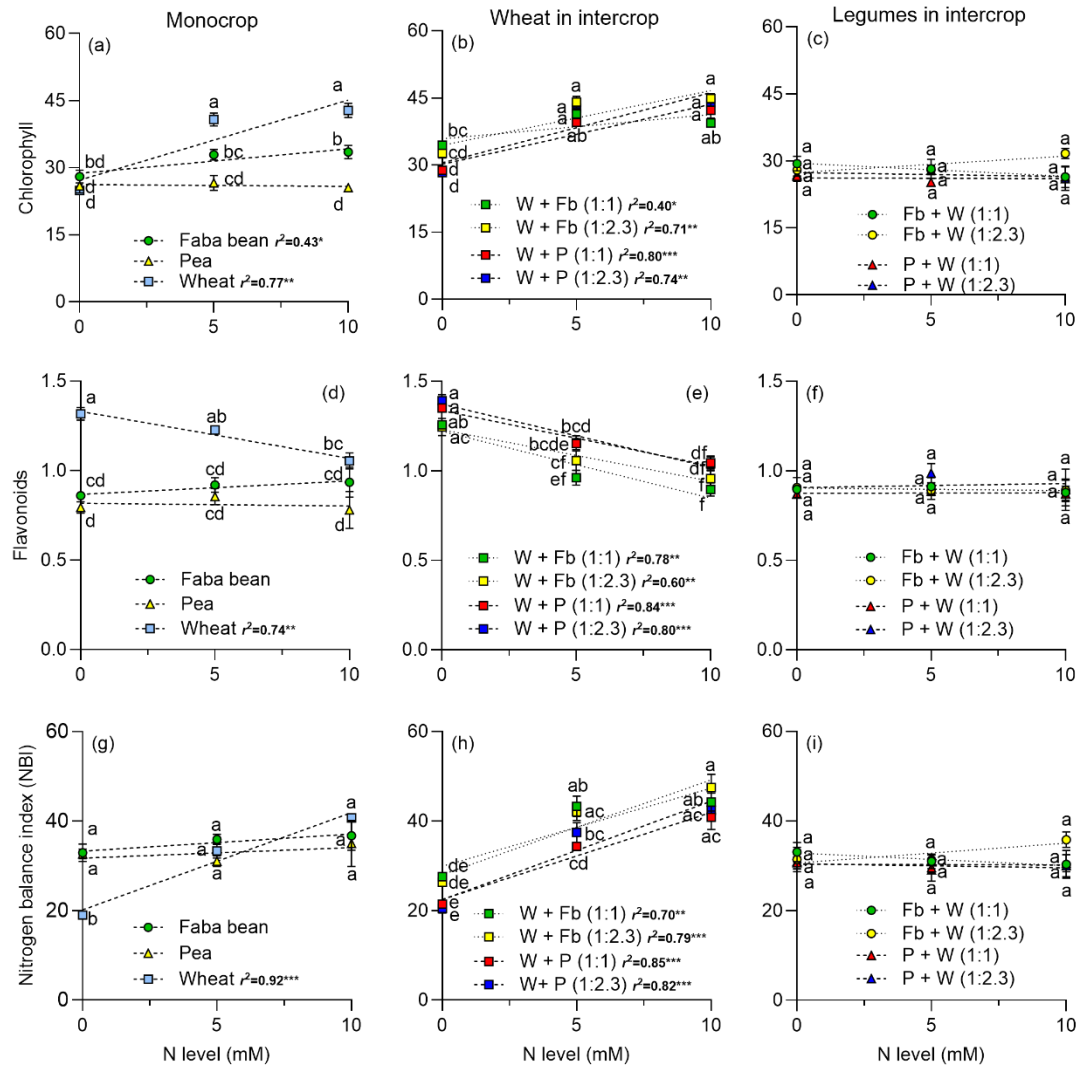
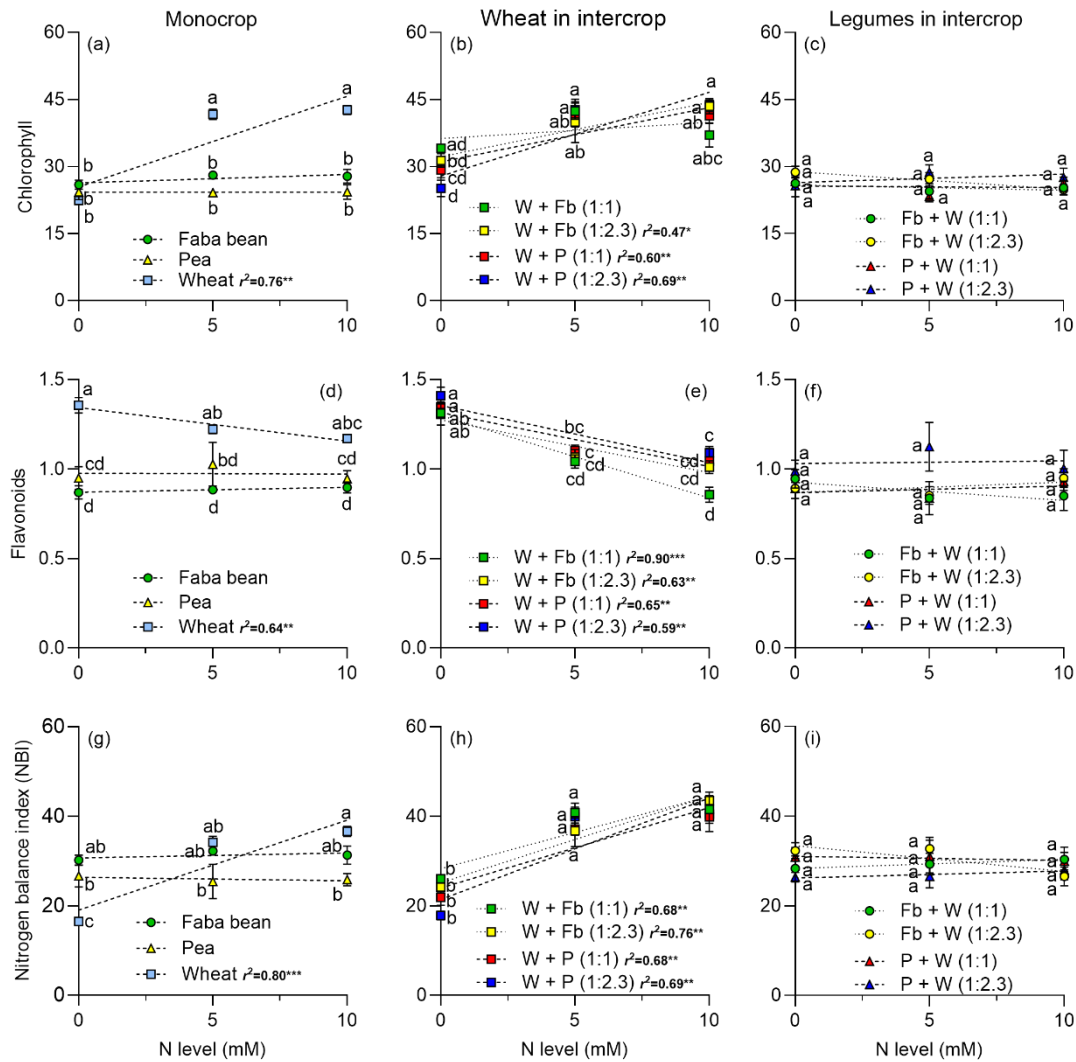


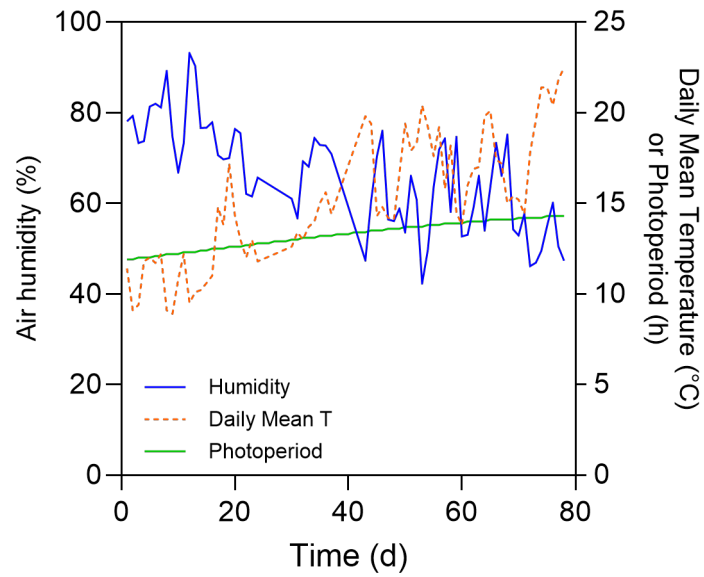
## Supplementary materials



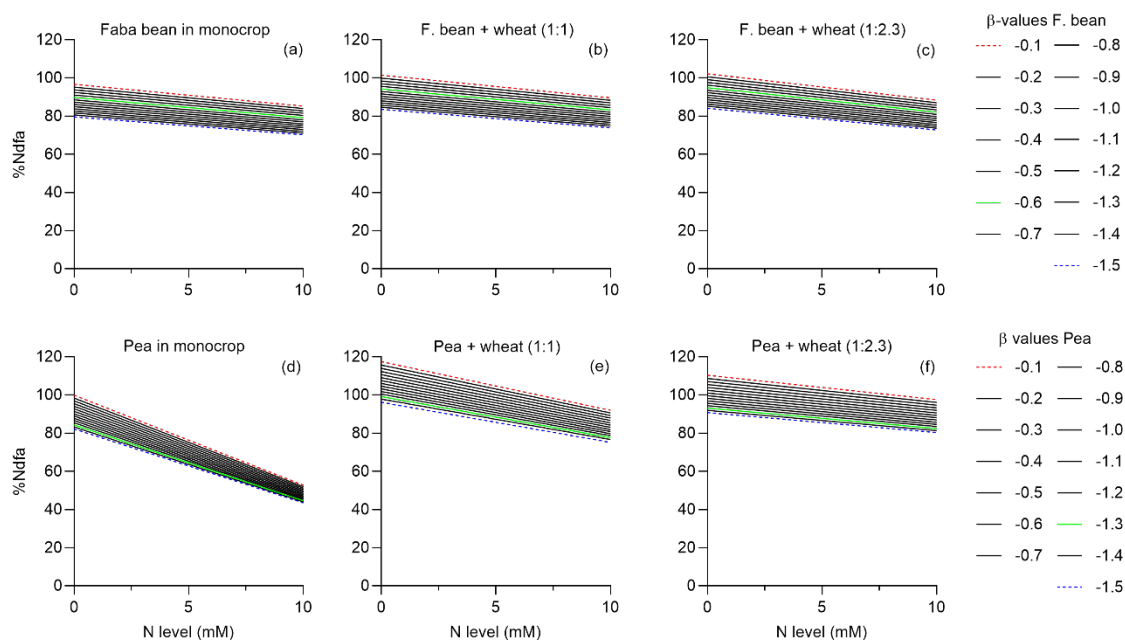
**Figure S1.** Responses of leaf chlorophyll (a–c), flavonoids (d–f), and nitrogen balance index (NBI) (g–i) at 66 DAS to N level in faba beans, peas, and wheat grown in monocrop and intercropped at two plant densities: 1:1 and 1:2.3, respectively. N levels were zero (N available in the soil), 5, and 10 mM applied in the form of  $\text{NH}_4\text{NO}_3$ . Symbols represent the mean and bars the standard error ( $n = 4$  for each N level).  $r^2$  is the coefficient of determination for linear regressions and asterisks indicate statistical significance at  $p$ -values: \* < 0.05, \*\* < 0.001, and \*\*\* < 0.0001, respectively. Small letters indicate differences between treatments according to two-way ANOVA and Tukey tests ( $p < 0.05$ ).



**Figure S2.** Responses of leaf chlorophyll (a–c), flavonoids (d–f), and the nitrogen balance index (NBI) (g–i) at 74 DAS to N level in faba beans, peas, and wheat grown in monocrop and intercropped at two plant densities: 1:1 and 1:2.3, respectively. N levels were zero (N available in the soil), 5, and 10 mM applied in the form of  $\text{NH}_4\text{NO}_3$ . Symbols represent the mean and bars the standard error ( $n = 4$  for each N level).  $r^2$  is the coefficient of determination for linear regressions and asterisks indicate statistical significance at  $p$ -values: \* < 0.05, \*\* < 0.001, and \*\*\* < 0.0001, respectively. Small letters indicate differences between treatments according to two-way ANOVA and Tukey tests ( $p < 0.05$ ).



**Figure S3.** Daily mean air temperature, air humidity, and hours of daylight (photoperiod [P]) during the growth period of faba beans, peas, and wheat grown in monocrop and intercropped at two plant densities: 1:1 and 1:2.3, respectively. Plants were grown during the springtime in the southern hemisphere (September to November 2021).



**Figure S4.** Sensitivity analysis for  $\beta$  values for *V. faba* (a–c) and *P. sativum* (d–f) in monocrop and intercropped with *T. aestivum* at two plant densities (1:1 and 1:2.3) and three N levels, respectively. N levels were zero (N available in the soil), 5, and 10 mM applied in the form of  $\text{NH}_4\text{NO}_3$ . A range of  $\beta$  values were tested as recorded in the literature. The  $\beta$  values resulted in an average of  $-0.49$  and  $-0.61$ , for peas and faba beans, respectively. In the case of faba beans, the  $\beta$  value proposed by the literature correctly fitted the linear regression (the green line in Figure S4a, b, and c), since it never exceeded 100% of %Ndfa. However, the  $\beta$  value used for the peas did not fit well, thus a range of  $\beta$  values were analyzed in a sensitivity analysis and the one that best fitted the linear regression was  $\beta = -1.3$  (the green line in Figure S4d, e, and f). Independently of the  $\beta$  value used, it was observed that the %Ndfa decreases as N increases.