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Supplementary Material

Subsoil testing required to detect the rundown of soil potassium to deficient levels for wheat production on loam-textured soils

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Supplementary material.

Table S1: Correlation matrix for Colwell K measured at the different depths for the eight field trials. Values shown are the Pearson correlation coefficient.

	0-10	10-20	20-30	30-40	40-50
0-10	1	0.91	0.83	0.65	0.62
10-20	0.91	1	0.94	0.79	0.79
20-30	0.83	0.94	1	0.82	0.85
30-40	0.65	0.79	0.82	1	0.93
40-50	0.62	0.79	0.85	0.93	1

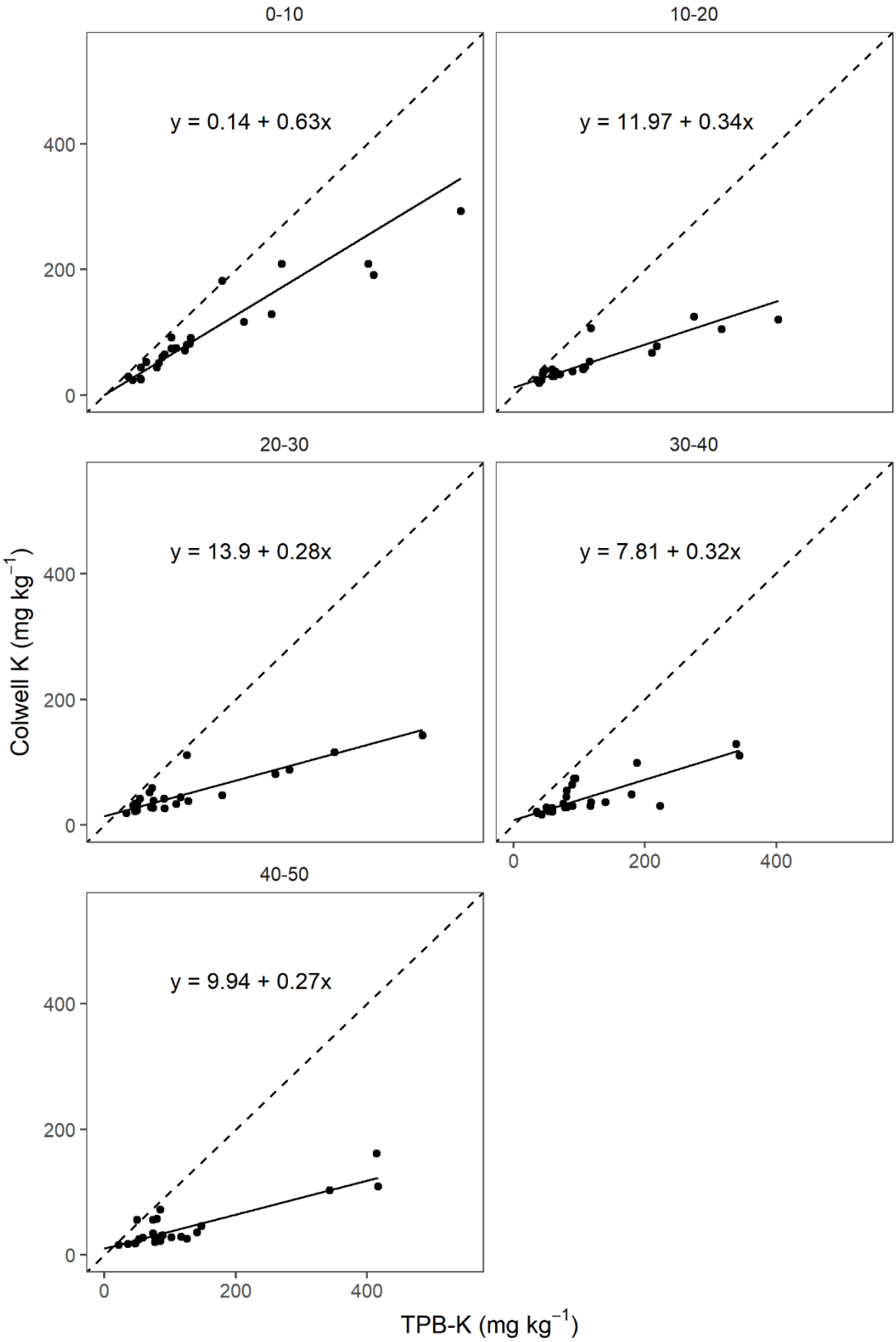

Fig. S1: Relationship between Colwell K and sodium tetraphenylboron K (TPB-K) for the field trials. Dashed line is 1:1. Solid line and equations shown are from Deming regression.

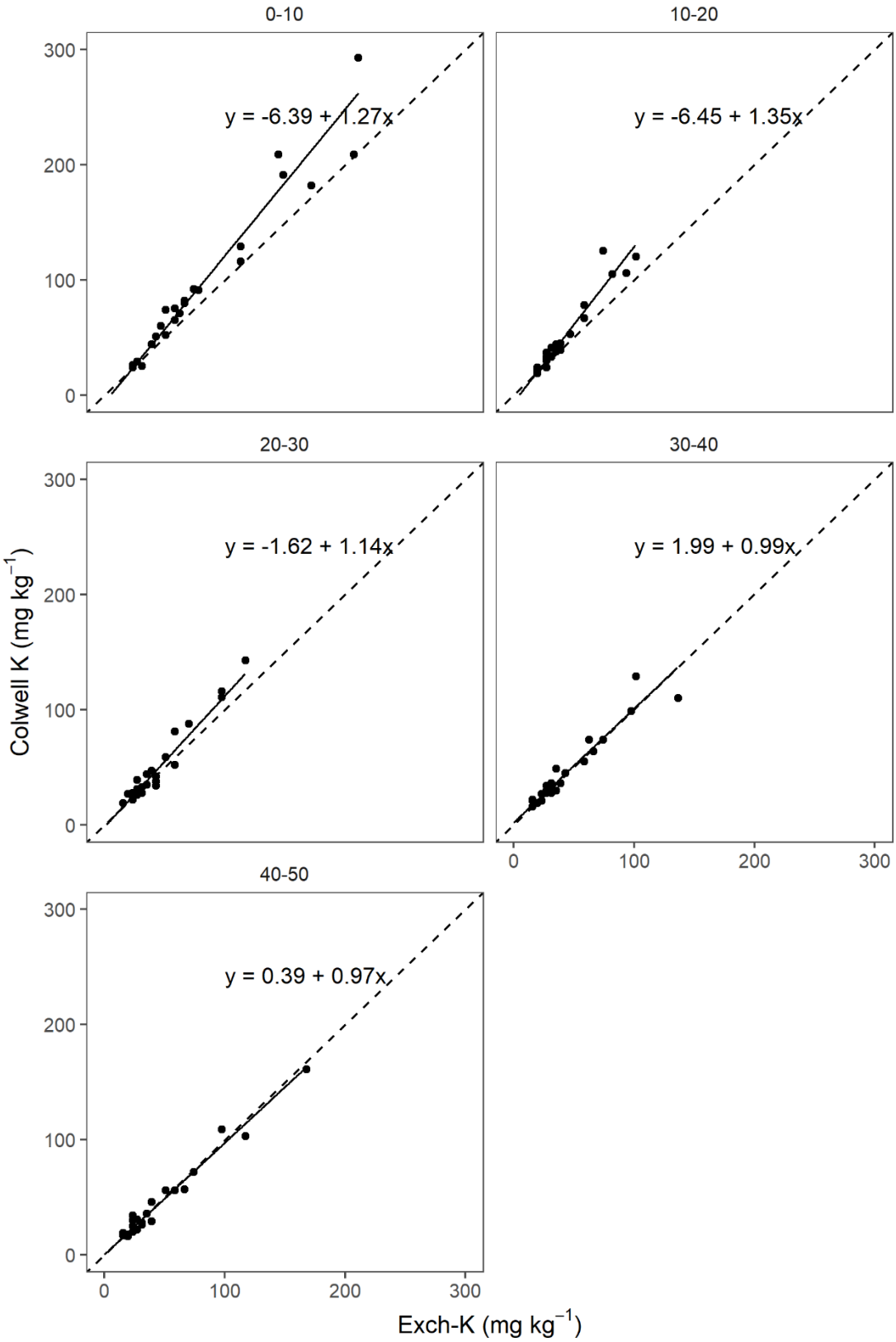

Fig. S2: Relationship between Colwell K and ammonium chloride and barium chloride exchangeable K (Exch-K) for the field trials. Dashed line is 1:1. Solid line and equations shown are from Deming regression.

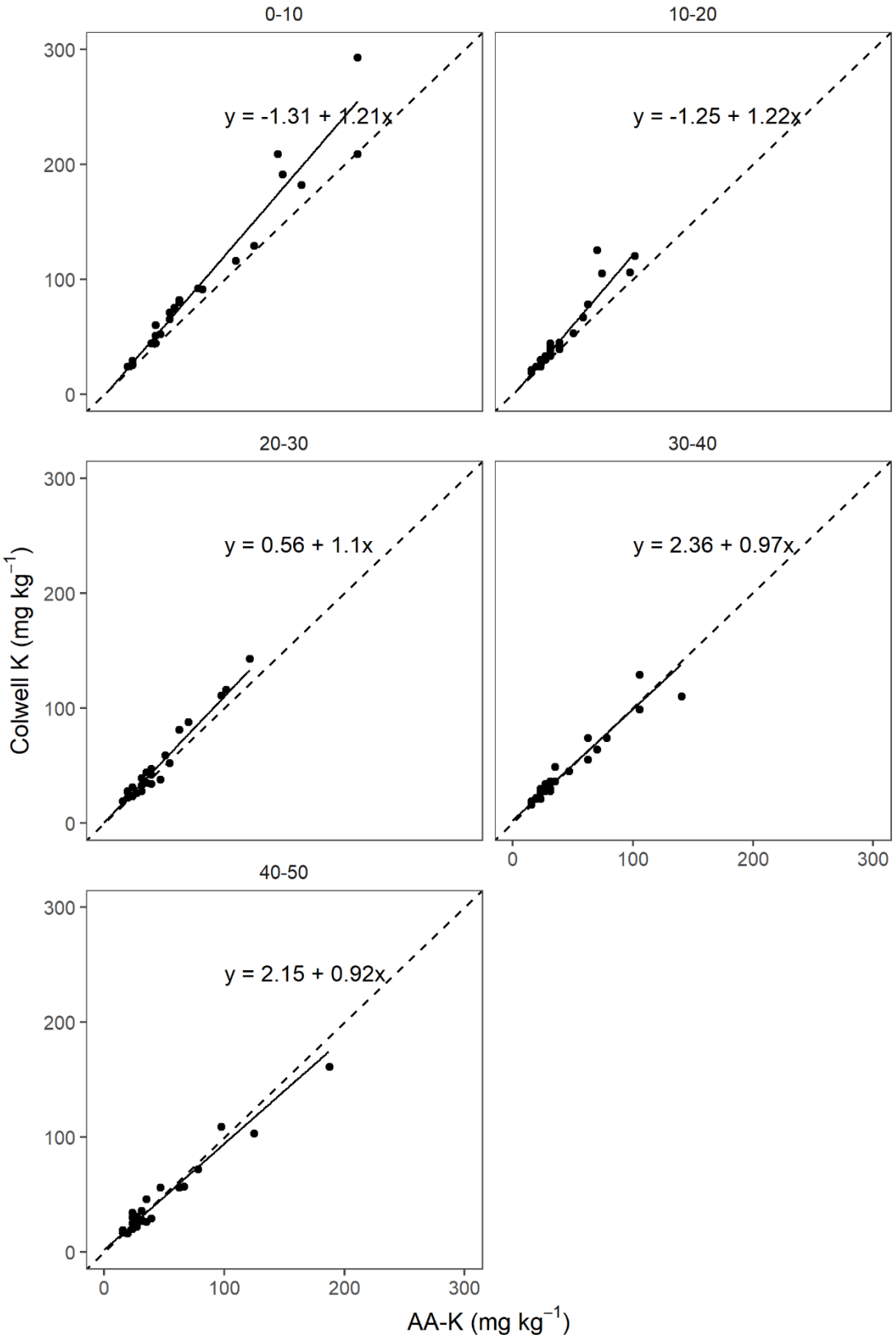

Fig. S3: Relationship between Colwell K and ammonium acetate exchangeable K (AA-K) for the field trials. Dashed line is 1:1. Solid line and equations shown are from Deming regression.

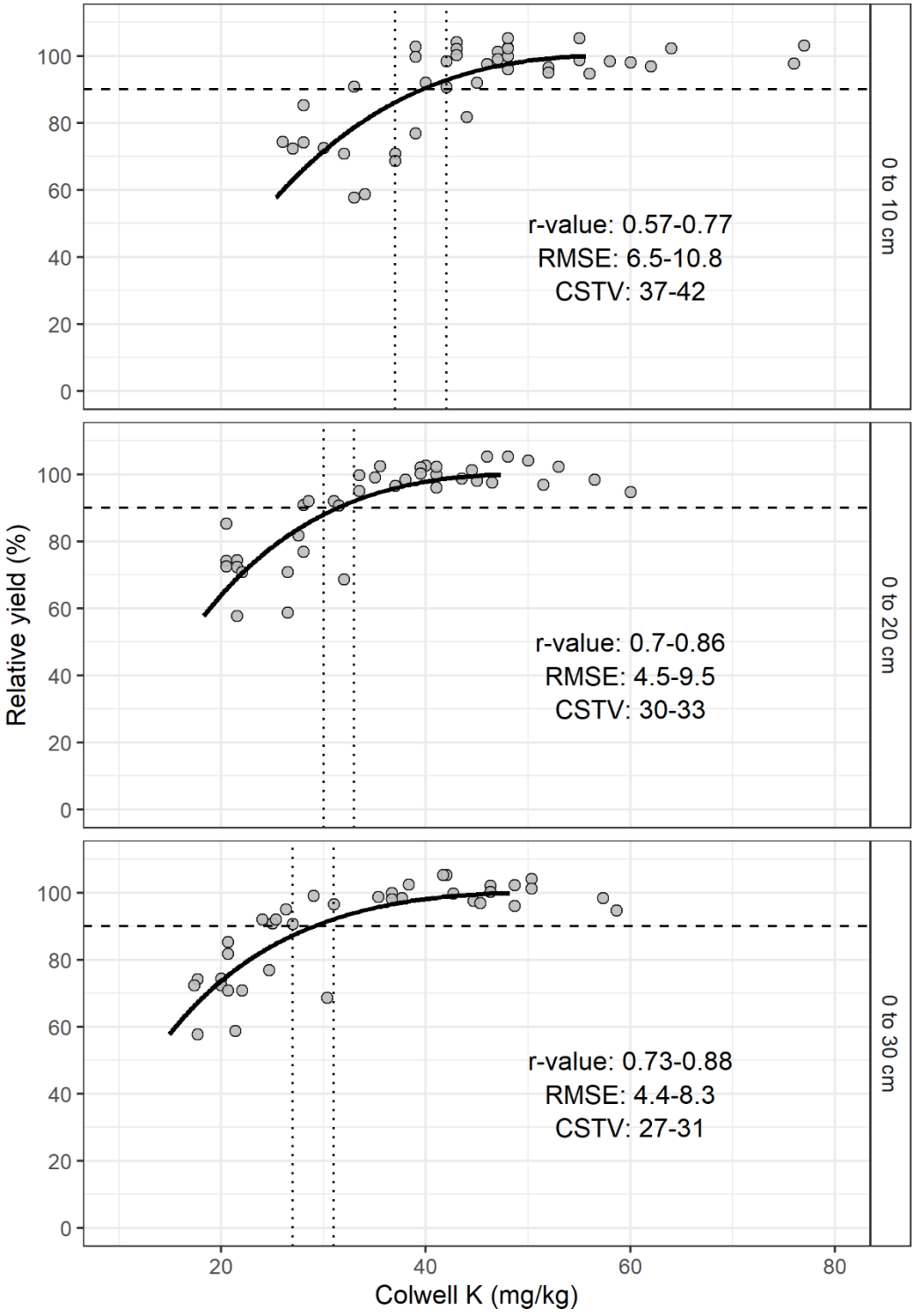

Fig. S4. Soil test calibration curves for canola grain yield data presented in Table 1, Brennan and Bolland (2006). The calibration curves shown are for mean Colwell K values at 0-10, 0-20 and 0-30 cm. The calibration curves were done with the arcsine-log calibration curve method using the soiltestcorr package (Correndo *et al.* 2023). Data points where Colwell K was greater than 2 x the critical soil test value (CSTV) in the initial analysis were excluded from the final model (Dyson and Conyers 2013; Correndo *et al.* 2017). The 90% confidence intervals (CI) for r-value (correlation of the transformed Colwell K and relative yield data), root mean square error (RMSE) and CSTV were

obtained from bootstrap samples (n=1000). Dashed vertical lines are the 90% CI for CSTV. Dashed horizontal line is 90% RY.

References

Brennan, RF, Bolland, MDA (2006) Soil and tissue tests to predict the potassium requirements of canola in south-western Australia. *Australian Journal of Experimental Agriculture* **46**, 675-679.

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