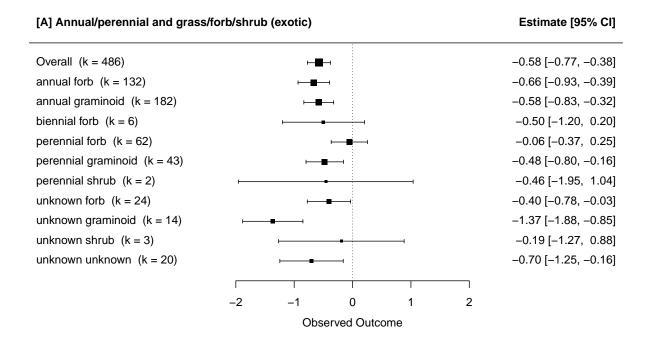
Supplemental materials

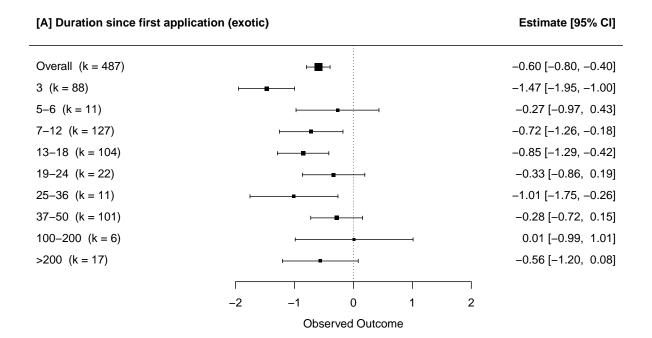
Supplemental Figures S1-12 and Table S3 for Ossanna & Gornish (2022), "Efficacy of labile carbon addition to reduce exotic invasive plants: A review and meta-analysis"



[B] Annual/perennial and grass/forb/shrub (native) Estimate [95% CI] Overall (k = 655)-0.07 [-0.19, 0.04] annual forb (k = 30)-0.23 [-0.50, 0.03] annual graminoid (k = 4)-0.50 [-1.10, 0.09] annual unknown (k = 3)-1.05 [-1.72, -0.38] biennial forb (k = 4)-0.19 [-0.89, 0.51] perennial forb (k = 141)0.09 [-0.08, 0.26] perennial graminoid (k = 340) -0.05 [-0.18, 0.09] perennial shrub (k = 39)-0.12 [-0.36, 0.13] perennial subshrub (k = 6)-0.29 [-0.74, 0.16] perennial unknown (k = 51) -0.07 [-0.32, 0.18] unknown forb (k = 14)-0.43[-0.78, -0.07]unknown graminoid (k = 11) -0.04 [-0.44, 0.36] unknown shrub (k = 3)1.35 [0.47, 2.22] unknown unknown (k = 9)-0.09 [-0.61, 0.44] -2 2 3 **Observed Outcome**

Figure S1. Standardized mean Hedges' q effect size \pm 95% confidence interval (CI) for exotic (A) and

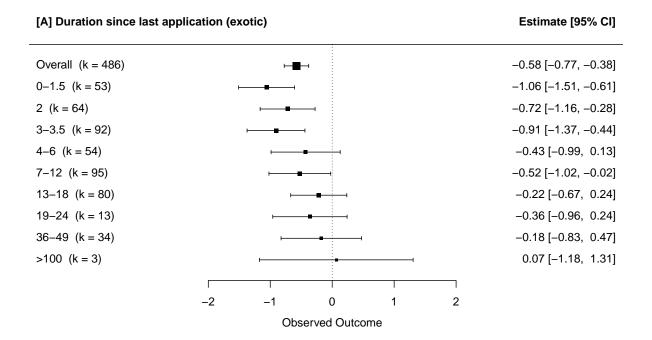
native plant abundance (B) in response to C addition, categorized by plant lifeform and duration (annual/perennial and grass/forb/shrub), with number of comparisons k. CIs that do not overlap zero are considered significant.



[B] Duration since first application (native) Estimate [95% CI] Overall (k = 655)-0.07 [-0.19, 0.04] 3 (k = 5)0.10 [-0.59, 0.78] 5-6 (k = 5)-0.53 [-1.11, 0.04] 7-12 (k = 67)0.12 [-0.24, 0.48] 13-18 (k = 99)-0.27 [-0.58, 0.03] 19-24 (k = 67)0.29 [-0.06, 0.64] 25-36 (k = 73)-0.19 [-0.47, 0.08] 37-50 (k = 143)0.00 [-0.26, 0.26] 100-200 (k = 9)0.06 [-0.75, 0.88] >200 (k = 187)-0.21 [-0.43, 0.01] -1.5 -0.50.5 **Observed Outcome**

Figure S2. Standardized mean Hedges' g effect size \pm 95% confidence interval (CI) for exotic (A) and native plant abundance (B) in response to C addition, categorized by study duration (months from first C

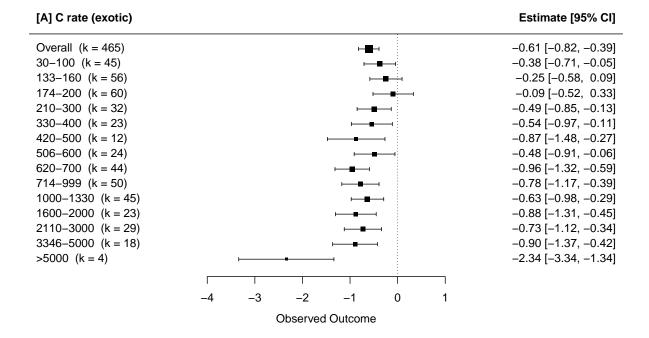
application to when first plant measurements taken). CIs that do not overlap zero are considered significant.



[B] Duration since last application (native) Estimate [95% CI] Overall (k = 655)-0.07 [-0.19, 0.04] 0-1.5 (k = 127) -0.40 [-0.65, -0.16] 2 (k = 78)0.14 [-0.15, 0.42] 3-3.5 (k = 10) -0.06 [-0.54, 0.41] -0.40 [-0.73, -0.08] 4-6 (k = 35)7-12 (k = 14)-0.19 [-0.57, 0.19] 13-18 (k = 294)-0.01 [-0.23, 0.21] 19-24 (k = 64)0.33 [-0.04, 0.70] 36-49 (k = 20)0.22 [-0.24, 0.68] >100 (k = 13)0.17 [-0.45, 0.79] -1 -0.50 0.5 1

Figure S3. Standardized mean Hedges' g effect size $\pm 95\%$ confidence interval (CI) for exotic (A) and native plant abundance (B) in response to C addition, categorized by study duration (months from first C application to when last plant measurements taken), with number of comparisons k. CIs that do not overlap zero are considered significant.

Observed Outcome



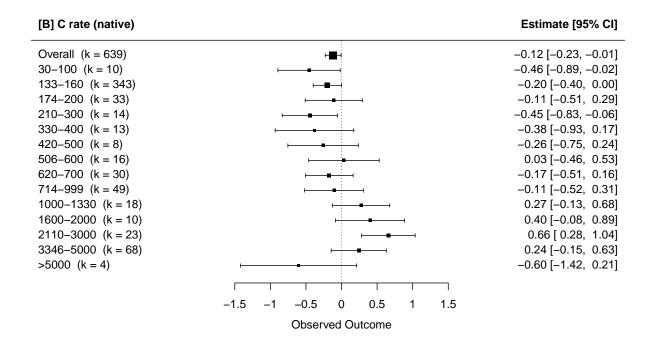
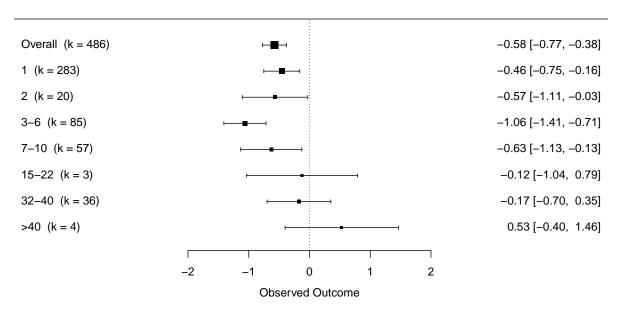


Figure S4. Standardized mean Hedges' g effect size $\pm 95\%$ confidence interval (CI) for exotic (A) and native plant abundance (B) in response to C addition, categorized by C rate (g C m⁻² y⁻¹), with number of comparisons k. CIs that do not overlap zero are considered significant.

[A] C applications (exotic)

Estimate [95% CI]



[B] C applications (native)

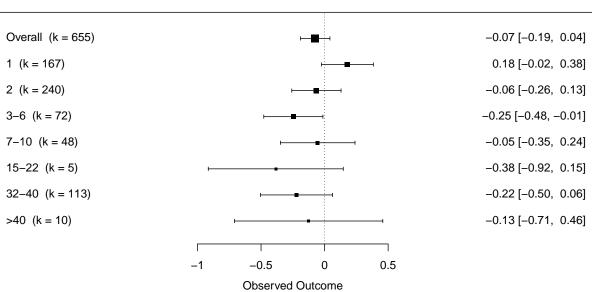
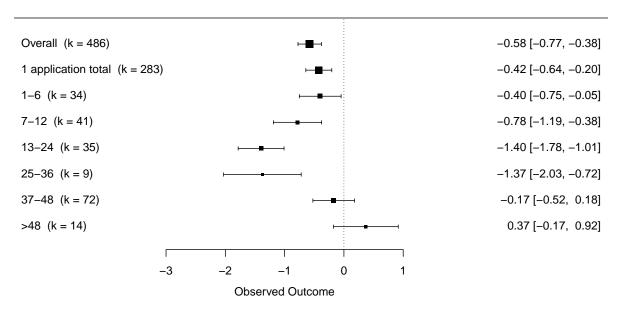


Figure S5. Standardized mean Hedges' g effect size $\pm 95\%$ confidence interval (CI) for exotic (A) and native plant abundance (B) in response to C addition, categorized by total number of C applications, with number of comparisons k. CIs that do not overlap zero are considered significant.

[A] Months applying C (exotic)

Estimate [95% CI]



[B] Months applying C (native)

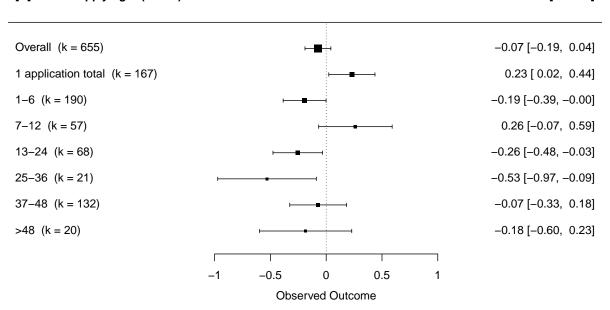
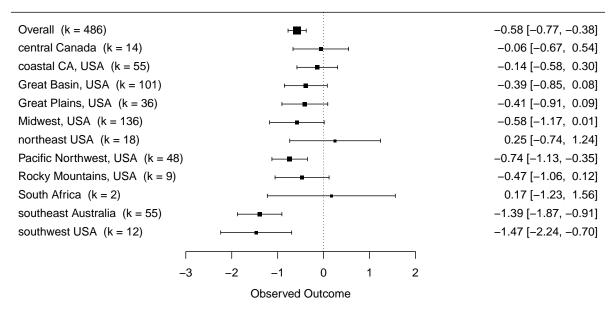


Figure S6. Standardized mean Hedges' g effect size $\pm 95\%$ confidence interval (CI) for exotic (A) and native plant abundance (B) in response to C addition, categorized by number of months applying C (takes into account reapplication and study duration), with number of comparisons k. CIs that do not overlap zero are considered significant.

[A] Region (exotic) Estimate [95% CI]



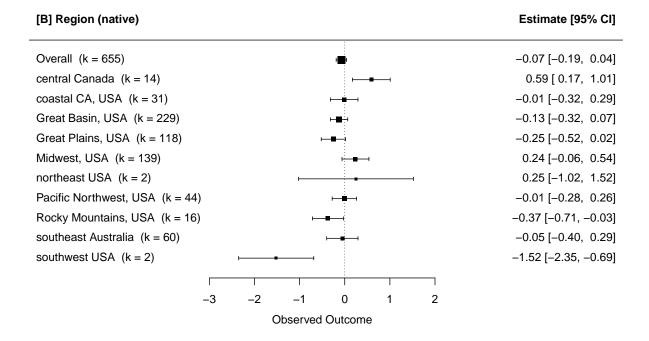
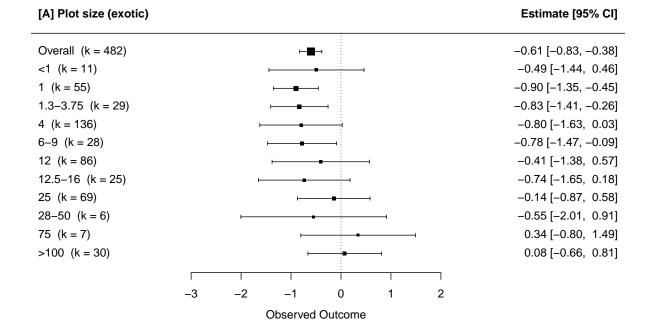


Figure S7. Standardized mean Hedges' g effect size \pm 95% confidence interval (CI) for exotic (A) and native plant abundance (B) in response to C addition, categorized by study region, with number of comparisons k. CIs that do not overlap zero are considered significant.



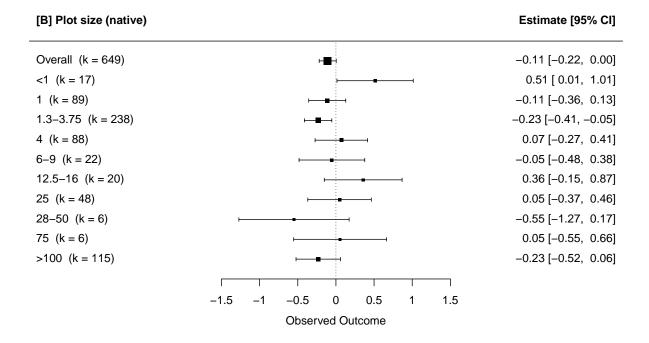
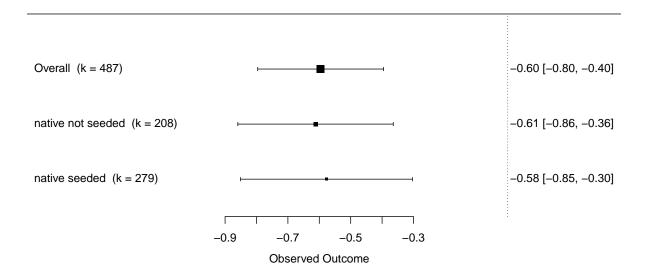


Figure S8. Standardized mean Hedges' g effect size \pm 95% confidence interval (CI) for exotic (A) and native plant abundance (B) in response to C addition, categorized by plot size (m²), with number of comparisons k. CIs that do not overlap zero are considered significant.

[A] Seeding of native (exotic)

Estimate [95% CI]



[B] Seeding of native (native)

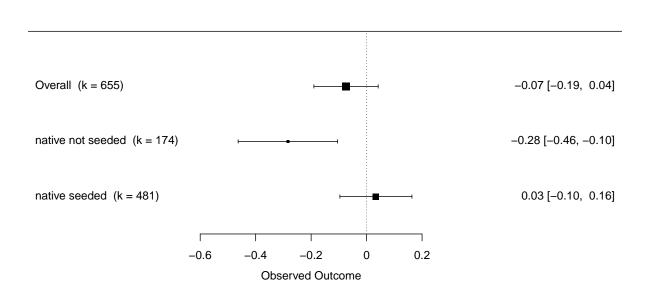
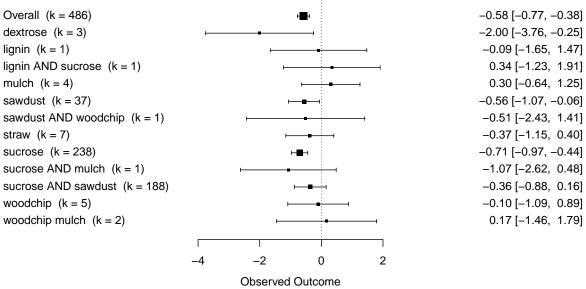


Figure S9. Standardized mean Hedges' g effect size \pm 95% confidence interval (CI) for exotic (A) and native plant abundance (B) in response to C addition, categorized by seeding of native plant species (seeded/not seeded), with number of comparisons k. CIs that do not overlap zero are considered significant.





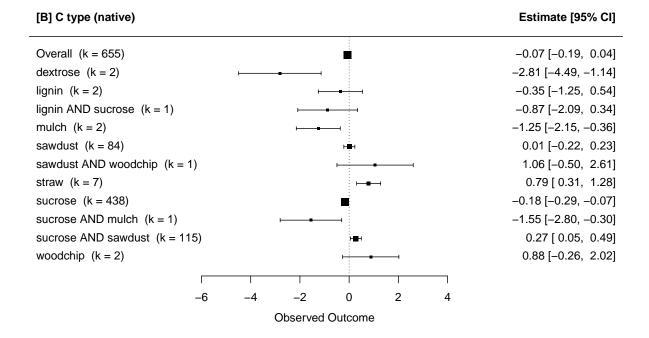
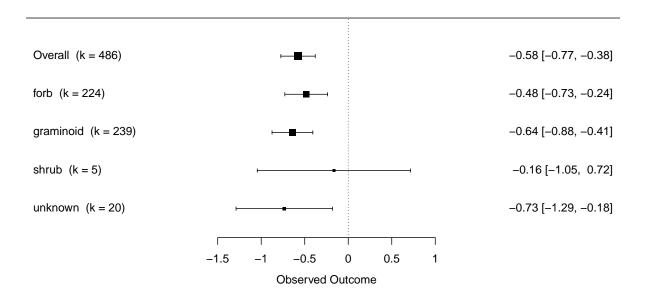


Figure S10. Standardized mean Hedges' g effect size \pm 95% confidence interval (CI) for exotic (A) and native plant abundance (B) in response to C addition, categorized by C type, with number of comparisons k. CIs that do not overlap zero are considered significant.

[A] Grass/forb/shrub (exotic)

Estimate [95% CI]

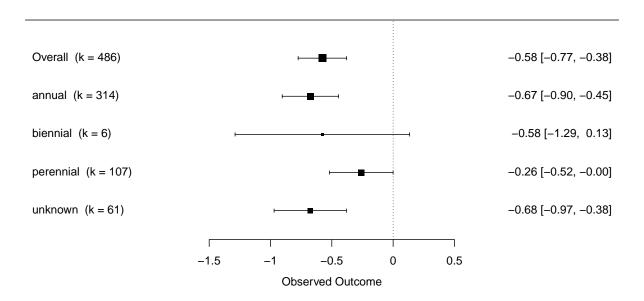


[B] Grass/forb/shrub (native) Estimate [95% CI] Overall (k = 655)-0.07 [-0.19, 0.04] forb (k = 189)-0.03 [-0.18, 0.13] graminoid (k = 355) -0.07 [-0.20, 0.06] shrub (k = 42)-0.02 [-0.26, 0.21] subshrub (k = 6)-0.27 [-0.71, 0.18] unknown (k = 63)-0.17 [-0.39, 0.05] -0.6-0.8 -0.4 -0.20.2 0.4 Observed Outcome

Figure S11. Standardized mean Hedges' g effect size \pm 95% confidence interval (CI) for exotic (A) and native plant abundance (B) in response to C addition, categorized by plant lifeform (grass/forb/shrub), with number of comparisons k. CIs that do not overlap zero are considered significant.

[A] Annual/perennial (exotic)

Estimate [95% CI]



[B] Annual/perennial (native)

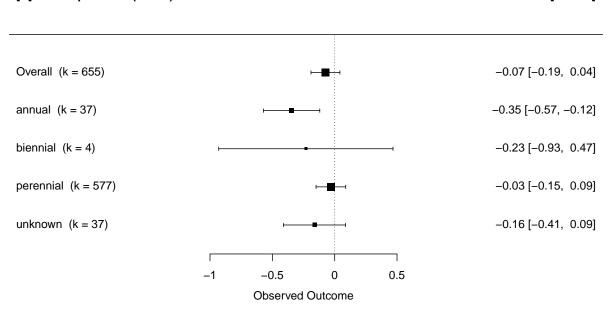


Figure S12. Standardized mean Hedges' g effect size \pm 95% confidence interval (CI) for exotic (A) and native plant abundance (B) in response to C addition, categorized by plant duration (annual/perennial), with number of comparisons k. CIs that do not overlap zero are considered significant.

Table S3. Heterogeneity statistics

Model	QE	QE_df	QE_p	QM	QM_df	QM_p	QM_QT
Summary							
Exotic	1013.0	485	0.0e + 00	32.680	1	0.0000000	0.031260
Native	925.8	654	0.0e+00	1.573	1	0.2097000	0.001697
Region							
Exotic	871.4	485	0.0e + 00	71.990	11	0.0000000	0.076320
Native	841.8	654	3.0e-07	32.480	10	0.0003331	0.037150
Duration since first C app							
Exotic	959.4	486	0.0e+00	60.610	9	0.0000000	0.059420
Native	884.8	654	0.0e + 00	13.620	9	0.1364000	0.015160
Duration since last C app							
Exotic	954.6	487	0.0e + 00	64.110	9	0.0000000	0.062940
Native	883.2	654	0.0e + 00	23.030	9	0.0061220	0.025420
C type							
Exotic	948.4	487	0.0e + 00	42.870	12	0.0000238	0.043240
Native	814.0	654	5.6e-06	56.400	11	0.0000000	0.064800
C rate							
Exotic	879.8	464	0.0e+00	72.930	14	0.0000000	0.076540
Native	799.4	638	2.6e-06	41.870	14	0.0001297	0.049770
Total C applications							
Exotic	956.7	487	0.0e+00	49.720	7	0.0000000	0.049400
Native	875.6	654	0.0e + 00	12.450	7	0.0867700	0.014020
Months applying C							
Exotic	890.9	487	0.0e + 00	98.500	7	0.0000000	0.099550
Native	866.5	654	0.0e + 00	19.860	7	0.0058790	0.022410
Grass/forb/shrub							
Exotic	1003.0	487	0.0e + 00	48.880	4	0.0000000	0.046450
Native	909.1	654	0.0e + 00	10.630	4	0.0310600	0.011560
Annual/perennial							
Exotic	1034.0	487	0.0e+00	33.070	4	0.0000012	0.030980
Native	918.8	654	0.0e + 00	4.090	5	0.5365000	0.004432
Annual/perennial and grass/forb/shrub							
Exotic	973.9	487	0.0e+00	68.770	10	0.0000000	0.065950
Native	881.2	654	0.0e + 00	37.230	13	0.0003817	0.040530
Plot size							
Exotic	937.3	481	0.0e+00	37.840	11	0.0000833	0.038800
Native	824.1	648	9.0e-07	18.570	10	0.0461400	0.022030
Seeding of native							
Exotic	1005.0	486	0.0e+00	33.420	2	0.0000001	0.032190
Native	894.7	654	0.0e+00	10.240	2	0.0059620	0.011320

QE, unexplained heterogeneity (dispersion); QE_df , corresponding degrees of freedom; QE_p , corresponding p-value; QM, heterogeneity explained by the model; QM_df , corresponding degrees of freedom; QM_p , corresponding p-value; QM/QT, proportion of observed (total) heterogeneity explained by the model.