Supplementary Materials: Short-term Belowground Responses to Thinning and Burning Treatments in Southwestern Ponderosa Pine Forests of the USA.

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Table S1. Stand and fuel characteristics at the Southwestern Plateau, Fire and Fire Surrogate study site. Treatment means (observed) are reported followed by standard errors in parentheses (n = 3). Size classes reported at diameter at breast height (DBH).

Properties	**Control**		**Fire only**		**Thinning only**		**Thinning plus fire**	
Stand	Pre	1 year	Pre	1 year	Pre	1 year	Pre	1 year
Tree density (trees ha^{-1})	655	654	600	562	563	189	440	140
	(144)	(149)	(164)	(164)	(124)	(24)	(88)	(18)
Size class (trees ha^{-1})								
(0–9.9 cm DBH)	66.3	66.3	66.7	35.7	48.7	20.3	35.7	3.3
	(56.9)	(56.9)	(43.4)	(18.9)	(22.4)	(17.9)	(17.2)	(1.8)
(10–19.9 cm DBH)	395.7	388.0	333.0	321.7	331.0	84.3	255.0	64.0
	(166.2)	(165.0)	(201.3)	(191.8)	(163.3)	(35.7)	(128.4)	(16.5)
(20.0–29.9 cm DBH)	153.7	160.7	155.0	156.7	132.7	44.0	100.7	34.3
	(13.4)	(15.1)	(4.4)	(7.0)	(26.5)	(8.5)	(18.2)	(4.3)
(30.0–39.9 cm DBH)	37.3	39.7	43.0	45.0	43.3	32.3	40.7	30.3
	(14.3)	(15.7)	(19.7)	(20.7)	(17.8)	(13.6)	(19.5)	(13.5)
(> 40.0 cm DBH)	2.0	2.3	2.3	2.0	7.3	7.7	8.0	7.7
	(1.0)	(1.3)	(0.3)	(1.0)	(3.0)	(2.9)	(1.0)	(0.9)
Basal area live (m^2 ha^{-1})	29.6	30.7	29.1	29.3	29.3	14.3	24.6	12.6
	(2.2)	(2.6)	(1.9)	(1.7)	(1.2)	(0.9)	(2.5)	(2.0)
Fuels †								
Forest floor (O horizon)	26.82	20.28	23.32	11.05	28.09	26.28	23.12	14.58
Mass (Mg ha^{-1})	(4.82)	(2.18)	(4.80)	(1.22)	(3.65)	(1.68)	(2.84)	(0.57)
1-h Fuel Mass	0.22	*	0.21	0.15	0.27	0.693	0.22	0.38
(Mg ha^{-1})	(0.08)		(0.08)	(0.01)	(0.05)	(0.07)	(0.09)	(0.08)
10-h Fuel Mass	1.74	*	1.77	1.13	1.74	4.6	1.70	2.73
(Mg ha^{-1})	(0.42)		(0.44)	(0.08)	(0.37)	(0.27)	(0.66)	(0.36)
100-h Fuel Mass	2.34	*	3.12	1.52	3.76	8.37	4.13	4.66
(Mg ha^{-1})	(0.61)		(0.86)	(0.12)	(1.92)	(1.34)	(1.91)	(0.71)
1000-h Fuel Mass	4.32	*	5.48	2.45	6.02	4.92	3.64	1.62
(Mg ha^{-1}) Sound	(1.50)		(1.93)	(0.18)	1.58	(1.12)	(1.07)	(0.33)
1000-h Fuel mass	1.77	*	2.14	0.33	2.93	1.33	1.81	0.21
(Mg ha^{-1}) Rotten	(0.44)		(0.68)	(0.32)	(0.99)	(0.62)	(0.64)	(0.09)

† Fuel size classes: 1-hour fuels 0–0.635 cm dia; 10-hour fuels 0.635–2.54 cm dia; 100-hour fuels 2.54–7.62 cm dia; and 1000-hour fuels 7.62–5.24 cm dia. * denotes samples not taken.

Table S2. Forest floor (O horizon) and mineral soil (0–5 cm) horizon characteristics pre- and 2-year post-fuel reduction treatments at the Southwestern Plateau, Fire and Fire Surrogate study site. Treatment means (observed) are reported followed by standard errors in parentheses (n = 3). Measurement of pH for forest floor and mass for mineral soil (0–5 cm) were not performed.

	Time	Control	Fire only	Thinning only	Thinning plus fire
Forest Floor					
Mass (Mg ha^{-1})	Pre	5.43 (0.17)	8.00 (0.67)	7.95 (1.11)	7.06 (0.40)
	6 months	7.59 (1.26)	5.05 (0.05)	5.94 (0.12)	4.52 (0.58)
	1 year	6.52 (1.41)	4.72 (0.95)	5.97 (1.49)	6.81 (0.45)
	2 years	7.04 (1.55)	3.95 (0.05)	4.67 (0.09)	3.42 (0.58)
Total Carbon (g kg^{-1})	Pre	211.89 (9.76)	294.01 (17.34)	308.92 (49.58)	288.92 (27.40)
	6 months	226.66 (76.53)	131.25 (11.02)	153.83 (14.37)	140.11 (24.90)
	1 year	211.10 (62.13)	144.55 (28.66)	159.16 (29.61)	194.89 (13.43)
	2 years	214.23 (82.75)	102.95 (8.67)	121.14 (12.16)	104.81 (21.66)
Total Nitrogen (g kg^{-1})	Pre	5.19 (0.50)	6.66 (0.68)	8.32 (2.06)	6.69 (0.73)
	6 months	6.14 (1.24)	4.64 (0.27)	4.93 (0.40)	3.46 (0.20)
	1 year	5.95 (1.61)	4.72 (0.95)	5.10 (1.11)	6.69 (0.74)
	2 years	5.72 (1.42)	3.66 (0.20)	3.88 (0.35)	2.63 (0.27)
Carbon/Nitrogen mass ratio	Pre	41.36 (3.08)	44.59 (2.79)	38.80 (3.36)	43.35 (0.68)
	6 months	35.22 (5.55)	28.77 (4.29)	31.15 (0.51)	40.00 (4.95)
	1 year	35.19 (4.19)	30.70 (0.35)	31.87 (2.61)	29.44 (2.00)
	2 years	35.22 (5.55)	28.60 (4.12)	31.13 (0.49)	39.10 (4.07
Mineral soil (0–5 cm)					
pH	Pre	5.53 (0.11)	5.62 (0.03)	5.44 (0.05)	5.50 (0.06)
	6 months	5.54 (0.17)	5.68 (0.09	5.38 (0.14)	5.76 (0.02)
	1 year	5.49 (0.16)	5.59 (0.11)	5.40 (0.09)	5.47 (0.12)
	2 years	5.35 (0.09)	5.33 (0.05)	5.42 (0.10)	5.43 (0.08)
Total Carbon (g kg^{-1})	Pre	43.43 (3.35)	43.07 (5.76)	49.18 (4.57)	52.20 (7.38)
	6 months	57.20 (8.25)	47.61 (5.83)	70.02 (17.55)	41.28 (4.53)
	1 year	44.83 (5.26)	45.76 (7.68)	44.31 (8.89)	37.41 (5.24)
	2 years	36.01 (3.49)	43.76 (5.10)	45.01 (4.84)	39.89 (1.64)
Total Nitrogen (g kg^{-1})	Pre	1.91 (0.14)	2.02 (0.19)	2.05 (0.26)	2.20 (0.24)
	6 months	2.40 (0.10)	2.35 (0.20)	3.22 (0.64)	2.19 (0.19)
	1 year	1.88 (0.18)	2.06 (0.38)	1.70 (.20)	1.71 (0.16)
	2 years	1.84 (0.16)	2.01 (0.23)	1.99 (0.14)	1.88 (0.05)
Carbon/Nitrogen mass ratio	Pre	22.76 (0.20)	21.17 (1.16)	24.32 (2.36)	23.67 (1.64)
	6 months	23.67 (0.26)	20.10 (0.74)	21.21 (1.62)	18.81 (0.70)
	1 year	23.74 (0.57)	21.79 (1.03))	25.55 (2.09)	21.83 (1.49
	2 years	21.70 (1.07)	22.08 (0.09)	22.61 (1.75)	21.29 (0.76)

Table S3. Mineral soil (0–5 cm) extractable base cations pre- and one-year post-fuel reduction treatments at the Southwestern Plateau, Fire and Fire Surrogate study site. Treatment means (observed) are reported followed by standard errors in parentheses (n = 3).

Cation (cmol kg^{-1})	Time	Control	Fire only	Thinning only	Thinning plus fire
Extractable Ca	Pre	4.475 (0.046)	4.495 (0.035)	4.529 (0.015)	4.423 (0.093)
	1 year	4.632 (0.113)	4.590 (0.094)	4.516 (0.001)	4.523 (0.007)
Extractable Mg	Pre	0.596 (0.001)	0.600 (0.001)	0.597 (0.003)	0.575 (0.019)
	1 year	0.611 (0.017)	0.614 (0.024)	0.593 (<0.001)	0.597 (0.003)
Extractable K	Pre	0.185 (0.002)	0.185 (0.002)	0.187 (<0.001)	0.187 (0.002)
	1 year	0.189 (0.002)	0.187(<0.001)	0.187 (<0.001)	0.187 (<0.001)
Extractable Na	Pre	0.086 (0.001)	0.086 (0.001)	0.085 (<0.001)	0.084 (0.001)
	1 year	0.085 (<0.001)	0.087 (0.002)	0.085 (<0.001)	0.085 (<0.001)
Cation Exchange Capacity	Pre	5.362 (0.035)	5.362 (0.035)	5.398 (0.019)	5.392 (0.010)
	1 year	5.518 (0.132)	5.478 (0.120)	5.382 (0.002)	5.392 (0.010)