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Supplement of

Exogenous phosphorus compounds interact with nitrogen availability to regulate dynamics of soil inorganic phosphorus fractions in a meadow steppe

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Table S1 The results of ANCOVA (*F* values) testing the differences in slope between the two N treatments (N effect, without N vs. with N) for each P compound and between the two P compounds (P compound effect, K_2HPO_4 vs. $Ca(H_2PO_4)_2$) for each N treatment of the inorganic phosphorus fractions of Al-P, Fe-P, Ca_2 -P and Ca_8 -P, respectively.

	N addition effect		P compound effect	
	KH_2PO_4	$Ca(H_2PO_4)_2$	Without N	N addition
Al-P	5.54**	10.72**	3.29*	12.48**
Fe-P	2.84*	4.92**	2.93*	8.85**
Ca_2 -P	2.72*	2.85*	3.57*	15.86*
Ca_8 -P	5.01**	2.69*	5.11**	10.69**

*, ** Significance level at 0.05 and 0.01, respectively

Table S2 The results of Student t-test (*P* values) determining the effects of P compounds on inorganic P fractions of Ca₁₀-P, O-P, Olsen P and TP concentrations within each P addition rate without and with N addition, respectively.

	P rates (kg P ha ⁻¹ yr ⁻¹)	Ca ₁₀ -P			O-P			Olsen-P			TP		
		KH ₂ PO ₄	Ca(H ₂ PO ₄) ₂	<i>P</i>	KH ₂ PO ₄	Ca(H ₂ PO ₄) ₂	<i>P</i>	KH ₂ PO ₄	Ca(H ₂ PO ₄) ₂	<i>P</i>	KH ₂ PO ₄	Ca(H ₂ PO ₄) ₂	<i>P</i>
Without N	20	34.93±2.07	44.89±0.94	<0.01	31.64±2.00	41.18±4.31	0.08	11.34±2.46	11.95±3.36	0.91	563.12±16.68	485.87±51.62	0.19
	40	43.47±2.29	53.48±1.24	<0.01	32.26±1.05	40.87±4.16	0.08	10.83±2.71	13.46±3.24	0.60	497.10±54.82	565.44±42.90	0.36
	60	44.43±1.25	48.74±2.39	0.15	27.70±5.03	35.24±2.32	0.21	16.66±3.21	12.81±2.64	0.44	485.26±43.38	574.14±51.46	0.87
	80	42.27±2.45	49.07±1.54	0.04	32.80±5.18	38.96±1.98	0.30	31.31±6.44	15.90±3.29	0.07	515.59±63.71	518.76±87.73	0.17
	100	42.00±1.35	49.56±2.34	0.02	33.97±2.22	30.57±2.93	0.38	45.10±2.65	28.02±4.15	0.02	686.68±33.59	706.78±37.11	0.70
N addition	20	36.20±2.93	43.68±2.61	0.09	36.09±3.04	34.62±2.41	0.71	6.83±1.53	4.22±0.54	0.27	433.38±63.13	545.44±39.62	0.17
	40	38.99±2.72	50.42±2.87	0.02	37.08±1.96	45.10±6.29	0.26	17.52±1.97	9.90±3.34	0.13	634.97±77.67	452.82±65.42	0.11
	60	40.41±2.38	47.40±2.05	0.05	40.07±3.70	25.31±3.19	0.02	21.65±1.48	16.27±4.01	0.30	552.76±32.00	468.51±79.04	0.35
	80	40.15±2.31	45.42±2.79	0.18	43.86±4.14	22.87±1.88	< 0.01	26.25±1.44	22.65±2.36	0.35	634.24±40.75	535.59±50.66	0.17
	100	39.93±2.83	50.71±1.49	<0.01	31.05±1.23	28.11±3.88	0.49	43.28±6.84	11.99±3.11	< 0.01	718.86±53.80	518.75±68.91	0.05

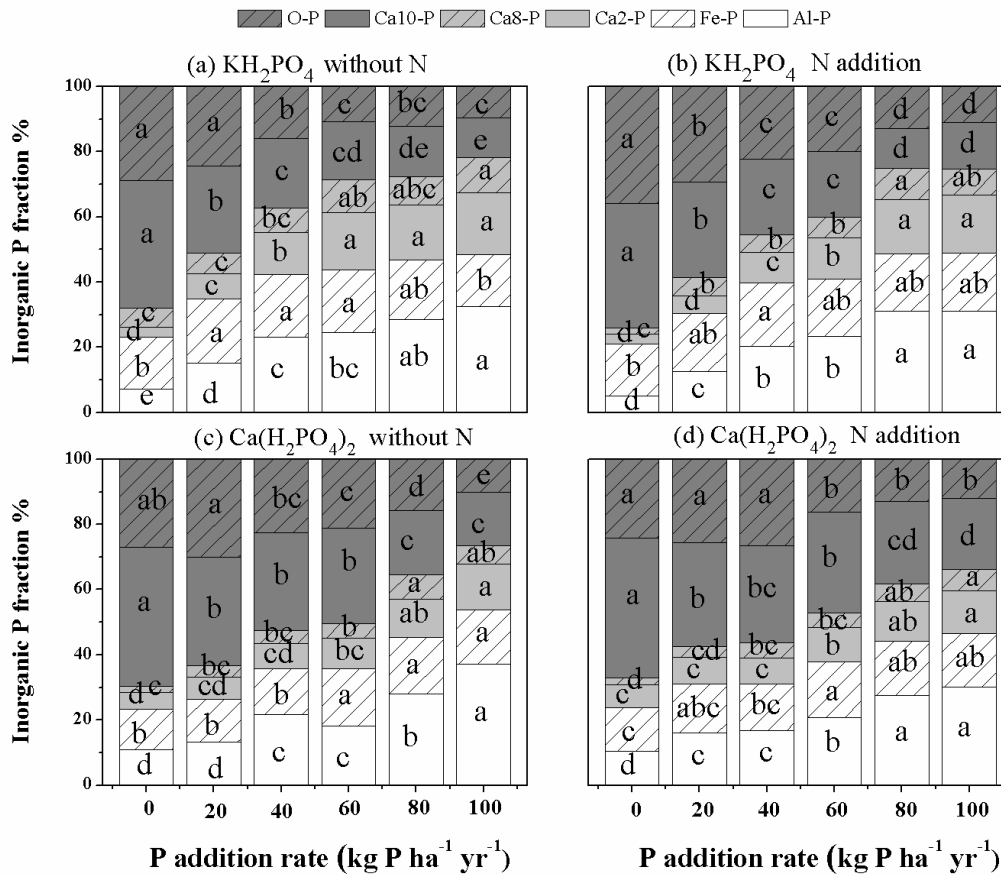


Fig. S1 The soil inorganic phosphorus fractions of variscite (Al-P), strengite (Fe-P), dicalcium phosphate (Ca₂-P), soil octacalcium phosphate (Ca₈-P), hydroxylapatite (Ca₁₀-P) and occluded P (O-P) expressed as a percentage of total inorganic

- 5 phosphorus as affected by KH_2PO_4 and $\text{Ca}(\text{H}_2\text{PO}_4)_2$ addition without N addition or with N addition. Letters indicate significance among P addition rates for one fraction within one P type and addition rate.

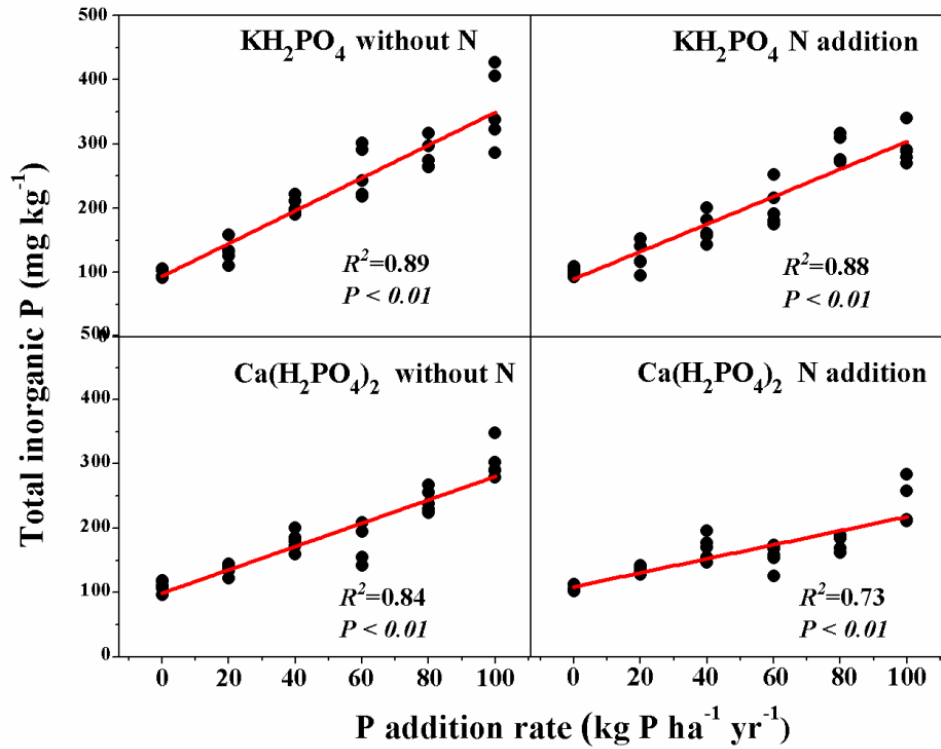


Fig. S2 Relationships between soil total inorganic phosphorus and phosphorus addition levels under KH₂PO₄ and Ca(H₂PO₄)₂ additions without N or with N addition.