

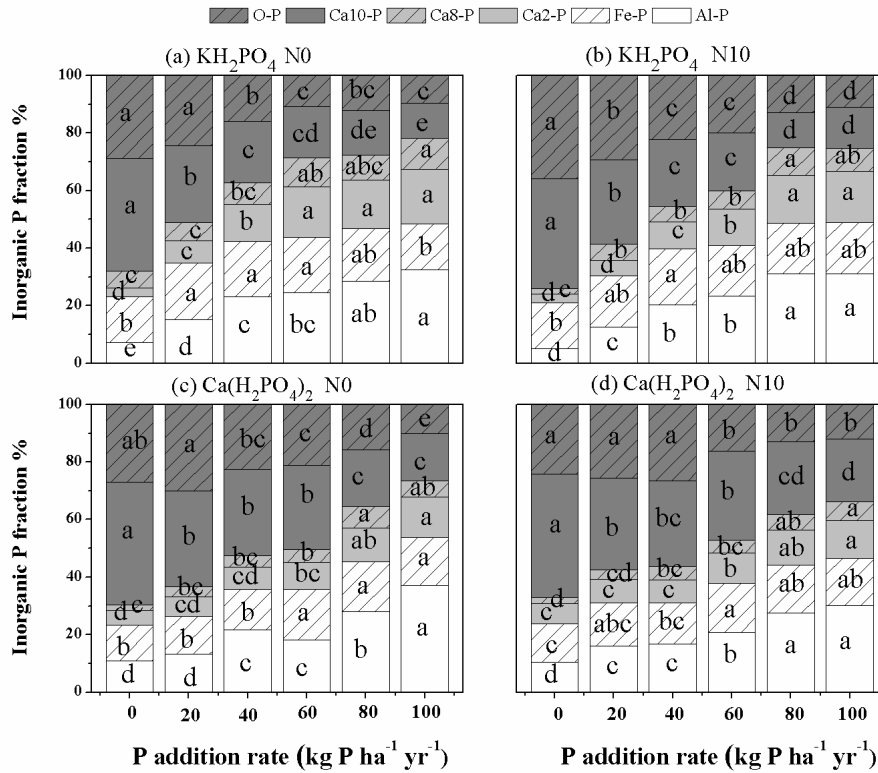
**Table S1** The results of ANCOVA (*F* values) testing the differences in slope between the two N treatments (N effect, without N vs. with N) for each P compound and between the two P compounds (P compound effect,  $K_2HPO_4$  vs.  $Ca(H_2PO_4)_2$ ) for each N treatment of the inorganic phosphorus fractions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

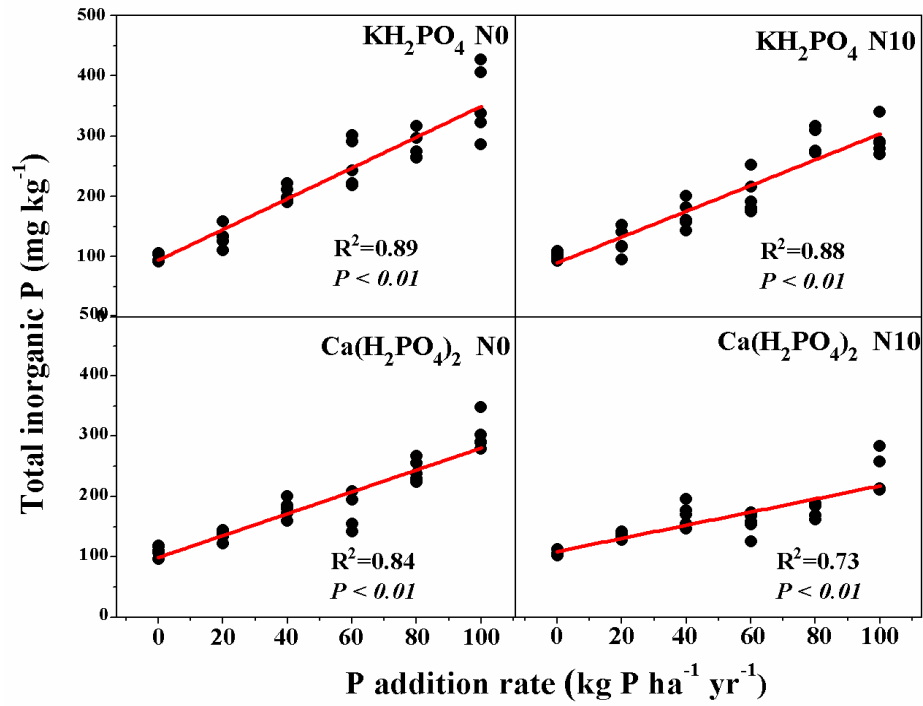
\*, \*\* Significance level at 0.05 and 0.01, respectively

**Table S2** The results of Student t-test (*P* values) determining the effects of P compounds on inorganic P fractions of Ca<sub>10</sub>-P, O-P, Olsen P and TP concentrations within each P addition rate without and with N addition, respectively.

	P rates (kg P ha <sup>-1</sup> yr <sup>-1</sup> )	Ca <sub>10</sub> -P	O-P	Olsen-P	TP
Without N	0	< 0.01	0.78	0.37	0.43
	20	< 0.01	0.08	0.91	0.19
	40	< 0.01	0.08	0.60	0.36
	60	0.15	0.21	0.44	0.87
	80	0.04	0.30	0.07	0.17
	100	0.02	0.38	0.02	0.70
N addition	0	0.02	< 0.01	0.44	0.98
	20	0.09	0.71	0.27	0.17
	40	0.02	0.26	0.13	0.11
	60	0.06	0.02	0.30	0.35
	80	0.18	< 0.01	0.35	0.17
	100	< 0.01	0.49	< 0.01	0.05



**Fig. S1** The soil inorganic phosphorus fractions of variscite (Al-P), strengite (Fe-P), dicalcium phosphate (Ca<sub>2</sub>-P), soil octacalcium phosphate (Ca<sub>8</sub>-P), hydroxylapatite (Ca<sub>10</sub>-P) and occluded P (O-P) expressed as a percentage of total inorganic phosphorus as affected by KH<sub>2</sub>PO<sub>4</sub> and Ca(H<sub>2</sub>PO<sub>4</sub>)<sub>2</sub> addition without (N<sub>0</sub>) or with N addition (100 kg N ha<sup>-1</sup> yr<sup>-1</sup>, N<sub>10</sub>). 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 KH<sub>2</sub>PO<sub>4</sub> and Ca(H<sub>2</sub>PO<sub>4</sub>)<sub>2</sub> additions without (N<sub>0</sub>) or with N addition (100 kg N ha<sup>-1</sup> yr<sup>-1</sup>, N<sub>10</sub>).