

Figure S1. Alfalfa and red clover accessions in greenhouse. Left: view of greenhouse; top right: alfalfa accessions after 60 days of cultivation; bottom right: red clover accessions after 60 days of cultivation.

Table S1. Plant biomass of alfalfa and red clover accessions in the five studied treatments (no P, TSP, SSA, compost and struvite) in PE1.

Biomass [p pot ⁻¹]				Treatment								
Species	Accession	No P*		TSP		SSA*		Compost*		Struvite*		Average*
Alfalfa	LE2812	10.9±1.7	Cb	15.7±2.4	Aab	12.9±1.9	BCa	14.6±1.7	ABab	15.3±0.4	ABa	13.9±2.4
	LE2521	11.4±2.2	Bb	13.4±2.8	ABb	14.8±1.9	Aa	15.3±1.8	Aab	13.6±1.9	ABa	13.7±2.4
	LE2511	12.3±2.6	Bab	15.7±0.8	Aab	15.6±1.3	Aa	13.4±1.5	ABb	14.2±2.5	ABa	14.2±2.1
	LE2368	13.1±3.6	Aab	16.8±1.7	Aa	14.5±0.9	Aa	15.5±5.9	Aab	14.1±1.9	Aa	14.8±3.2
	LE2669	14.5±1.5	ABa	14.2±1.8	ABab	13.7±4.0	Ba	18.4±3.0	Aa	16.5±1.5	ABa	15.5±2.9
	Average	12.4±2.5	B	15.2±2.2	A	14.3±2.2	A	15.4±3.3	A	14.7±1.9	A	14.4±2.7
Red clover	LE1731	15.2±3.3	BCc	12.6±2.0	Ca	17.7±2.1	ABa	17.0±3.5	ABa	20.0±1.2	Aa	16.5±3.4
	LE1423	20.4±3.2	Aa	14.6±2.1	Ba	16.2±3.3	ABa	18.0±3.2	ABa	20.5±3.0	Aa	18.1±3.6
	LE1391	16.2±2.3	Abc	14.0±2.0	Aa	14.4±2.7	Aa	17.6±3.5	Aa	17.4±1.9	Aa	15.9±2.7
	LE1599	18.2±4.0	Aab	14.3±1.3	Aa	17.1±2.9	Aa	19.0±4.0	Aa	18.2±3.0	Aa	17.4±3.3
	LE1937	16.8±5.0	ABbc	15.8±1.6	ABa	14.6±1.8	Ba	16.8±0.8	ABa	18.5±0.7	Aa	16.4±2.2
	Average	17.4±3.6	B	14.1±1.9	D	15.9±2.6	C	17.7±2.9	B	19.0±2.3	A	16.8±3.1
Average		14.8±3.9	B	14.7±2.1	B	15.1±2.5	B	16.5±3.3	A	16.8±3.0	A	5.66±0.18

No P = without P amendment, TSP = triple-super-phosphate, SSA = sewage sludge ash, compost = biowaste compost. Uppercase letters indicate a significant difference among treatments and lowercase letters indicate a significant difference among accessions within the same plant species (Duncan's new multiple range test with $p < 0.05$). Asterisks indicate the significant different between plant species within same treatment. Mean ± standard deviation ($n = 20$).

Table S2. Plant biomass of alfalfa and red clover accessions in the five studied treatments (no P, TSP, SSA, compost, and struvite) in PE2.

Biomass [p pot ⁻¹]				Treatment								
Species	Accession	No P*		TSP*		SSA*		Compost*		Struvite*		Average*
Alfalfa	LE713	17.3±2.3	Aa	19.4±1.8	Aab	17.9±2.3	Aa	17.8±1.2	Aa	19.9±2.0	Aa	18.5±2.0
	LE2370	17.2±1.0	Aa	18.8±1.4	Ab	19.2±1.9	Aa	18.9±0.8	Aa	18.6±0.9	Aa	18.5±1.3
	LE2521	18.9±2.3	Aa	19.4±0.2	Aab	18.3±1.0	Aa	18.3±1.4	Aa	20.0±1.2	Aa	18.9±1.5
	LE888	18.9±1.4	ABa	21.0±0.5	Aa	18.2±2.5	Ba	19.8±0.7	ABa	19.2±1.5	ABa	19.4±1.7
	LE2669	18.7±2.0	Aa	20.6±1.0	Aab	18.1±0.9	Aa	19.6±2.4	Aa	19.7±2.1	Aa	19.3±1.8
	Average	18.2±1.9	C	19.9±1.4	A	18.3±1.7	C	18.9±1.5	BC	19.5±1.5	AB	18.9±1.7
Red clover	LE1731	22.6±4.0	Ab	23.3±3.7	Aab	23.8±1.3	Aa	23.1±3.3	Aab	24.5±3.7	Aab	23.4±3.0
	LE1391	25.8±2.0	Aa	25.8±3.3	Aa	23.4±1.7	Aa	24.8±5.3	Aa	27.3±4.1	Aa	25.4±3.4
	LE2750	23.2±2.9	Aab	20.4±2.5	ABb	20.9±3.4	ABb	19.6±4.2	Bc	23.4±4.5	Ab	21.6±3.5
	LE1775	25.7±4.2	Aa	25.4±4.8	Aa	24.4±2.1	Aa	25.2±4.1	Aa	25.6±4.2	Aab	25.3±3.6
	LE1804	21.8±3.2	Ab	23.8±2.6	Aab	23.2±2.7	Aab	21.8±4.9	Abc	23.8±6.4	Ab	22.9±3.9
	Average	23.8±3.4	AB	23.7±3.7	AB	23.1±2.4	B	23.1±4.4	B	24.9±4.4	A	23.7±3.7
Average		21.0±3.9	BC	21.9±3.4	AB	20.7±3.2	C	20.9±3.8	C	22.2±4.3	A	21.3±3.8

No P = without P amendment, TSP = triple-super-phosphate, SSA = sewage sludge ash, compost = biowaste compost. Uppercase letters indicate a significant difference among treatments and lowercase letters indicate a significant difference among accessions within the same plant species (Duncan's new multiple range test with $p < 0.05$). Asterisks indicate the significant different between plant species within same treatment. Mean ± standard deviation ($n = 4$).

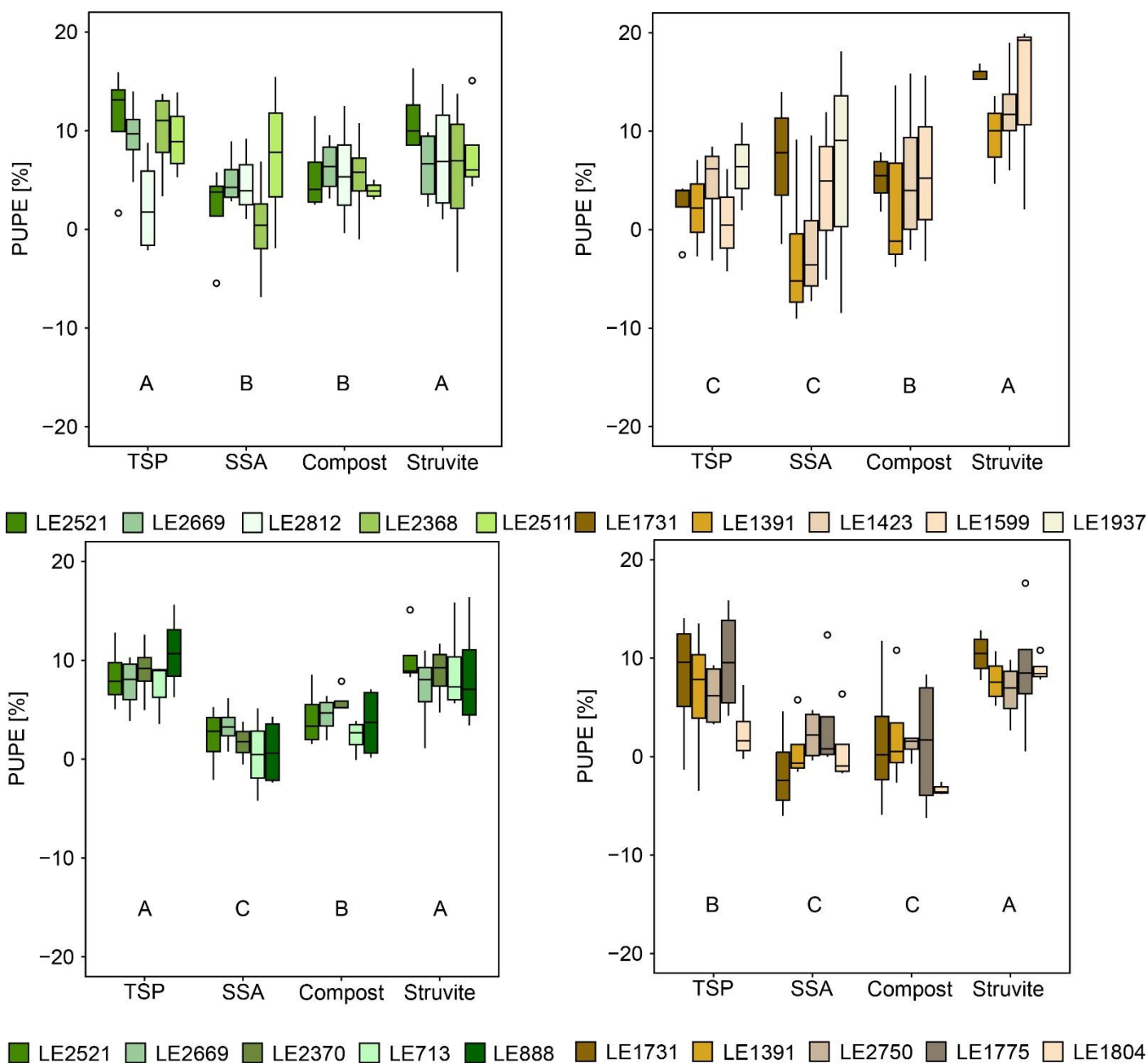


Figure S2. Phosphorus uptake efficiency (PUPE) of alfalfa and red clover accessions in the five studied treatments (TSP, SSA, compost and struvite) in PE1 (upper part) and PE2 (lower part). Different shades of green and brown colours are illustrated to differentiate alfalfa and red clover accessions, respectively. Letters indicate significant differences among treatments (on mean of accessions) within same plant species (Duncan's new multiple range test with $p < 0.05$). Mean \pm standard deviation ($n = 4$)

Table S3. Phosphorus utilisation efficiency (PUTE) of alfalfa and red clover accessions in the five studied treatments (no P, TSP, SSA, compost, and struvite) in PE1.

PUTE		Treatment										
Species	Accession	No P*		TSP*		SSA		Compost*		Struvite		Average*
Alfalfa	LE2812	393±56	Ab	334±38	ABab	358±62	ABa	377±17	ABa	323±53	Bab	357±50
	LE2521	408±37	Ab	319±20	Bab	415±23	Aa	386±63	Aa	311±34	Bb	368±57
	LE2511	472±25	Aa	360±51	Ba	402±88	ABa	397±36	ABa	342±47	Bab	395±66
	LE2368	406±7	Bb	325±28	Dab	447±36	Aa	360±23	Ca	324±20	Dab	372±53
	LE2669	446±43	Aab	301±39	Cb	426±59	Aa	406±34	ABa	358±23	BCa	387±65
	Average	425±45	A	328±38	C	409±60	A	385±38	B	332±37	C	376±59
Red clover	LE1731	573±43	Aa	414±94	BCa	446±70	Bb	461±27	Ba	331±38	Ca	445±96
	LE1423	500±66	Aab	341±22	BCa	497±74	Aab	412±32	Ba	310±24	Ca	412±91
	LE1391	560±59	Aa	400±8	BCa	513±38	Aa	425±39	Ba	333±29	Ca	453±95
	LE1599	539±40	Aa	393±45	Ba	439±45	Bb	412±33	Ba	312±43	Ca	427±87
	LE1937	443±32	Ab	329±42	ABa	375±120	ABc	352±31	ABb	283±5	Ba	352±78
	Average	532±62	A	374±61	D	455±85	B	415±46	C	316±32	E	420±95
Average		476±76	A	348±54	D	431±76	B	399±44	C	324±36	E	396±81

No P = without P amendment, TSP = triple-super-phosphate, SSA = sewage sludge ash, compost = biowaste compost. Uppercase letters indicate a significant difference among treatments and lowercase letters indicate a significant difference among accessions within the same plant species (Duncan's new multiple range test with $p < 0.05$). Asterisks indicate the significant different between plant species within same treatment. Mean \pm standard deviation ($n = 4$).

Table S4. Phosphorus utilisation efficiency (PUTE) of alfalfa and red clover accessions in the five studied treatments (no P, TSP, SSA, compost, and struvite) in PE2.

PUTE		Treatment										
Species	Accession	No P		TSP		SSA		Compost*		Struvite		Average
Alfalfa	LE713	491±43	Aa	370±11	CDa	466±43	ABa	424±31	BCa	357±30	Da	425±62
	LE2370	515±25	Aa	386±18	CDa	452±29	Ba	410±14	Ca	356±32	Da	424±61
	LE2521	474±45	Aa	367±24	CDa	441±20	ABa	399±23	BCa	349±15	Da	406±53
	LE888	499±56	Aa	350±37	Ca	460±32	ABa	434±30	Ba	363±22	Ca	421±67
	LE2669	467±12	Aa	363±29	Ba	442±15	Aa	414±15	ABa	373±63	Ba	412±50
	Average	489±39	A	367±26	D	452±28	B	416±24	C	360±33	D	417±58
Red clover	LE1731	458±31	Aa	376±40	Ba	447±55	Aa	453±45	Aa	394±32	Ba	426±51
	LE1391	472±15	Aa	369±33	Ba	459±48	Aa	433±22	Aa	360±24	Ba	419±55
	LE2750	493±23	Aa	393±30	BCa	430±8	Aa	476±43	Ba	358±36	Ca	428±58
	LE1775	477±37	Aa	383±11	BCa	444±43	Aa	434±23	ABa	367±34	Ca	421±50
	LE1804	469±10	Aa	362±12	Ba	434±11	Aa	448±62	Aa	372±22	Ba	417±52
	Average	474±25	A	376±27	C	443±36	B	447±40	B	370±30	C	422±52
Average		482±33	A	372±27	D	448±32	B	431±36	C	365±32	D	420±55

No P = without P amendment, TSP = triple-super-phosphate, SSA = sewage sludge ash, compost = biowaste compost. Uppercase letters indicate a significant difference among treatments and lowercase letters indicate a significant difference among accessions within the same plant species (Duncan's new multiple range test with $p < 0.05$). Asterisks indicate the significant different between plant species within same treatment. Mean \pm standard deviation ($n = 4$).