Table 1. Some physical and chemical properties of the tested calcareous soil and rice straw compost

a) Soil Physical Properties

Particle size distribution (%)				Texture class	Total $CaCO_3$ (%)	$CaCO_3$ fraction (%)			
c. sand	f. sand	silt	clay			c. sand	f. sand	silt	clay
26.58	31.33	17.05	24.99	Sand Clay Loam	31.2	10.81	14.41	2.88	2.12

b) Soil Chemical Properties

ECe (dS/m)	pH soil paste	Soluble ions in saturated soil extract (meq/l)								Organic matter (%)	Olsen-P (mg/kg)	P- Q/I parameters		
		K^+	Na^+	Ca^{+2}	Mg^{+2}	Cl^-	HCO_3^-	CO_3^{-2-}	SO_4^{-2}			Q_0	EPP	PBC
												(mg/kg)	(μg/l)	(L/kg)
2.60	7.92	0.64	7.00	14.0	4.40	15.1	2.90	0.00	8.04	0.51	4.75	6.10	61.9	99

c) Used Rice Straw Compost

pH 1:10 suspension	EC (d S/m) 1:10 extract	Organic matter (%)	Total Nutrients (%)			C/N ratio	Available nutrients (mg/kg)		
			N	P	K		N	P	K
8.02	1.81	54.7	1.30	0.61	2.44	24.5	295	373	472

Table 2. Effect of application of rice straw compost and bio-fertilizer on growth and P status in barely plants grown on highly calcareous soil (31% $CaCO_3$with and without inorganic P fertilization

Treatment	Without P fertilization						With P fertilization					
	Dry matter (g/pot)			P content (%)		Total P uptake mg/pot)	Dry matter (g/pot)			P content (%)		Total P uptake mg/pot)
	Shoots	Roots	Whole plants	Shoots	Roots		Shoots	Roots	Whole plants	Shoots	Roots	
1st growth period												
Control	2.27 p	2.00 p	4.27 g	0.110 n	0.086 j	4.24 o	2.41 q	2.06 p	4.47 m	0.161 j	0.170 h	7.39 m
2 % compost	2.46 n	2.11 o	4.57 p	0.172 m	0.131 g	7.01 n	2.65 p	2.36 o	5.01 l	0.271 e	0.223 d	12.47 l
4 % compost	3.30 l	2.61 m	5.91 n	0.184 l	0.142 f	9.81 k	3.52 m	2.81 l	6.32 j	0.276 e	0.154 i	14.02 k
PDB	3.41 k	2.12 o	5.53 o	0.204 k	0.113 h	9.36 l	3.61 l	2.30 m	5.91 k	0.220 g	0.170 h	11.86 m
PDB + 2 % compost	3.51 j	3.14 j	6.65 k	0.271 e	0.153 e	14.33 j	4.71 g	2.51 m	7.22 i	0.303 d	0.242 b	20.36 h
PDB + 4 % compost	4.41 g	2.33 n	6.74 j	0.259 f	0.167 c	15.36 h	3.81 k	3.72 g	7.23 h	0.324 c	0.172 h	18.76 i
Mean	**3.23 C**	**2.39 C**	**5.62 C**	**0.200 C**	**0.130 C**	**10.01C**	**3.45 C**	**2.63 C**	**6.07 C**	**0.260 C**	**0.190 C**	**14.14 C**
2nd growth period												
Control	3.06 n	2.71 l	5.77 m	0.201 k	0.113 h	9.11 l	3.12 o	2.81 4	5.93 k	0.214 g	0.206 e	12.42 lm
2 % compost	3.42 k	3.42 i	6.84 i	0.274 e	0.162 d	14.92 i	3.96 j	3.63 h	.590 h	0.326 c	0.230 c	21.29 g
4 % compost	4.52 f	3.51 h	8.03 g	0.280 d	0.163 d	18.59 e	4.84 f	3.82 f	8.66 f	0.321 c	0.243 b	24.84 e
PDB	4.31 h	3.14 j	7.45 h	0.250 g	0.175 c	16.33 g	4.54 i	3.41 i	7.95g	0.247 f	0.222 d	18.74 i
PDB + 2 % compost	4.73 d	3.71 f	8.44 e	0.323 a	0.215 a	23.31 c	5.54 e	3.91 e	9.45 d	0.332 c	0.244ab	27.99 d
PDB + 4 % compost	5.55 b	4.04 d	9.59 c	0.292 c	0.205 b	24.54 a	6.11 b	4.19 d	10.3 g	0.527 a	0.241 d	42.33 b
Mean	**4.27 B**	**3.42 B**	**7.69 B**	**0.270 A**	**0.171 A**	**17.76 B**	**4.69 B**	**3.63 B**	**8.31 B**	**0.330 A**	**0.225 A**	**24.60 B**
3rd growth period												
Control	3.22 m	2.89 k	6.11 l	0.174 m	0.077 i	7.84 m	3.4 n	3.01 j	6.41 j	0.203 h	0.182 g	12.41 lm
2 % compost	4.00 i	4.27 b	8.27 f	0.252 g	0.159 d	16.9 f	4.55 i	4.41 b	8.96 e	0.315 c	0.204 e	23.37 f
4 % compost	5.60 a	4.16 c	9.76 b	0.268 e	0.152 e	21.35 d	5.91 d	4.33 c	10.24 c	0.314 c	0.233 c	28.7 c
PDB	4.60 e	3.62 g	9.22 g	0.223 j	0.171 c	16.45 g	4.81 f	3.81 f	8.62 f	0.200 h	0.170 h	16.11 j
PDB + 2 % compost	5.14 c	3.91 e	9.05 d	0.311 b	0.207 b	24.1 b	6.5 a	3.90 e	10.42 b	0.331 c	0.191 f	29.06 c
PDB + 4 % compost	5.62 a	4.72 a	10.34 d	0.245 i	0.199 b	23.21 c	6.01 e	4.89 a	10.9 a	0.512 b	0.250 a	42.99 a
Mean	**4.70 A**	**3.93A**	**8.63 A**	**0.246 B**	**0.161 B**	**18.27 A**	**5.20A**	**4.06 a**	**9.25 A**	**0.313 B**	**0.205 B**	**25.44 A**

-Values having the same small latter(s) within a column are not significantly different at 95% confidence level.
-Values having the same capital latter(s) within a column are not significantly different at 95% confidence level.
- PDB refers to the used phosphate dissolving bacteria (Bacillus Megatherium).

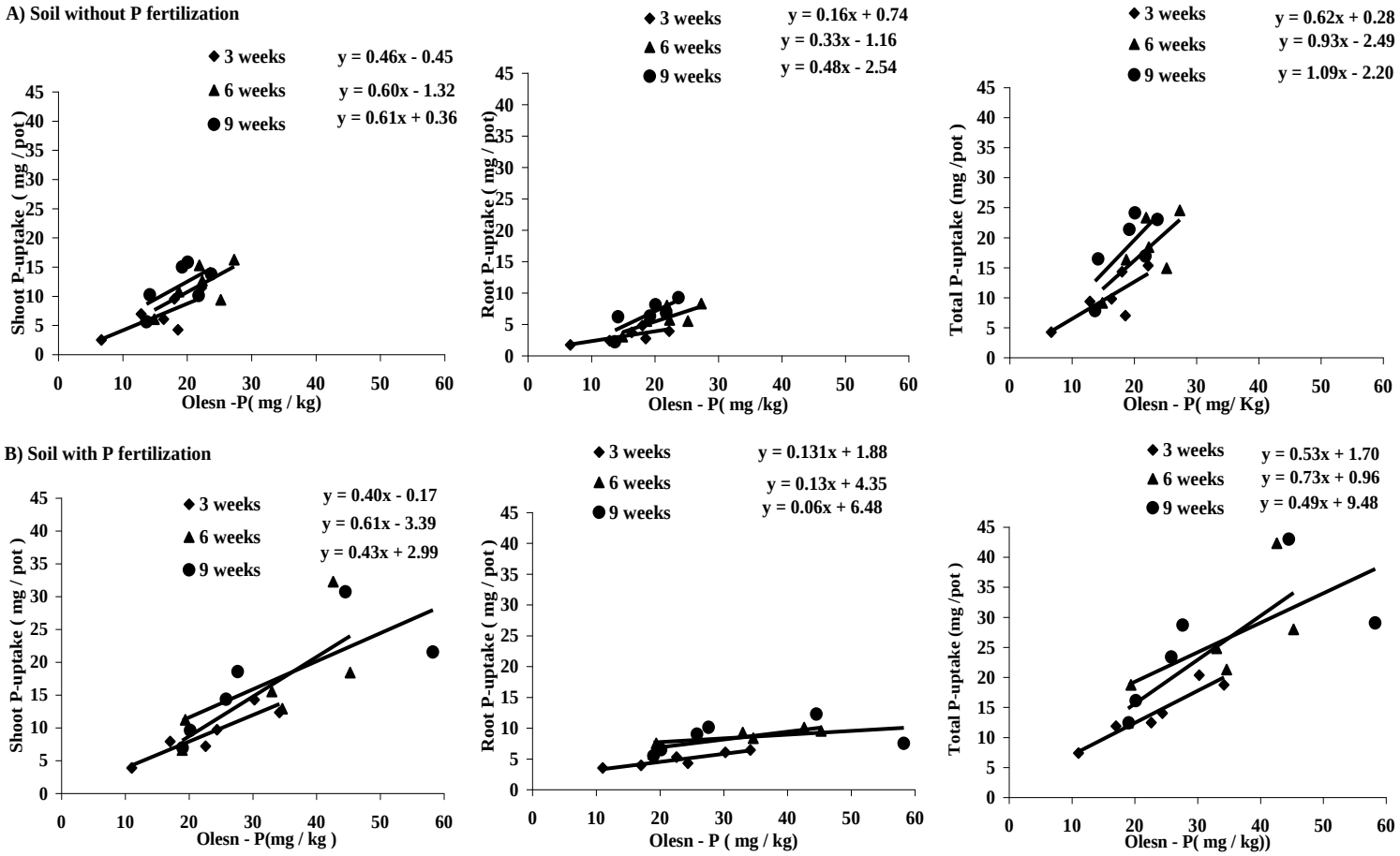

Fig. 1. Regression of P-uptake by barley plants to Olsen-P in highly calcareous soils (31.4 % $CaCO_3$) with and without P-fertilization

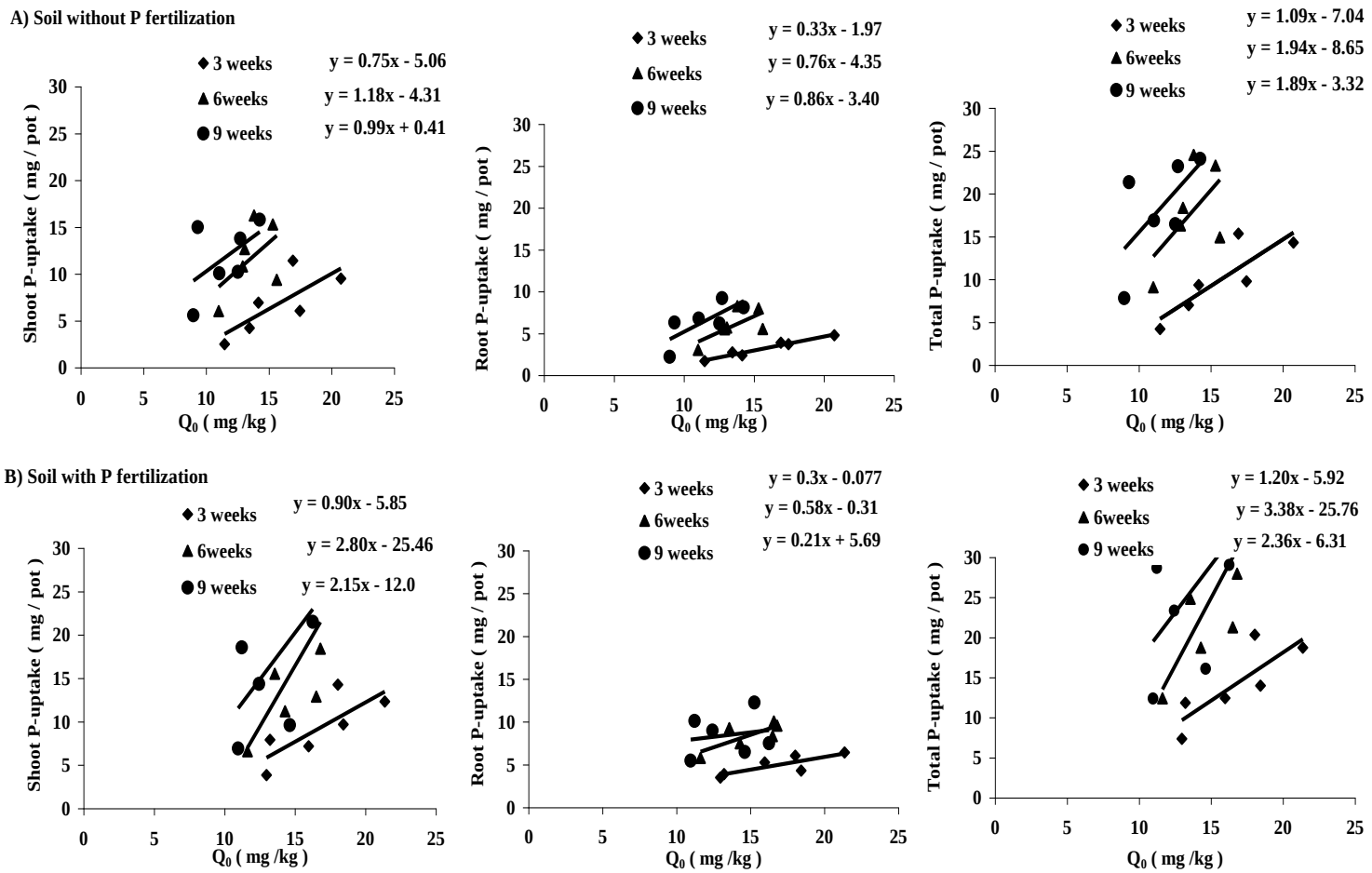

Fig. 2. Regression of P-uptake by berley plants to Quantity (Q_0) in highly calcareous soils (31.4% $CaCO_3$) with and without P-fertilization

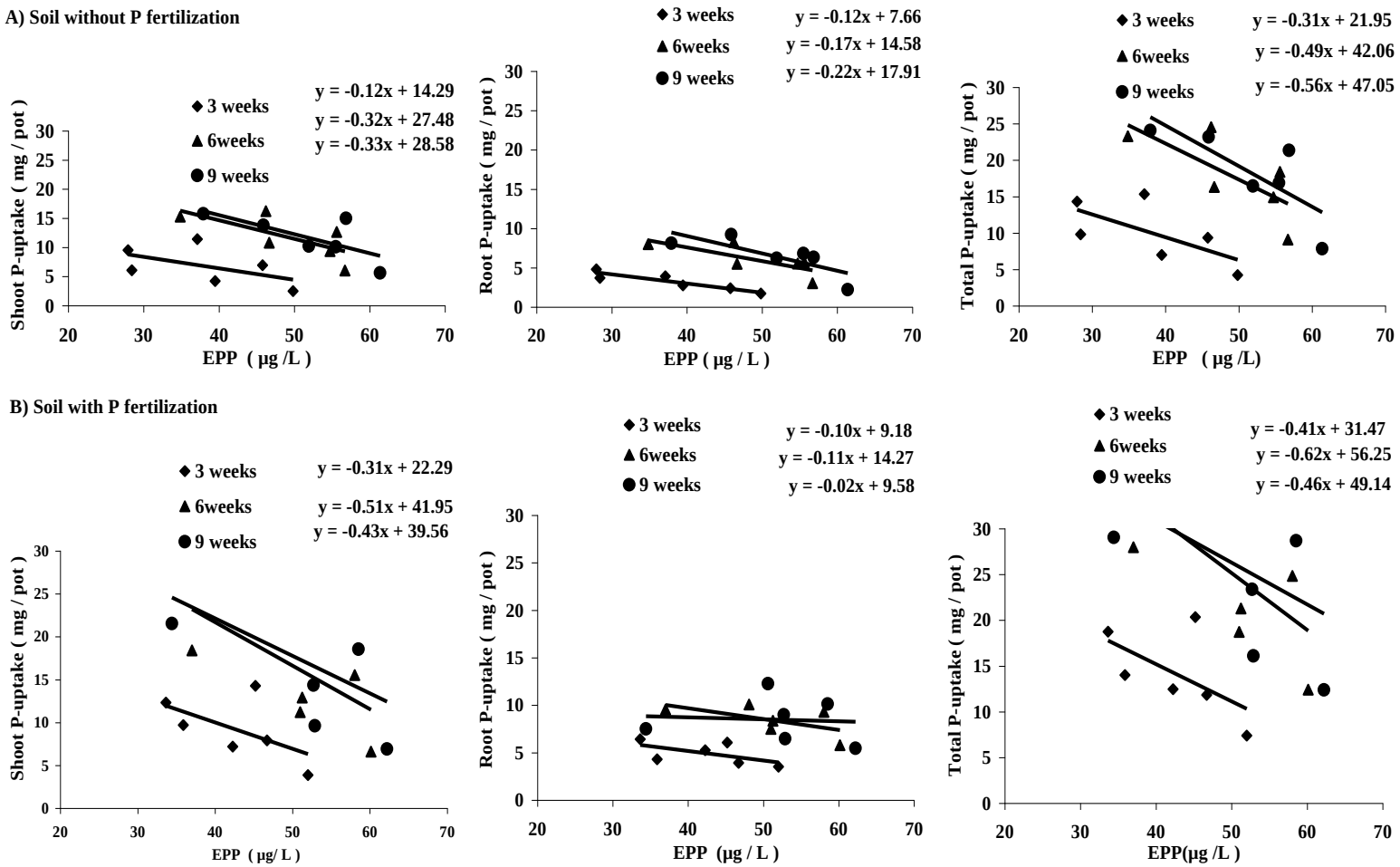

Fig. 3. Regression of P-uptake by barley plants to Equilibrium Phosphate Potenial (EPP) in highly calcareous soils (31.4% $CaCO_3$) with and without P-fertilization

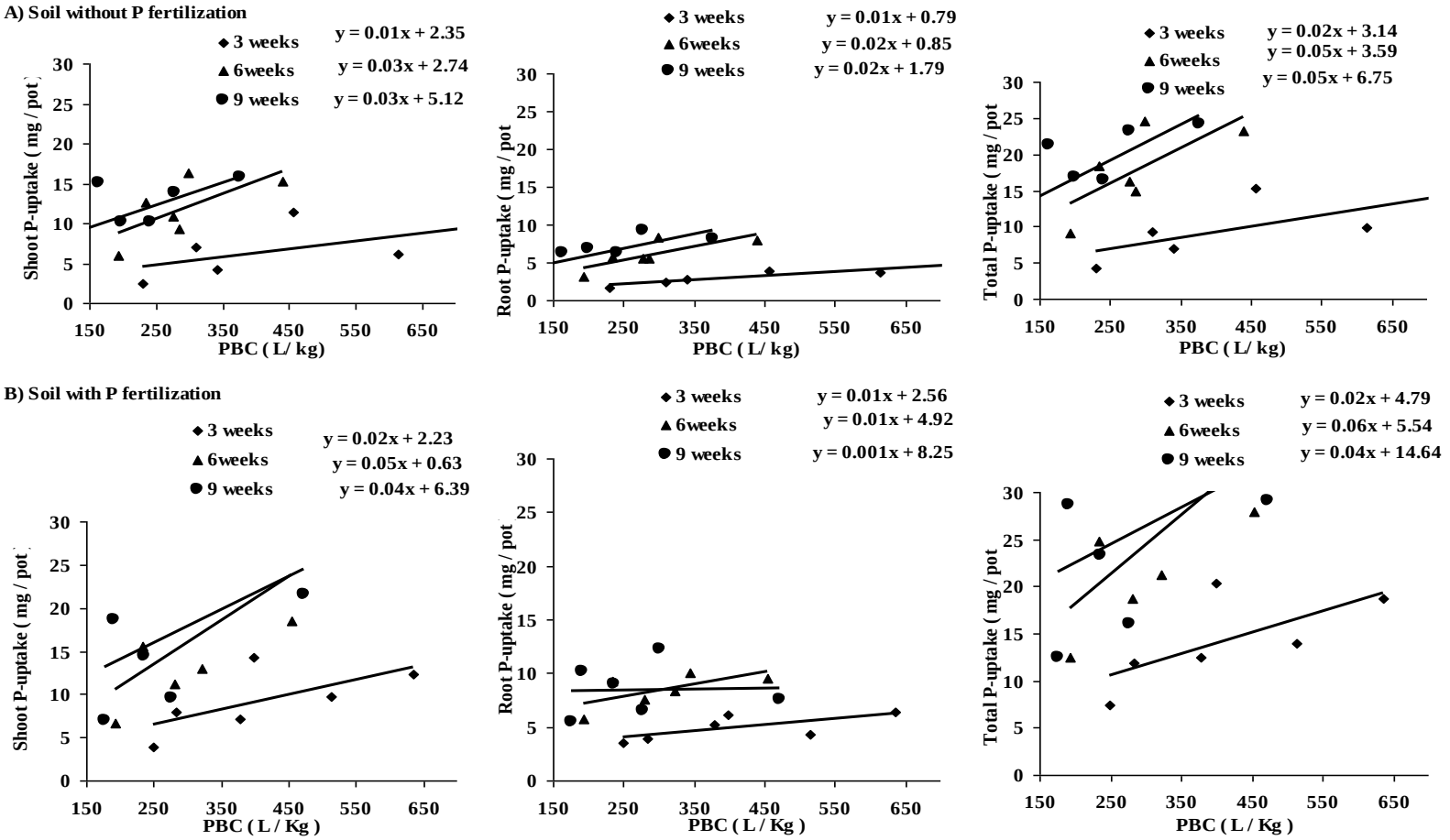

Fig. 4. Regression of P-uptake by barley plants to Phosphorus Buffering Capacity (PBC) in highly calcareous soils (31.4% $CaCO_3$) with and without P-fertilization