

Fig. S1: Gene specificity HeatMap. Values obtained from Genevestigator, AT_mRNASeq_ARABI_GL-9 database and RNAseq datas. We only utilised values for wild type (Col-0).

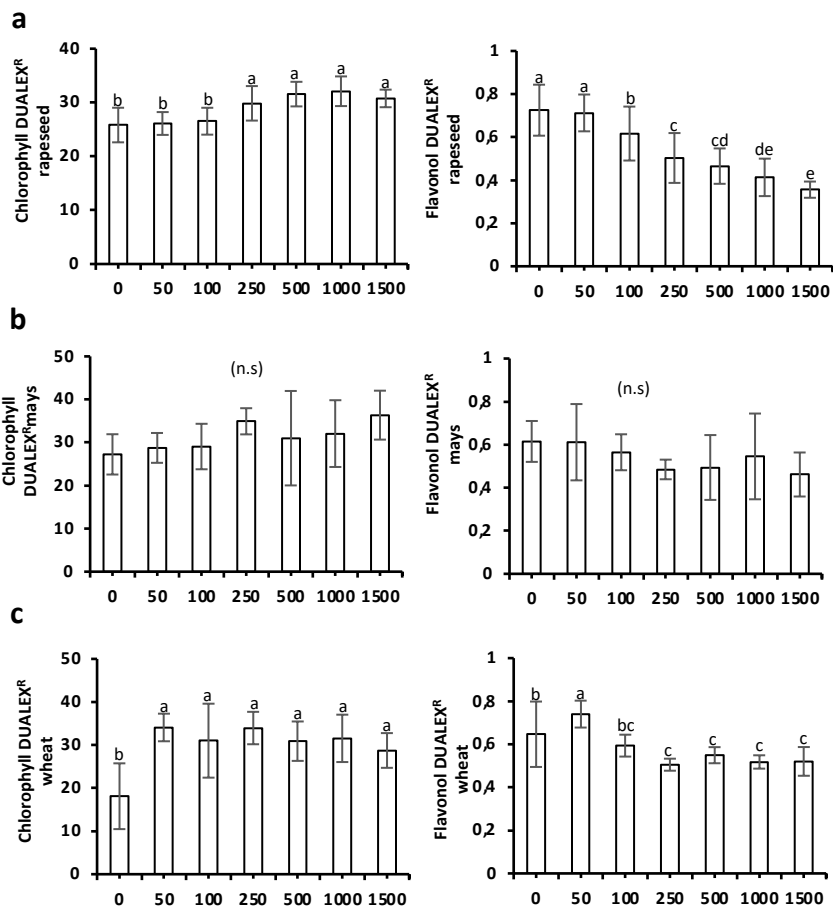


Fig. S2: Chlorophyll and Flavonol measurements of 29-old-day plants exposed to different doses of Pi. Dualex^R spectral measurements (Chlorophyll and Flavonol Index) of second youngest leaf the day before harvest. (a) Rapeseed. (b) Mays. (c) Wheat. Bars indicate means \pm SD. Different letters indicate significant different means (one-way ANOVA followed by SNK test, n=7).

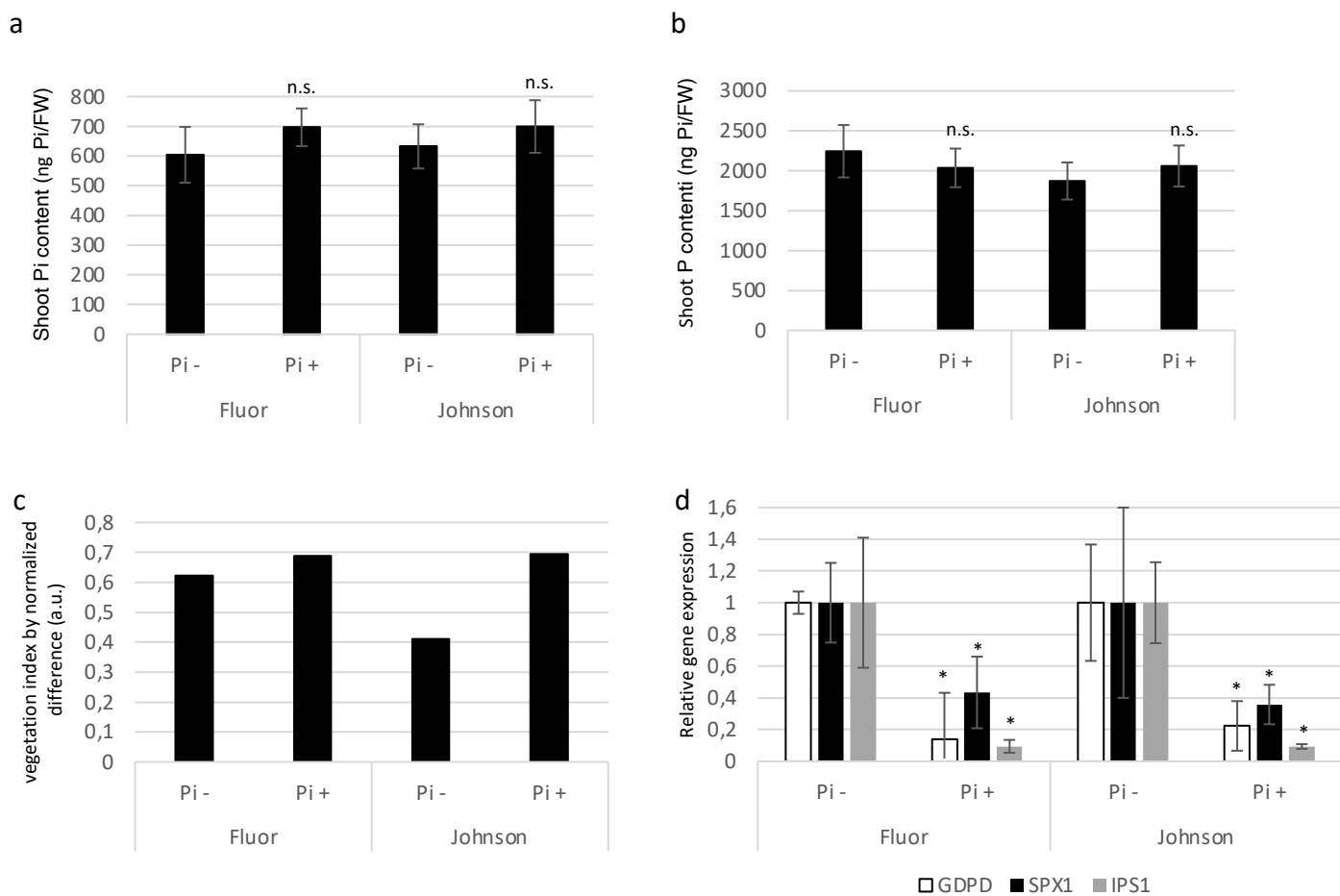


Fig. S3: Analysis of two *Triticum aestivum* varieties grown in Pi depleted (Pi-) or Pi fertilized (Pi+) fields after 6 months

(a) Measure of total P content in shoots. (b) Measure of free Pi content in shoots; (c) Measure of normalized difference vegetation index; (d) Relative gene expression analyses of selected molecular markers. TaACT was used as housekeeping gene.

Significant (*) or non significant (n.s.) different means by one way ANOVA at $p < 0,05$, $n = 5$. For each sample two young leaves were harvested.

	(ng/mg DW)
P	9.2
Fe	6.4
Al	13.2
B	0.8
Ca	8.8
Cu	0.0
K	31.8
Mg	6.3
Mn	0.1
Mo	2.0
Na	2809.1
S	3212.0
Zn	0.2

Table S1: elements present in the Sima Aldrich agar used for this study

	Soil 1 Cazevieille)	Soil 2 (CMI)	Soil 3 (LUFA)	Soil (Giroussens)
<i>Granulometry</i>				
Clay (<2 µm) (g/kg)	476	189	86	111
Fine silt (2/20 µm) (g/kg)	253	365	137	172
Coarse silt (20/50 µm) (g/kg)	121	401	165	267
Fine sand (50/200 µm) (g/kg)	67	31	268	201
Coarse sand (200/2000 µm) (g/kg)	18	14	344	235
<i>Chemical characteristics</i>				
pH in water	7.75	6.23	6.15	6,10
Total C (g/kg)	36.2	9.15	7.02	8,05
Organic C (g/kg)	25.20	8.98	6.97	7,5
SOM (g/kg)	43.60	15.50	12.20	13
Cation exchange capacity - cobaltihexamine' method (cmol _c /kg)				
	27.27	9.25	4.38	5
Ca – cobaltihexamine' method (cmol _c /kg)	26.2	7.84	3.46	3,66
Fe – cobaltihexamine' method (cmol _c /kg)	0.0092	0.0101	0.0096	ND
Total N Kjeldahl's method (g/kg)	2.50	0.95	0.65	0,7
Total Ca HF (g/kg)	33.4	4.95	2.59	ND
Total Fe HF (g/kg)	42,3	27,2	9,36	ND
Total P HF (g/kg)	0.67	0.65	0.68	ND

Table S2. Main characteristics of soils used in the study

Plant species	Name	Accession number	Forward primer (5'-3')	Reverse primer (5'-3')
A. thaliana	AtSPX1	At5g20150	CGGGTTTTGAAGGAGATCAG	GCGGCAATGAAAACACACTA
	AtSPX3	At2g45130	ATGGCGAAATGGTTCTGCTA	CCTCCTTTGTTGCGTTGTC
	AtUNICORN1	At5g20790	CGTCTCGAACCAGAAATCAAT	TATTAACGGCTCCGTTTTTCG
	AtIPS1	At3g09922	TGAAGACTGCAGAAGGCTGA	CGAAGCTTGCCAAAGGATAG
	AtSQD2	At5g01220	TACCTGAAGCTCGGATTGCT	TGTGAGAGTTCATCGCCTTG
	AtPHT1;4	At2g38940	CCTCGGTCGTATTTATTACCACG	CCATCACAGCTTTGGCTCATG
	AtPHR1	At4g28610	GTTCAGCAGCAACCTTCTCC	GCTCTTCTACTACCGCCAAG
AtTUBULIN	At5g62690	GAGCCTTACAACGCTACTCTGTCTGTC	ACACCAGACATAGTAGCAGAAATCAAG	
B. napus	BnSPX1	XM_013819206.2	CCAAGCAGAGCTCTCAGAG	GAATCTTCTCCATGTCTCA
	BnIPS1.2	JN542388.1	CGGGTTTTGTGTTCTGGAAG	GGAACCGAAGCTTGCCAAA
	BnUNICORN1	XM_013866441	GGACGTTAGCTACGGAGGTG	CCGTTTGTATCCATAACC
	BnPHT1;4	KJ192193.1	GCCATCATAATCGTGGAAT	GCCTGGGACGTGGTAGTAAA
	BnPHR1	XM_013856598	AGTCTCTGCAAACCATCCCA	TGACAGCCTCAACAAAAGCC
	BnACT7	NM_001316079	TGAGAGATTCCGTTGCCCT	CACCACTGAGGACGATGTTTC
	BnEf1alpha	NM_001315606	AGTCTTTGTGGAGGCATT	CTGGGTCATCCTGGGGTT
Z. mays	ZmSPX1	XM_008678441	CAAGTTCAACGCCTTCTCC	GAAGTCGACGATCTCCTTGC
	ZmSPX3	XM_008666764	CACAGGGAGCTGAAGGAGAC	GCCAGCCTGTGTAGTTGAT
	ZmSQD2	BT087620	ATTGGAGACGGACCATTGAG	CCACAACCCAGTGTCTCT
	ZmPHT2	NM_001112346	CATTGTCACGCTCGTCATCT	GGTGGAGTTGAAGTGGTCTG
	ZmPHR1	NM_001294298	CCCTGCTGGGAATAATTTGA	AACCGTTGAGTTTCTGTGG
	ZmEIF4A	AF007580	GACAAGATGAGGAGCAGGGA	CAATACCACGAGCAAGCAGG
	ZmTUBULIN	GRMZM2G152466_T01	CACTGATGTTGCTGCTCTGCT	GTTGAGGTTGGGTAGGTTGGG
T. aestivum	TaSPX1	AK332300	GACGCTGTGACACACGATAC	GAAACAGGTGAGGCTCTGGT
	TaIPS1	AK330946	CGGCGACTTCTACCTCTAC	GACTACTGAAGACTCGCACCA
	TaGDPD	AK447128	AATCAATGCCCTCGCTAC	GTGTGATCTCCTCGGTGAG
	TaPHT1;2	KJ170128	CATCCTCATGGTCTCTGCT	GTGGCGCTCAGAGGATAGTC
	TaPT4	AK333026	GGGCTTCATGTTACCTTCTCTG	GGATCTTTGACCCACTCAACATCC
	TaPHR1	KC286911.1	TTCCAGGTTCCGGCTGATG	CTGCCACCATTCAATTTGTT
	TaACTIN	GQ339780	GTGTTGGATTCTGGTGATGGTG	CGAGGTCAAGACGAAGGATGG
TaGAPDH	EF92180	CCTTCATCACCACCGACTACA	ACAGCAACCTCCTTCTACC	

Table S3: List of primers used for this study