

### Supplementary Data

**Table S1:** Comparison of means among wheat varieties. PH=Plant height (cm), TLL=Total no. of live leaves, ChlC= Chlorophyll content (SPAD value), LS4= **Leaf injury scores at 4<sup>th</sup> leaf**, LS5= Leaf injury scores at 5<sup>th</sup> leaf, SDW=Shoot dry weight (g), RDW=Root dry weight (g), TPr=Total number of phytomers per tiller, TR=Total no. of roots per tiller, NSR=No. of seminal roots, LSR=Length of seminal roots (cm), MAL=Main axis length at Pr4 (cm), MALPr1=Main root axis length at phytomer 1 (cm), MAD=Main axis diameter (mm), PAL=Length of first order lateral roots (cm), PAD=Diameter of first order lateral roots (mm), DPA=Density of first order lateral roots (no. mm<sup>-1</sup>), **SAL=Length of second order lateral roots** (cm), SAD=Diameter of second order lateral roots (mm), DSA=Density of second order lateral roots (no. mm<sup>-1</sup>), DRH<sub>MA</sub>= Density of root hairs of main axis, DRH<sub>SA</sub>= Density of root hairs of second order lateral roots (no. mm<sup>-1</sup>), DRH<sub>PA</sub>=Density of root hairs of first order lateral roots (no. mm<sup>-1</sup>), RHL<sub>PA</sub>=Length of root hairs of first order lateral roots (μm).

VARIETY	PH	TLL	Chl3	LS4	LS5	SDW	RDW	TPr	TR	NSR	LSR	MALPr4
Durum	40.33	5.00	31.25	3.00	4.33	0.35	0.06	6.50	9.00	4.50	2.36	49.00
Sourav	37.33	4.33	28.37	2.67	4.33	0.40	0.06	7.00	9.25	5.00	1.38	46.05
Gourab	41.35	4.00	27.23	3.33	6.00	0.35	0.05	6.75	8.75	5.50	2.30	55.88
Sonalika	40.45	4.17	29.22	4.33	6.33	0.39	0.06	7.00	7.50	4.50	2.68	46.68
Kanchan	34.08	4.33	28.85	3.33	4.33	0.33	0.04	6.00	7.50	5.50	2.40	53.25
Sonora-64	32.75	3.50	26.65	3.67	5.33	0.21	0.03	5.50	6.50	5.00	2.38	47.75
Kalaysona	32.00	3.83	25.50	6.67	8.67	0.40	0.03	5.50	5.00	6.25	1.78	48.50
Triticale	49.67	4.83	36.10	3.33	6.33	0.41	0.05	6.00	6.25	4.00	1.95	49.38
Kheri	46.00	3.67	27.03	5.00	6.67	0.34	0.03	6.25	7.00	5.25	4.15	42.63
BARI-21	38.42	4.33	25.03	3.33	4.33	0.44	0.06	6.50	8.25	4.50	2.30	55.13
BARI-22	49.83	4.83	28.82	5.00	6.33	0.56	0.07	7.00	8.00	4.75	3.28	56.38
BARI-23	37.37	4.33	25.90	5.00	7.00	0.37	0.06	6.25	9.50	5.00	3.06	44.50
BARI-24	43.17	4.17	30.48	4.33	5.67	0.43	0.10	7.75	12.25	5.75	1.94	58.85
BARI-25	35.55	4.33	28.82	5.00	6.00	0.35	0.09	7.00	9.00	6.25	3.50	59.75
BARI-26	37.17	3.83	28.32	4.00	5.67	0.29	0.03	5.75	8.75	4.25	4.01	47.63
BARI-27	35.83	4.00	28.87	4.67	6.67	0.25	0.08	5.50	5.75	5.25	3.21	44.85
BARI-28	40.17	4.67	30.30	3.67	6.00	0.38	0.06	6.50	7.75	6.00	4.06	56.80
BARI-29	42.33	4.67	31.72	4.33	6.00	0.48	0.07	6.50	7.00	4.25	2.87	47.88
BARI-30	37.67	4.50	26.45	4.00	6.00	0.44	0.08	6.50	10.75	4.75	4.70	47.38
BARI-31	37.50	4.00	28.58	4.67	7.00	0.34	0.05	6.50	9.50	5.25	2.36	46.25
BARI-32	39.17	5.00	30.80	4.33	5.67	0.50	0.07	6.75	11.00	5.00	3.60	53.55
BARI-33	43.00	4.67	28.95	4.33	7.33	0.56	0.07	6.75	9.00	4.25	3.28	50.60
<b>Mean</b>	<b>39.60</b>	<b>4.32</b>	<b>28.78</b>	<b>4.18</b>	<b>6.00</b>	<b>0.39</b>	<b>0.06</b>	<b>6.44</b>	<b>8.33</b>	<b>5.03</b>	<b>2.89</b>	<b>50.39</b>
<b>SEM</b>	<b>0.592</b>	<b>0.075</b>	<b>0.283</b>	<b>0.125</b>	<b>0.159</b>	<b>0.014</b>	<b>0.008</b>	<b>0.135</b>	<b>0.325</b>	<b>0.148</b>	<b>0.189</b>	<b>0.935</b>
<b>p value</b>	<b>&lt;0.001</b>	<b>0.002</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>0.115</b>	<b>&lt;0.001</b>	<b>0.003</b>	<b>&lt;0.001</b>	<b>0.005</b>

**Table S1:** Comparison of means among wheat varieties (Cont.)

VARIETY	MALP1	MAD	PAL	PAD	DPA	SAL	SAD	DSA	DRH <sub>MA</sub>	DRH <sub>SA</sub>	DRH <sub>PA</sub>	RHL <sub>PA</sub>
Durum	2.30	0.46	2.70	0.23	5.10	0.35	0.14	3.30	8.20	7.10	7.60	343.00
Sourav	2.63	0.37	2.99	0.22	5.80	0.46	0.15	3.90	6.00	8.50	8.30	579.00
Gourab	2.00	0.44	1.78	0.21	6.75	0.52	0.18	4.20	7.60	9.10	7.00	440.00
Sonalika	2.23	0.40	1.86	0.23	5.30	0.64	0.15	4.50	7.30	7.30	6.80	288.00
Kanchan	2.20	0.38	3.52	0.21	5.90	0.58	0.14	4.15	7.70	7.40	9.30	432.00
Sonora-64	1.78	0.39	1.64	0.25	5.90	0.54	0.15	4.50	6.90	8.00	7.70	548.00
Kalaysona	1.58	0.49	1.65	0.23	5.46	0.29	0.13	3.00	6.50	5.67	9.10	346.00
Triticale	2.10	0.51	2.06	0.24	5.65	0.52	0.14	3.60	6.70	4.73	5.80	376.00
Kheri	2.48	0.40	1.87	0.22	6.25	0.37	0.16	3.80	8.80	9.60	7.80	477.00
BARI-21	2.35	0.41	1.92	0.17	5.75	0.48	0.15	3.45	8.90	6.50	7.80	426.00
BARI-22	2.18	0.41	2.31	0.21	5.85	0.43	0.15	3.95	6.00	7.10	9.70	505.00
BARI-23	1.30	0.46	2.85	0.28	5.45	0.44	0.15	3.30	9.00	7.00	9.30	508.00
BARI-24	3.05	0.49	2.52	0.25	5.40	0.44	0.17	4.35	7.10	7.80	8.10	625.00
BARI-25	2.35	0.43	2.73	0.22	5.45	0.61	0.15	5.10	10.90	9.40	9.90	518.00
BARI-26	2.13	0.36	2.37	0.20	5.50	0.37	0.15	4.50	6.80	8.90	8.00	415.00
BARI-27	1.35	0.42	2.92	0.20	6.18	0.58	0.14	4.91	5.88	7.70	5.90	300.00
BARI-28	2.50	0.41	2.05	0.26	5.90	0.37	0.15	5.85	8.60	7.90	9.50	461.00
BARI-29	2.35	0.50	1.70	0.26	6.25	0.42	0.15	5.85	5.38	7.40	7.40	443.00
BARI-30	2.83	0.50	1.75	0.22	6.05	0.41	0.16	4.05	6.60	8.40	7.50	439.00
BARI-31	1.98	0.39	2.85	0.26	5.68	0.83	0.16	5.30	6.70	6.90	7.90	481.00
BARI-32	2.38	0.42	1.40	0.20	5.88	0.38	0.16	3.40	6.40	7.50	10.80	588.00
BARI-33	2.33	0.45	1.96	0.19	5.55	0.50	0.12	4.40	8.40	6.30	7.10	627.00
<b>Mean</b>	<b>2.20</b>	<b>0.43</b>	<b>2.24</b>	<b>0.23</b>	<b>5.77</b>	<b>0.48</b>	<b>0.15</b>	<b>4.24</b>	<b>7.38</b>	<b>7.55</b>	<b>8.10</b>	<b>462.05</b>
<b>SEM</b>	<b>0.096</b>	<b>0.007</b>	<b>0.273</b>	<b>0.0036</b>	<b>0.07</b>	<b>0.019</b>	<b>0.0014</b>	<b>0.078</b>	<b>0.166</b>	<b>0.156</b>	<b>0.157</b>	<b>10.76</b>
<b>p value</b>	<b>0.003</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>

**Table S2:** Treatment  $\times$  Variety interactions in shoot, root and root hair traits of 22 wheat variety under two treatments. PH=Plant height, TLL=Total no. of live leaves, LS4= Leaf injury scores at 4<sup>th</sup> leaves, LS5= Leaf injury scores at 5<sup>th</sup> leaves, ChlC= Chlorophyll content, SDW=Shoot dry weight, TPr=Total number of root bearing phytomers per tiller, NSR=Number of seminal roots, LSR=Length of seminal roots, MALPr1-Pr4= Main axis length at phytomers 1-4.

VARIETY	PH		TLL		Chl3		LS4		LS5		SDW		TPr		NSR	
	0%	10% PEG	0%	10% PEG	0%	10% PEG	0%	10% PEG	0%	10% PEG	0%	10% PEG	0%	10% PEG	0%	10% PEG
Durum	43.00	37.67	5.67	4.33	35.10	27.40	2.33	3.67	3.67	5.00	0.41	0.29	7.0	6.0	4.5	4.5
Sourav	41.00	33.67	4.33	4.33	28.37	28.37	<b>2.33</b>	3.00	<b>3.00</b>	5.67	0.49	0.31	7.5	6.5	5.5	4.5
Gourab	44.37	38.33	4.67	3.33	28.37	26.10	3.00	3.67	4.33	7.67	0.41	0.28	7.5	6.0	6.5	4.5
Sonalika	44.23	36.67	4.00	4.33	29.83	28.60	3.67	5.00	5.67	7.00	0.51	0.26	7.0	7.0	5.5	3.5
Kanchan	42.50	<b>25.67</b>	4.67	4.00	30.63	27.07	3.00	3.67	3.67	5.00	0.42	0.23	6.0	6.0	6.5	4.5
Sonora-64	34.50	31.00	3.67	3.33	31.60	<b>21.70</b>	3.00	4.33	4.33	6.33	0.25	<b>0.17</b>	6.5	4.5	4.5	5.5
Kalaysona	35.33	28.67	4.00	3.67	28.10	22.90	4.33	9.00	8.33	9.00	0.60	0.21	7.0	4.0	6.0	6.5
Triticale	53.33	46.00	5.33	4.33	36.27	35.93	3.00	3.67	5.00	7.67	0.42	0.41	7.0	5.0	4.5	3.5
Kheri	43.00	49.00	4.00	3.33	26.20	27.87	4.33	5.67	6.33	7.00	0.38	0.30	6.5	6.0	5.0	5.5
BARI-21	44.17	32.67	4.67	4.00	26.37	23.70	3.67	3.00	5.00	3.67	0.56	0.32	7.0	6.0	5.5	3.5
BARI-22	52.67	47.00	5.67	4.00	27.83	29.80	5.00	5.00	5.00	7.67	0.68	0.45	7.5	6.5	5.5	4.0
BARI-23	41.73	33.00	5.00	3.67	28.57	23.23	3.67	6.33	5.00	9.00	0.46	0.28	7.5	5.0	7.0	3.0
BARI-24	44.33	42.00	5.00	<b>3.33</b>	31.33	29.63	3.67	5.00	5.67	5.67	0.47	0.39	10.0	5.5	7.0	4.5
BARI-25	38.77	32.33	4.67	4.00	30.27	27.37	5.00	5.00	5.00	7.00	0.42	0.28	8.5	5.5	7.0	5.5
BARI-26	36.00	38.33	4.00	3.67	27.80	28.83	4.33	3.67	5.67	5.67	0.23	0.35	6.0	5.5	4.5	4.0
BARI-27	38.33	33.33	4.33	3.67	28.13	29.60	3.67	5.67	5.00	8.33	0.26	0.25	7.0	<b>4.0</b>	6.5	4.0
BARI-28	45.33	35.00	5.00	4.33	29.73	30.87	3.00	4.33	5.00	7.00	0.53	0.24	7.5	5.5	5.5	6.5
BARI-29	46.00	38.67	5.33	4.00	33.07	30.37	3.00	5.67	4.33	7.67	0.56	0.40	6.5	6.5	5.5	<b>3.0</b>
BARI-30	36.33	39.00	5.00	4.00	25.23	27.67	3.67	4.33	5.00	7.00	0.47	0.40	7.0	6.0	4.5	5.0
BARI-31	39.67	35.33	4.33	3.67	30.33	26.83	5.00	4.33	5.67	8.33	0.38	0.29	6.5	6.5	6.0	4.5
BARI-32	43.00	35.33	5.67	4.33	32.90	28.70	3.67	5.00	4.33	7.00	0.58	0.42	8.0	5.5	5.5	4.5
BARI-33	46.33	39.67	5.67	3.67	29.70	28.20	4.33	4.33	6.33	8.33	0.62	0.51	7.0	6.5	4.5	4.0
Mean	42.5	36.7	4.76	3.88	29.8	27.7	3.67	4.70	5.06	6.94	0.46	0.32	7.18	5.70	5.59	4.48
SEM	0.73	0.79	0.10	0.08	0.41	0.37	0.13	0.19	0.19	0.19	0.02	0.02	0.16	0.16	0.21	0.20
p value	0.002		0.307		0.057		0.003		0.03		0.027		0.044		0.003	

**Table S2:** Treatment × Variety interactions in shoot, root and root hair traits of 22 wheat variety under two treatments (cont.)

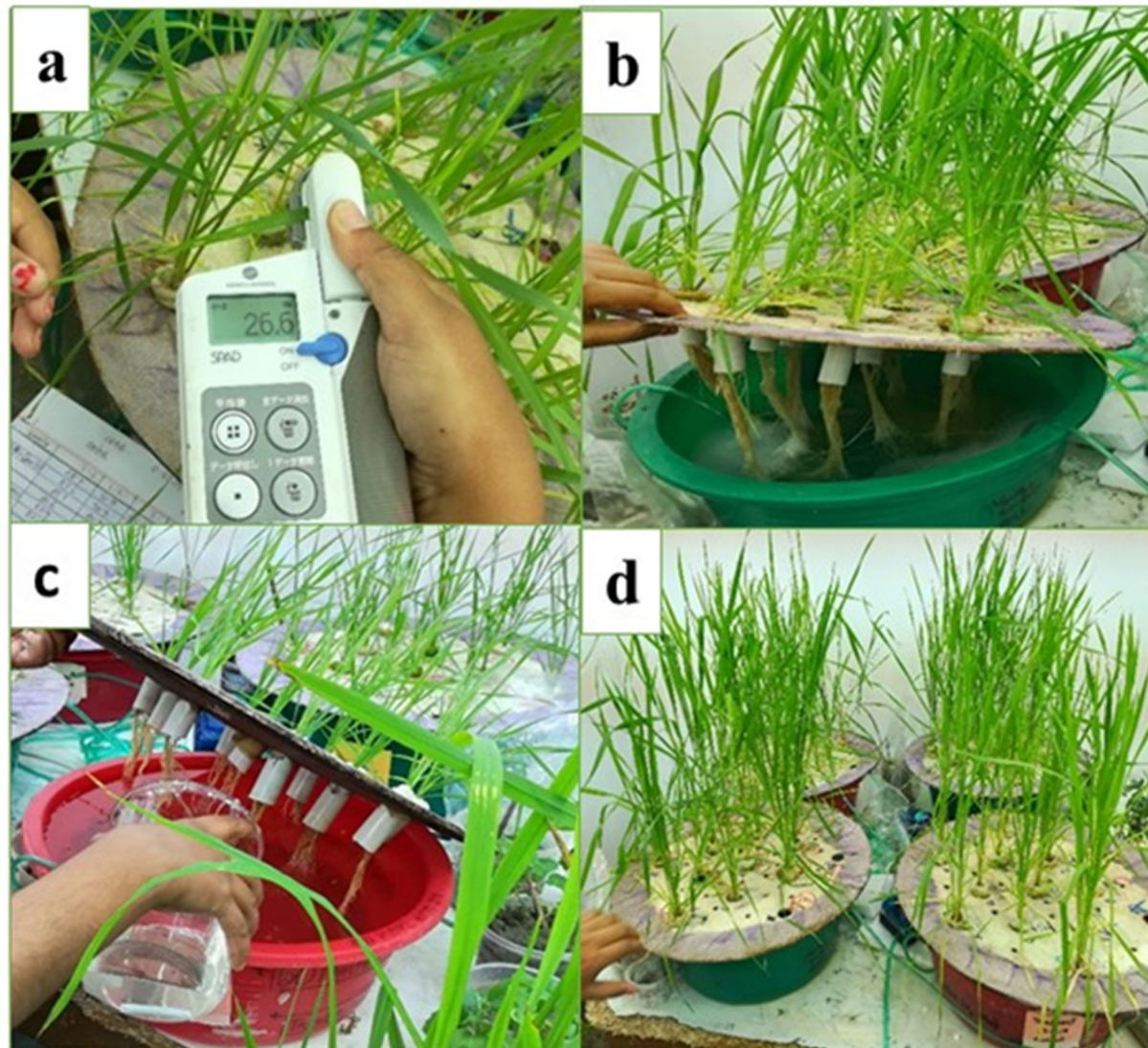
VARIETY	LSR		MALPr1		MALPr2		MALPr3		MALPr4	
	0%	10% PEG	0%	10% PEG	0%	10% PEG	0%	10% PEG	0%	10% PEG
Durum	2.3	2.44	1.80	3.30	5.85	21.55	10.85	24.30	21.45	31.00
Sourav	1.4	<b>1.32</b>	3.35	1.90	4.90	3.85	5.70	13.45	31.00	22.35
Gourab	1.9	2.72	2.15	3.50	4.90	5.30	9.50	19.70	15.60	26.50
Sonalika	1.8	3.53	2.20	2.75	7.90	6.45	10.15	17.40	16.05	32.15
Kanchan	1.6	3.20	2.55	1.85	7.15	18.50	17.30	30.00	44.25	38.85
Sonora-64	2.3	2.47	2.35	1.10	3.70	17.50	13.60	21.25	25.05	41.50
Kalaysona	2.0	1.55	1.50	1.65	3.15	11.50	29.00	13.00	43.00	49.00
Triticale	1.8	2.14	2.85	1.85	10.65	3.80	15.40	24.20	18.60	32.25
Kheri	3.1	5.16	3.10	2.35	14.25	9.30	19.60	12.70	26.50	26.50
BARI-21	2.6	2.02	2.90	1.80	6.30	19.50	18.00	32.00	27.25	35.75
BARI-22	2.2	4.36	2.85	2.00	15.50	21.20	16.05	28.75	23.50	33.00
BARI-23	1.5	4.64	2.45	1.15	9.35	4.30	14.75	10.90	18.75	17.30
BARI-24	2.1	1.79	4.25	2.75	7.40	4.80	11.60	10.05	18.00	22.25
BARI-25	2.9	4.07	3.35	1.35	7.95	22.05	8.85	14.90	12.20	40.75
BARI-26	2.8	5.18	2.25	2.00	3.85	5.35	7.45	21.25	27.00	32.00
BARI-27	4.9	1.55	0.95	1.50	2.90	11.00	4.90	20.00	9.70	33.00
BARI-28	3.5	4.60	2.25	2.75	3.70	19.00	12.95	22.50	20.05	57.50
BARI-29	3.1	2.62	2.40	2.80	19.25	26.75	33.00	36.00	35.50	45.75
BARI-30	4.3	5.07	3.70	1.95	12.80	5.35	25.50	10.55	28.00	32.35
BARI-31	2.4	2.36	1.60	2.35	3.25	3.45	5.75	13.50	23.50	37.50
BARI-32	2.5	4.76	3.85	1.90	6.70	3.25	12.80	5.60	19.75	19.60
BARI-33	3.0	3.53	2.50	2.15	6.55	7.75	23.50	13.00	25.50	26.25
<b>Mean</b>	2.55	3.23	2.60	2.12	7.63	11.43	14.83	18.86	24.10	33.32
<b>SEM</b>	0.205	0.325	0.10	1.25	0.85	1.47	1.01	1.50	1.41	2.04
<b>p value</b>	0.01		0.003		0.001		0.019		0.002	

**Table S3:** Correlation coefficients of root traits. PH=Plant height, TLL=Total no. of live leaves, LS4= Leaf injury scores at 4<sup>th</sup> leaves, LS5= Leaf injury scores at 5<sup>th</sup> leaves, ChlC= Chlorophyll content, SDW=Shoot dry weight, RDW=Root dry weight, TPr=Total number

of root bearing phytomers per tiller, TR=Total number of roots per tiller, NSR=Number of seminal roots, LSR=Length of seminal roots, MALmax= Maximum main axis length, MAD=Main axis diameter, PAL=Length of first order lateral roots, PAD=Diameter of first order lateral roots, DPA=Density of first order lateral roots, SAL=Length of second order lateral roots, SAD=Diameter of second order lateral roots, DSA=Density of second order lateral roots, DRH<sub>MA</sub>= Density of root hairs of main axis, DRH<sub>SA</sub>= Density of root hairs of second order lateral roots.

	RDW	TPr	TR	NSR	LSR	MALmax	MAD	PAL	PAD	DPA	SAL	SAD	DSA	DRHma	DRHsa
TPr	0.379 <sup>NS</sup>														
TR	0.492 <sup>NS</sup>	0.92***													
NSR	0.405 <sup>NS</sup>	0.754**	0.867***												
LSR	-0.039 <sup>NS</sup>	-0.012 <sup>NS</sup>	-0.12 <sup>NS</sup>	-0.01 <sup>NS</sup>											
MALmax	0.664*	-0.101 <sup>NS</sup>	0.091 <sup>NS</sup>	0.008 <sup>NS</sup>	-0.278 <sup>NS</sup>										
MAD	0.34 <sup>NS</sup>	-0.383 <sup>NS</sup>	-0.358 <sup>NS</sup>	-0.369 <sup>NS</sup>	0.011 <sup>NS</sup>	0.252 <sup>NS</sup>									
PAL	0.481 <sup>NS</sup>	-0.381 <sup>NS</sup>	-0.149 <sup>NS</sup>	-0.034 <sup>NS</sup>	0.221 <sup>NS</sup>	0.606*	0.585*								
PAD	0.073 <sup>NS</sup>	-0.612*	-0.528 <sup>NS</sup>	-0.461 <sup>NS</sup>	-0.042 <sup>NS</sup>	0.206 <sup>NS</sup>	0.719**	0.525 <sup>NS</sup>							
DPA	-0.145 <sup>NS</sup>	-0.759**	-0.634*	-0.348 <sup>NS</sup>	0.341 <sup>NS</sup>	-0.051 <sup>NS</sup>	0.381 <sup>NS</sup>	0.545 <sup>NS</sup>	0.521 <sup>NS</sup>						
SAL	0.162 <sup>NS</sup>	-0.067 <sup>NS</sup>	-0.068 <sup>NS</sup>	-0.316 <sup>NS</sup>	0.42 <sup>NS</sup>	-0.002 <sup>NS</sup>	0.097 <sup>NS</sup>	0.217 <sup>NS</sup>	0.088 <sup>NS</sup>	0.303 <sup>NS</sup>					
SAD	0.257 <sup>NS</sup>	0.309 <sup>NS</sup>	0.266 <sup>NS</sup>	0.169 <sup>NS</sup>	-0.019 <sup>NS</sup>	0.144 <sup>NS</sup>	-0.09 <sup>NS</sup>	-0.134 <sup>NS</sup>	0.232 <sup>NS</sup>	-0.176 <sup>NS</sup>	0.19 <sup>NS</sup>				
DSA	0.448 <sup>NS</sup>	-0.337 <sup>NS</sup>	-0.262 <sup>NS</sup>	-0.347 <sup>NS</sup>	0.38 <sup>NS</sup>	0.378 <sup>NS</sup>	0.546 <sup>NS</sup>	0.588*	0.677*	0.373 <sup>NS</sup>	0.508 <sup>NS</sup>	0.251 <sup>NS</sup>			
DRHma	0.392 <sup>NS</sup>	-0.032 <sup>NS</sup>	-0.113 <sup>NS</sup>	-0.008 <sup>NS</sup>	0.748**	0.01 <sup>NS</sup>	0.389 <sup>NS</sup>	0.497 <sup>NS</sup>	0.285 <sup>NS</sup>	0.321 <sup>NS</sup>	0.341 <sup>NS</sup>	-0.027 <sup>NS</sup>	0.638*		
DRHsa	0.205 <sup>NS</sup>	-0.186 <sup>NS</sup>	-0.125 <sup>NS</sup>	0.005 <sup>NS</sup>	0.416 <sup>NS</sup>	0.503 <sup>NS</sup>	0.084 <sup>NS</sup>	0.533 <sup>NS</sup>	0.313 <sup>NS</sup>	0.205 <sup>NS</sup>	0.001 <sup>NS</sup>	0.26 <sup>NS</sup>	0.442 <sup>NS</sup>	0.392 <sup>NS</sup>	
DRHpa	0.334 <sup>NS</sup>	-0.374 <sup>NS</sup>	-0.447 <sup>NS</sup>	-0.349 <sup>NS</sup>	0.203 <sup>NS</sup>	0.236 <sup>NS</sup>	0.691*	0.579*	0.591*	0.473 <sup>NS</sup>	0.238 <sup>NS</sup>	-0.01 <sup>NS</sup>	0.488 <sup>NS</sup>	0.658*	0.297 <sup>NS</sup>

\*, \*\*, and \*\*\* = Significant at  $\leq 5\%$ ,  $\leq 1\%$ , and  $\leq 0.1\%$  levels of probability, respectively and NS= Non-significant



**Figure S1:** Culture of wheat genotypes in a plant culture room a) measurement of chlorophyll content b) root growth c) inspection of oxygen supply and adding of nutrients d) plants of twenty-two wheat genotypes before destructive harvest.