

**Table S1.** Myanmar rice materials.

No.	Varieties	Ecosystem	No.	Varieties	Ecosystem
1	Ayarmin	Lowland	12	Yeanelo - 6	Lowland
2	Manaw Thukha	Lowland	13	Yeanelo - 7	Lowland
3	Myaung Mya May	Lowland	14	Y329-UBN (Thai-land)	Lowland
4	Pyi Myanmar Sein	Lowland	15	Ba Ma Htar	Upland
5	Shwe Asian	Lowland	16	Kauk Yin	Upland
6	Sin Thwe Lat	Lowland	17	Ma Ma Lay Saba	Upland
7	Yeanelo - 1	Lowland	18	Nga Ywan Nu	Upland
8	Yeanelo - 2	Lowland	19	Yar - 4	Upland
9	Yeanelo - 3	Lowland	20	Yar - 8	Upland
10	Yeanelo - 4	Lowland	21	Yar Kyaw	Upland
11	Yeanelo - 5	Lowland			

**Table S2.** Principal component analysis of lowland rice under drought stress in field experiment.

Traits	Dim.1	Dim.2	Dim.3	Dim.4
FD	-0.53	0.32	-0.75	-0.05
PH	0.84	-0.34	0.25	0.26
TN	-0.48	-0.82	-0.09	-0.30
BW	0.47	-0.86	-0.16	0.13
GW	0.23	0.34	0.88	0.21
FG	0.18	-0.91	0.12	-0.31
NPT	0.83	-0.47	-0.28	0.06
NR	0.53	-0.80	-0.25	0.04
LR	-0.66	0.17	0.14	-0.72
RT	0.93	0.20	-0.05	-0.28
CA	0.90	0.24	0.01	-0.33
SA	0.78	0.50	0.12	-0.27
XN	0.57	0.33	-0.42	-0.60
XA	0.72	0.64	-0.13	0.10
PA	0.10	0.38	-0.70	0.50
Eigen value	6.05	4.48	2.31	1.73
%variance	40.36	29.86	15.37	11.51
%Cum.Var	40.36	70.22	85.60	97.11

FD, 50% days to flowering (DAS); PH, plant height (cm); TN, tiller number (number); FG, percent of filled grain (%); 1000GW, one thousand grain weight; BIO, biomass (g); NPT, nodal root per tiller (no./tiller); NR, total nodal root number (no.); LR, lateral root density (no./10 cm); RT, root thickness (mm); CA, cortex area (cm<sup>2</sup>); SA, stele area (cm<sup>2</sup>); XN, xylem number (no.); XA, xylem area (cm<sup>2</sup>); PA, percent of aerenchyma (%).

**Table S3.** Principal component analysis of upland rice under drought stress in field experiment.

Traits	Dim.1	Dim.2	Dim.3	Dim.4
FD	0.80	0.40	0.22	0.38
PH	-0.22	0.69	-0.50	0.17
TN	-0.32	-0.86	0.03	0.34
BW	0.12	-0.32	-0.19	0.90
GW	0.80	0.40	0.23	0.37
FG	0.80	0.40	0.26	0.35
NPT	0.42	-0.46	-0.44	-0.46
NR	0.03	-0.77	-0.45	0.21
LR	-0.77	-0.14	0.54	0.12
RT	-0.91	0.36	-0.10	0.13
CA	-0.82	0.42	-0.15	0.32
SA	-0.71	0.62	-0.20	0.25
XN	-0.08	0.84	0.25	-0.37
XA	-0.10	-0.15	0.89	-0.03
PA	-0.46	-0.49	0.62	0.07
Eigen value	5.08	4.28	2.44	1.95

%variance	33.88	28.53	16.29	13.03
%Cum.Var	33.88	62.41	78.70	91.73

FD, 50% days to flowering (DAS); PH, plant height (cm); TN, tiller number (number); FG, percent of filled grain (%); 1000GW, one thousand grain weight; BIO, biomass (g); NPT, nodal root per tiller (no./tiller); NR, total nodal root number (no.); LR, lateral root density (no./10 cm); RT, root thickness (mm); CA, cortex area (cm<sup>2</sup>); SA, stele area (cm<sup>2</sup>); XN, xylem number (no.); XA, xylem area (cm<sup>2</sup>); PA, percent of aerenchyma (%).

**Table S4.** Principal component analysis of lowland rice under drought stress in pot experiment.

Traits	Dim.1	Dim.2	Dim.3	Dim.4
PH	-0.17	0.68	-0.04	-0.64
TN	-0.92	-0.03	0.24	0.04
BM	-0.78	0.50	-0.13	0.10
NPT	-0.15	0.75	-0.32	0.44
NR	-0.92	0.24	0.00	0.18
LR	-0.18	0.10	0.74	0.05
%50-90	0.67	-0.04	-0.34	0.51
CC	0.34	0.00	-0.56	-0.44
PR	0.82	0.33	0.20	0.09
SC	0.84	0.37	0.27	-0.03
TR	0.84	0.32	0.27	0.00
Eigen value	5.06	1.69	1.35	1.11
%variance	45.97	15.39	12.30	10.08
%Cum.Var	45.97	61.36	73.66	83.74

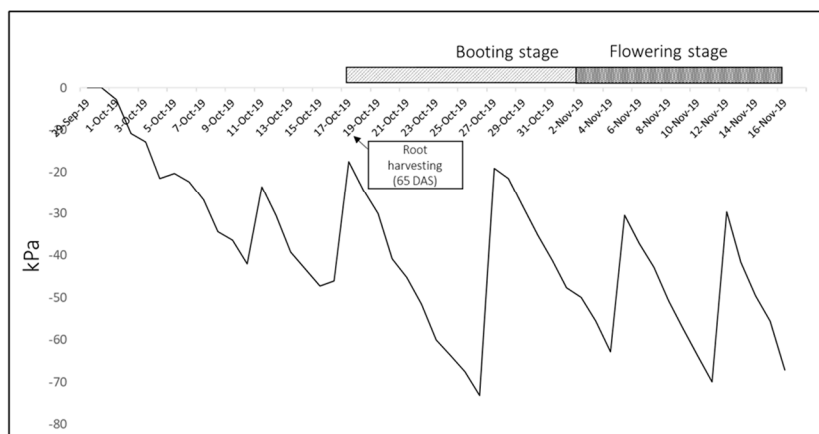
PH, plant height (cm); TN, tiller number (number); BIO, biomass (g); NPT, nodal root per tiller (no./tiller); NR, total nodal root number (no.); LR, lateral root density (no./10 cm); %50-90; percent of nodal root at 50-90 degree (%), CC, chlorophyll content (nmol cm<sup>-2</sup>); PR, photosynthesis rate (CO<sub>2</sub> m<sup>-2</sup>s<sup>-1</sup>); SC, stomatal conductance (mmol m<sup>-2</sup>s<sup>-1</sup>); TR, transpiration rate (mm min<sup>-1</sup>).

**Table S5.** Principal component analysis of upland rice under drought stress in pot experiment.

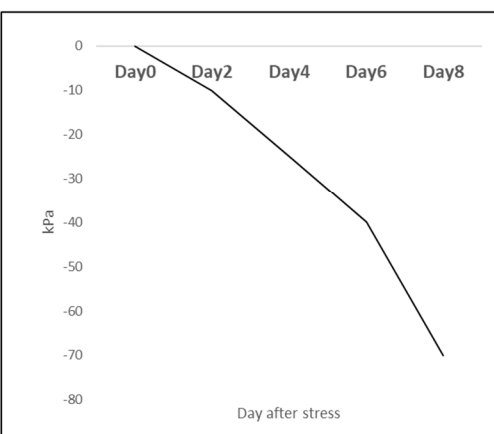
Traits	Dim.1	Dim.2	Dim.3
PH	-0.56	-0.66	-0.41
TN	-0.86	0.18	-0.36
BM	-0.94	-0.17	0.03
NPT	-0.91	-0.09	0.37
NR	-0.98	-0.01	0.03
LRD	-0.01	0.99	0.03
%50-90	0.91	0.13	0.03
CC	0.26	0.85	0.06
PR	-0.04	-0.42	0.90
SC	0.71	-0.57	-0.06
TR	0.69	-0.58	-0.17
Eigen value	5.61	3.06	1.28
%variance	50.96	27.83	11.65
%Cum.Var	50.96	78.79	90.44

PH, plant height (cm); TN, tiller number (number); BIO, biomass (g); NPT, nodal root per tiller (no./tiller); NR, total nodal root number (no.); LR, lateral root density (no./10 cm); %50-90; percent of nodal root at 50-90 degree (%), CC, chlorophyll content (nmol cm<sup>-2</sup>); PR, photosynthesis rate (CO<sub>2</sub> m<sup>-2</sup>s<sup>-1</sup>); SC, stomatal conductance (mmol m<sup>-2</sup>s<sup>-1</sup>); TR, transpiration rate (mm min<sup>-1</sup>).

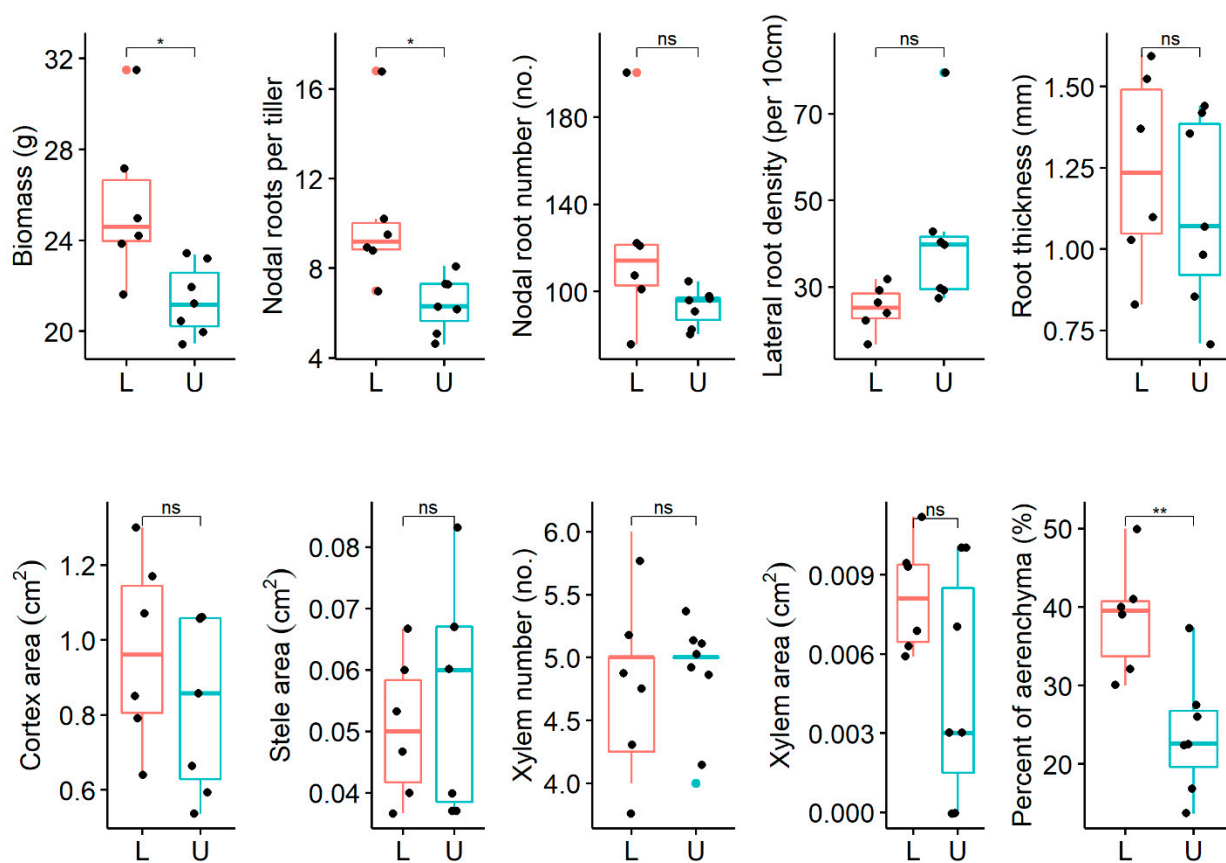
A Field exp.



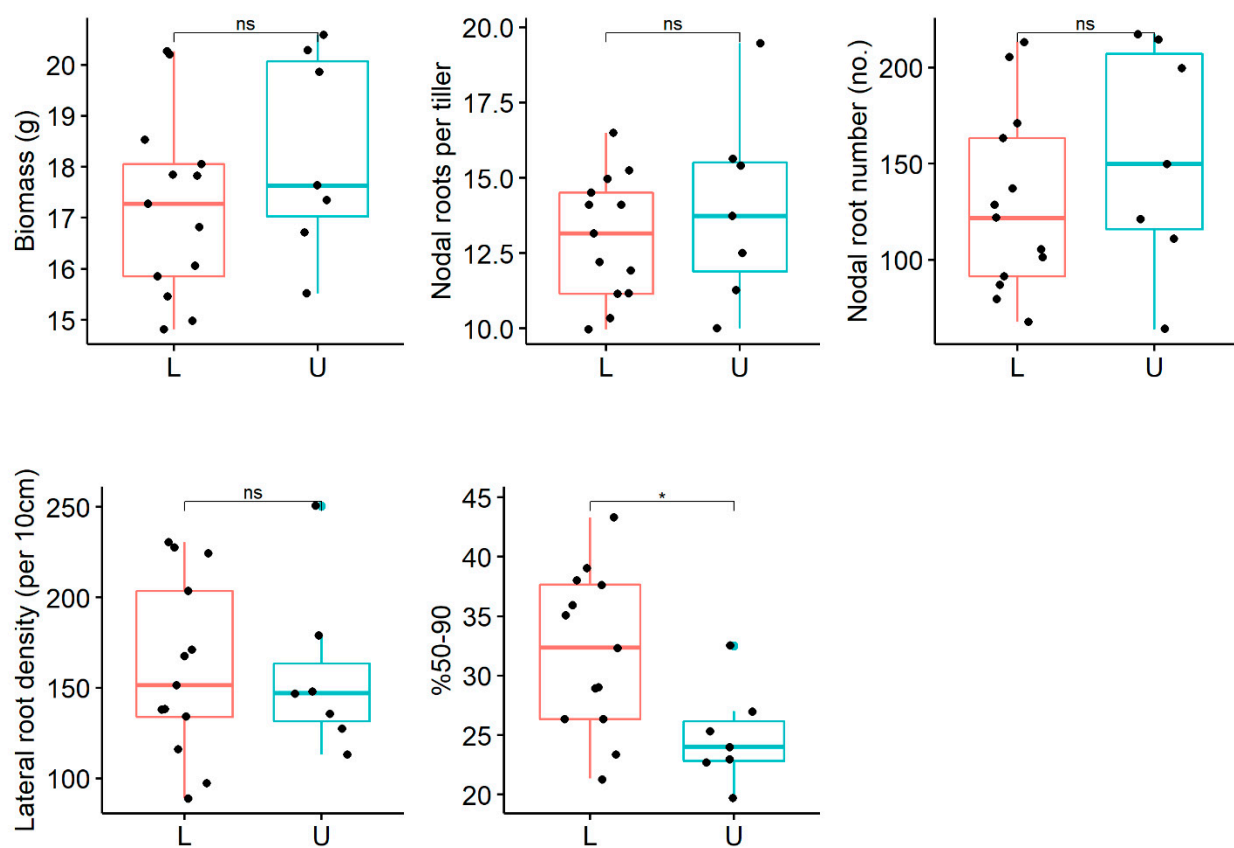
B Pot exp.



**Figure S1.** Soil water potential monitoring by tensiometer.



**Figure S2.** Comparison of upland (U) and lowland (L) rice root character under drought stress in field experiment. Note: \*\*, \* and ns represent the significant differences at 0.05, 0.01 levels and no significant difference, respectively.

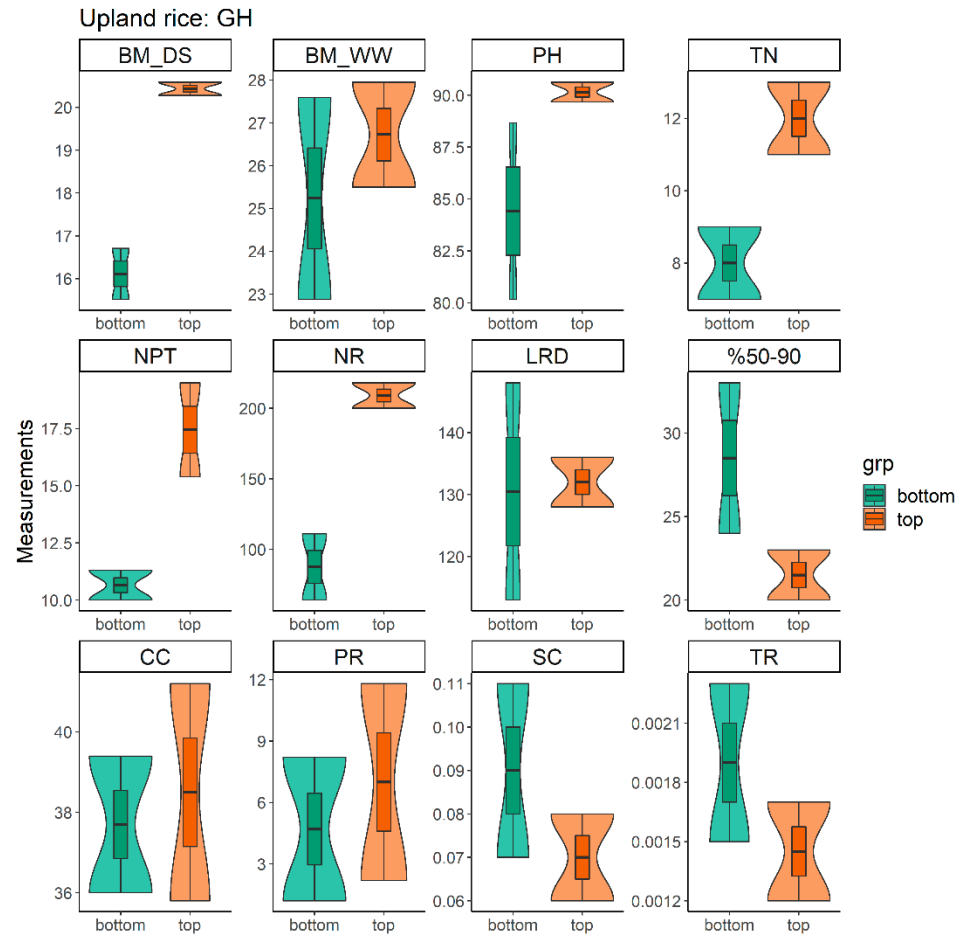


**Figure S3.** Comparison of upland and lowland rice root character under drought stress in pot experiment. Note: \* and ns represent the significant differences at 0.01 levels and no significant difference, respectively.









**Figure S7. Bulk analysis of upland rice in pot experiment.** PH, plant height (cm); TN, tiller number (number); BIO, biomass (g); NPT, nodal root per tiller (no./tiller); NR, total nodal root number (no.); LR, lateral root density (no./10 cm); %50-90; percent of nodal root at 50-90 degree (%), CC, chlorophyll content ( $\text{nmol cm}^{-2}$ ); PR, photosynthesis rate ( $\text{CO}_2 \text{ m}^{-2} \text{ s}^{-1}$ ); SC, stomatal conductance ( $\text{mmol m}^{-2} \text{ s}^{-1}$ ); TR, transpiration rate ( $\text{mm min}^{-1}$ ).