Table S1. The apparent CO_2 photocompensation point (C_i^*) and the day respiration rate (R_d) in the flag leaves of the tested rice genotypes under different nitrogen supplies.

Genotype	Treatment	C_i^* (µmol mol^{-1})	R_d (µmol m^{-2} s^{-1})
Sab Ini	HN	43.9 ± 3.2	0.43 ± 0.38
	LN	43.2 ± 1.4	0.45 ± 0.02
N22	HN	52.1 ± 2.4	0.90 ± 0.22
	LN	47.3 ± 3.5	0.71 ± 0.18
Huanghuazhan	HN	42.2 ± 1.6	0.33 ± 0.10
	LN	42.3 ± 0.6	0.41 ± 0.18
Yongyou 12	HN	44.5 ± 4.1	0.64 ± 0.55
	LN	43.3	0.84
ANOVA			
Genotype		**	ns
N treatment		ns	ns
Genotype*N treatment		ns	ns

Parameters were compared between treatments based on the least significant difference (LSD) test at the 0.05 probability level. **，$p < 0.01$; ns, non-significant.

Table S2. Effects of nitrogen supplies on leaf nitrogen contents, gas exchange parameters and photosynthetic nitrogen use efficiency in the flag leaves of the tested rice genotypes.

Genotype	Treatment	N_{mass} (mg g^{-1})	N_{area} (g m^{-2})	A (µmol m^{-2} s^{-1})	g_s (mol m^{-2} s^{-1})	g_m (mol m^{-2} s^{-1})	PNUE (µmol g^{-1} (N) s^{-1})
Sab Ini	HN	2.5 ± 0.2	0.83 ± 0.05	26.2 ± 0.9	0.262 ± 0.014	0.191 ± 0.006	31.7 ± 1.1
	LN	2.0 ± 0.1	0.58 ± 0.03	18.3 ± 4.2	0.199 ± 0.073	0.149 ± 0.040	31.5 ± 7.0
N22	HN	2.4 ± 0.1	1.03 ± 0.03	20.2 ± 1.1	0.184 ± 0.010	0.269 ± 0.065	19.5 ± 1.6
	LN	1.8 ± 0.0	0.79 ± 0.03	14.7 ± 1.1	0.157 ± 0.024	0.185 ± 0.044	18.7 ± 1.4
Huanghuazhan	HN	2.4 ± 0.1	1.03 ± 0.02	26.5 ± 0.3	0.347 ± 0.181	0.285 ± 0.164	25.8 ± 0.6
	LN	1.8 ± 0.2	0.97 ± 0.04	23.0 ± 3.3	0.327 ± 0.225	0.155 ± 0.041	23.9 ± 3.5
Yongyou 12	HN	2.2 ± 0.1	1.08 ± 0.08	18.0 ± 1.1	0.142 ± 0.027	0.225 ± 0.001	16.6 ± 1.4
	LN	1.5 ± 0.1	0.79 ± 0.02	13.6 ± 1.1	0.135 ± 0.024	0.250 ± 0.094	17.3 ± 1.4
ANOVA							
Genotype		***	***	***	*	ns	***
N treatment		***	***	***	ns	ns	ns
Genotype*N treatment		ns	**	ns	ns	ns	ns

Parameters were compared between treatments based on the least significant difference (LSD) test at the 0.05 probability level. *，$p < 0.05$; **，$p < 0.01$; ***，$p < 0.001$; ns, non-significant.

Table S3. Effects of nitrogen supplies on leaf anatomical traits in the flag leaves of the tested rice genotypes.

Genotype	Treatment	LMA (g m^{-2})	LT (mm)	LD (mg mm^{-3})	T_{cw} (nm)
Sab Ini	HN	33.2 ± 1.9	0.120 ± 0.004	0.278 ± 0.016	288 ± 15
	LN	29.4 ± 2.8	0.140 ± 0.004	0.210 ± 0.016	288 ± 28
N22	HN	42.7 ± 0.4	0.126 ± 0.006	0.339 ± 0.016	255 ± 22
	LN	44.0 ± 1.6	0.111 ± 0.003	0.395 ± 0.016	253 ± 20
Huanghuazhan	HN	43.1 ± 2.5	0.126 ± 0.006	0.341 ± 0.016	269 ± 36
	LN	52.9 ± 6.1	0.145 ± 0.006	0.365 ± 0.016	266 ± 33
Yongyou 12	HN	49.1 ± 1.5	0.176 ± 0.020	0.279 ± 0.016	319 ± 24
	LN	52.9 ± 2.9	0.162 ± 0.010	0.328 ± 0.016	306 ± 41
ANOVA					
Genotype		***	***	***	***
N treatment		*	ns	ns	ns
Genotype*N treatment		**	**	***	ns

Parameters were compared between treatments based on the least significant difference (LSD) test at the 0.05 probability level. *，$p < 0.05$；**，$p < 0.01$；***，$p < 0.001$; ns, non-significant.

Table S4. Effects of nitrogen supplies on mass-based leaf chemical compositions in the flag leaves of the tested rice genotypes.

Genotype	Treatment	Pectic substance (mg g^{-1})	Hemicellulose (mg g^{-1})	Cellulose (mg g^{-1})	Lignin (mg g^{-1})	Cell wall content (mg g^{-1})	Soluble sugar (mg g^{-1})	Starch (mg g^{-1})	NSC (mg g^{-1})
Sab Ini	HN	19.4 ± 2.7	213.7 ± 7.1	229.5 ± 21.8	158.9 ± 2.9	625.3 ± 18.3	142.7 ± 7.1	26.4 ± 6.8	169.1 ± 9.3
	LN	17.8 ± 2.4	222.2 ± 7.4	171.3 ± 80.3	149.4 ± 7.1	560.8 ± 88.4	112.8 ± 11.4	13.5 ± 8.0	126.3 ± 19.3
N22	HN	15.4 ± 1.0	222.1 ± 16.4	179.3 ± 35.5	167.9 ± 5.4	584.7 ± 22.2	96.8 ± 5.9	9.3 ± 1.3	106.1 ± 5.2
	LN	16.9 ± 1.7	243.6 ± 15.9	205.1 ± 33.5	144.6 ± 27.3	610.3 ± 31.5	88.2 ± 7.9	5.4 ± 2.9	93.6 ± 7.3
Huanghuazhan	HN	18.3 ± 1.5	236.1 ± 8.5	268.2 ± 5.6	175.7 ± 6.2	698.3 ± 4.2	89.0 ± 6.9	3.7 ± 1.4	92.7 ± 8.1
	LN	17.8 ± 0.8	252.5 ± 13.6	231.9 ± 64.2	168.4 ± 4.0	670.6 ± 68.1	81.5 ± 16.8	5.7 ± 2.8	87.3 ± 17.5
Yongyou 12	HN	19.7 ± 1.6	266.3 ± 3.0	207.4 ± 72.0	176.9 ± 5.0	670.4 ± 71.6	57.9 ± 10.2	3.3 ± 4.0	60.1 ± 12.7
	LN	17.1 ± 0.7	271.2 ± 16.3	301.1 ± 7.3	164.8 ± 7.3	754.1 ± 18.4	66.0 ± 9.2	14.1 ± 3.0	80.1 ± 12.2
ANOVA									
Genotype		ns	***	ns	*	**	***	***	***
N treatment		ns	*	ns	*	ns	*	ns	ns
Genotype*N treatment		ns	ns	ns	ns	ns	*	ns	**

Parameters were compared between treatments based on the least significant difference (LSD) test at the 0.05 probability level. *, $p < 0.05$；**, $p < 0.01$；***, $p < 0.001$; ns, non-significant.

Table S5. Effects of nitrogen supplies on area-based leaf chemical compositions in the flag leaves of the tested rice genotypes.

Genotype	Treatment	Pectic substance (g m^{-2})	Hemicellulose (g m^{-2})	Cellulose (g m^{-2})	Lignin (g m^{-2})	Cell wall content (g m^{-2})	Soluble sugar (g m^{-2})	Starch (g m^{-2})	NSC (g m^{-2})
Sab Ini	HN	0.64 ± 0.09	7.1 ± 0.2	7.6 ± 0.7	5.3 ± 0.1	20.8 ± 0.6	4.74 ± 0.23	0.88 ± 0.23	5.62 ± 0.31
	LN	0.52 ± 0.07	6.5 ± 0.2	5.0 ± 2.4	4.4 ± 0.2	16.5 ± 2.6	3.76 ± 0.50	0.42 ± 0.20	4.18 ± 0.36
N22	HN	0.66 ± 0.04	9.5 ± 0.7	7.7 ± 1.5	7.2 ± 0.2	25.0 ± 0.9	4.17 ± 0.25	0.40 ± 0.06	4.58 ± 0.23
	LN	0.74 ± 0.07	10.7 ± 0.7	9.0 ± 1.5	6.4 ± 1.2	26.8 ± 1.4	3.85 ± 0.31	0.23 ± 0.13	4.09 ± 0.27
Huanghuazhan	HN	0.79 ± 0.06	10.2 ± 0.4	11.6 ± 0.2	7.6 ± 0.3	30.1 ± 0.2	4.11 ± 0.33	0.17 ± 0.05	4.27 ± 0.31
	LN	0.94 ± 0.04	13.4 ± 0.7	12.3 ± 3.4	8.9 ± 0.2	35.5 ± 3.6	4.23 ± 1.02	0.30 ± 0.14	4.53 ± 1.06
Yongyou 12	HN	0.97 ± 0.08	13.1 ± 0.1	10.2 ± 3.5	8.7 ± 0.2	32.9 ± 3.5	2.93 ± 0.61	0.17 ± 0.21	3.04 ± 0.76
	LN	0.90 ± 0.04	14.3 ± 0.9	15.9 ± 0.4	8.7 ± 0.4	39.9 ± 1.0	3.49 ± 0.48	0.75 ± 0.16	4.24 ± 0.64
ANOVA									
Genotype		***	***	***	***	***	***	**	**
N treatment		ns	***	ns	ns	*	ns	ns	ns
Genotype*N treatment		**	***	*	**	**	***	*	***

Parameters were compared between treatments based on the least significant difference (LSD) test at the 0.05 probability level. *, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.001$; ns, non-significant.