Supplementary Table I: Amounts of polar lipid molecular species as affected by nitrogen starvation. Leaves and roots of fifteen-day-old seedling exposed to nitrogen sufficient (5 mM) and deficient (0.5 mM) conditions were used to analyze the lipids. Five biological replications were maintained for each experiment and the experiment was repeated thrice. The lipids were analyzed by ESI-MS/MS and the intensities in each spectrum were normalized to those two internal standards of the same class; a signal of 1 is the same amount of intensity as 1 nmol of the standards. The data represents the average of 15 replicates. The data of nitrogen sufficient and deficient conditions were compared using one-way ANOVA and the p values are reported. The p value <0.05 is presented in bold. The reduction in lipid species content under nitrogen starvation is denoted as minus (-) sign.

Lipid species (class and total acyl carbons: total carbon-carbon double bonds)	Compound Number	Normalized mass spectral signal per extracted dry mass (signal per mg)				Normalized mass spectral signal per extracted dry mass (signal per mg)			
		Leaf				Root			
		N 5 mM	N 0.5 mM	P value	Difference between N 5 mM and N 0.5 mM	N 5 mM	N 0.5 mM	P value	Difference between N 5 mM and N 0.5 mM
DGDG(34:6)	126	0.018	0.006	**0.009**	-0.012	0.002	0.001	0.088	-0.001
DGDG(34:5)	127	0.016	0.006	**0.022**	-0.010	0.000	0.000	0.092	0.000
DGDG(34:4)	128	0.225	0.114	**0.024**	-0.111	0.004	0.002	**0.015**	-0.002
DGDG(34:3)	129	7.394	3.922	**0.02**	-3.471	0.503	0.159	**6.52E-05**	-0.344
DGDG(34:2)	130	0.042	0.024	0.264	-0.019	0.130	0.022	**7.26E-05**	-0.108
DGDG(34:1)	131	0.081	0.047	**0.0124**	-0.034	0.012	0.006	**8.00E-05**	-0.006
DGDG(36:6)	132	22.322	11.935	**0.008**	-10.387	0.783	0.564	**0.0017**	-0.219
DGDG(36:5)	133	0.466	0.129	**0.033**	-0.337	0.120	0.024	**4.07E-05**	-0.096
DGDG(36:4)	134	0.422	0.221	**0.005**	-0.201	0.091	0.029	**6.62E-06**	-0.062
DGDG(36:3)	135	1.550	0.921	**0.001**	-0.629	0.192	0.107	**9.61E-05**	-0.085
DGDG(36:2)	136	0.043	0.017	**0.041**	-0.026	0.030	0.009	**6.53E-07**	-0.021
DGDG(36:1)	137	0.008	0.005	0.15	-0.003	0.001	0.001	0.4476	0.000
DGDG(38:6)	138	0.102	0.074	0.272	-0.028	0.019	0.008	**0.0342**	-0.011

DGDG(38:5)	139	0.001	0.000	0.152	-0.001	0.000	0.000	0.0965	0.000
DGDG(38:4)	140	0.007	0.003	**0.049**	-0.003	0.002	0.000	**1.16E-04**	-0.001
DGDG(38:3)	141	0.028	0.015	**0.01**	-0.013	0.008	0.001	**2.78E-07**	-0.007
TOTAL DGDG		32.725	17.440	**0.008**	-15.285	1.896	0.933	**4.23E-05**	-0.963
MGDG(34:6)	110	0.080	0.028	**0.004**	-0.052	0.000	0.002	**0.032**	0.001
MGDG(34:5)	111	0.067	0.026	**0.004**	-0.041	0.002	0.001	0.231	-0.001
MGDG(34:4)	112	0.472	0.199	**0.017**	-0.274	0.003	0.005	0.12	0.001
MGDG(34:3)	113	1.950	0.741	**0.006**	-1.209	0.075	0.025	**0.007**	-0.050
MGDG(34:2)	114	0.033	0.007	**0.037**	-0.025	0.023	0.003	**3.03E-04**	-0.020
MGDG(34:1)	115	0.013	0.009	0.327	-0.004	0.010	0.002	**0.018**	-0.008
MGDG(36:6)	116	65.141	30.722	**0.016**	-34.419	1.581	1.281	0.333	-0.300
MGDG(36:5)	117	1.575	0.674	**0.0013**	-0.901	0.108	0.038	**1.69E-06**	-0.069
MGDG(36:4)	118	0.863	0.414	**0.016**	-0.450	0.062	0.026	**7.63E-04**	-0.035
MGDG(36:3)	119	0.344	0.184	**0.03**	-0.159	0.023	0.012	6.00E-03	-0.012
MGDG(36:2)	120	0.014	0.007	0.082	-0.007	0.005	0.001	**2.00E-03**	-0.004
MGDG(36:1)	121	0.008	0.000	**2.45E-05**	-0.008	0.003	0.000	**4.37E-02**	-0.003
MGDG(38:6)	122	0.099	0.041	**0.02**	-0.058	0.005	0.000	**5.70E-02**	-0.005
MGDG(38:5)	123	0.025	0.008	**0.022**	-0.017	0.002	0.000	0.912	-0.002
MGDG(38:4)	124	0.011	0.004	**0.006**	-0.007	0.000	0.001	2.39E-04	0.000
MGDG(38:3)	125	0.005	0.003	0.067	-0.003	0.002	0.000	**0.015**	-0.001
TOTAL MGDG		70.701	33.069	**0.014**	-37.632	1.905	1.398	1.49E-01	-0.507
PG(32:1)	103	1.927	1.249	0.071	-0.678	0.015	0.023	0.177	0.009
PG(32:0)	104	0.376	0.338	0.59	-0.038	0.296	0.274	0.47	-0.021
PG(34:4)	105	0.738	0.406	**0.037**	-0.332	0.001	0.001	0.71	0.000
PG(34:3)	106	0.448	0.305	0.073	-0.143	0.238	0.247	0.79	0.009
PG(34:2)	107	0.977	0.681	0.095	-0.296	0.184	0.163	0.336	-0.022
PG(34:1)	108	0.634	0.465	0.055	-0.169	0.040	0.039	0.71	-0.001

PG(34:0)	109	0.072	0.073	0.957	0.001	0.048	0.048	0.98	0.000
PG(36:6)	152	0.003	0.005	0.156	0.002	0.004	0.007	**0.0221**	0.003
PG(36:5)	153	0.004	0.008	0.089	0.005	0.007	0.008	0.509	0.001
PG(36:4)	154	0.017	0.012	0.166	-0.005	0.004	0.004	0.775	0.000
PG(36:3)	155	0.010	0.011	0.78	0.001	0.010	0.013	0.14	0.003
PG(36:2)	156	0.018	0.015	0.416	-0.004	0.016	0.018	0.458	0.002
PG(36:1)	157	0.002	0.002	0.207	-0.001	0.001	0.001	0.78	0.000
TOTAL PG		5.236	3.569	0.063	-1.667	0.865	0.846	0.844	-0.019
LPG(16:1)	98	0.006	0.007	0.904	0.000	0.006	0.004	0.371	-0.002
LPG(16:0)	99	0.015	0.010	0.38	-0.005	0.001	0.001	0.937	0.000
LPG(18:3)	100	0.005	0.002	0.266	-0.002	0.000	0.000	0.561	0.000
LPG(18:2)	101	0.001	0.001	0.526	-0.001	0.000	0.001	0.352	0.000
LPG(18:1)	102	0.004	0.003	0.292	-0.001	0.001	0.002	0.352	0.001
TOTAL LPG		0.031	0.022	0.307	-0.009	0.009	0.008	0.760	-0.001
LPC(16:1)	87	0.000	0.000	0.311	0.000	0.000	0.000	0.076	0.000
LPC(16:0)	88	0.014	0.012	0.226	-0.002	0.019	0.016	0.262	-0.003
LPC(18:3)	89	0.009	0.008	0.749	-0.001	0.022	0.022	0.959	0.000
LPC(18:2)	90	0.011	0.010	0.825	-0.001	0.021	0.015	**0.012**	-0.006
LPC(18:1)	91	0.001	0.001	0.372	0.000	0.003	0.002	**0.005**	-0.001
LPC(18:0)	92	0.006	0.004	**0.031**	-0.002	0.006	0.005	0.653	0.000
TOTAL LPC		0.041	0.036	0.374	-0.005	0.070	0.060	0.176	-0.011
LPE(16:1)	93	0.000	0.000	0.966	0.000	0.000	0.001	0.177	0.000
LPE(16:0)	94	0.012	0.014	0.35	0.002	0.056	0.060	0.626	0.004
LPE(18:3)	95	0.004	0.005	0.376	0.001	0.024	0.027	0.17	0.003
LPE(18:2)	96	0.009	0.010	0.646	0.001	0.032	0.030	0.4	-0.003
LPE(18:1)	97	0.002	0.001	0.181	-0.001	0.002	0.002	0.401	0.000
TOTAL LPE		0.026	0.029	0.564	0.003	0.115	0.119	0.693	0.005
PC(32:0)	1	0.018	0.021	0.576	0.004	0.050	0.050	0.999	0.000
PC(34:4)	2	0.024	0.018	0.185	-0.006	0.050	0.048	0.811	-0.001
PC(34:3)	3	1.941	1.820	0.72	-0.121	3.271	3.282	0.974	0.011

PC(34:2)	4	2.063	2.089	0.96	0.025	2.536	2.066	0.137	-0.470
PC(34:1)	5	0.179	0.193	0.783	0.014	0.180	0.136	0.04	-0.044
PC(36:6)	6	0.809	0.776	0.85	-0.033	2.392	2.579	0.579	0.187
PC(36:5)	7	1.795	1.792	0.996	-0.002	3.505	3.048	0.179	-0.457
PC(36:4)	8	1.374	1.269	0.801	-0.104	1.722	1.250	0.039	-0.472
PC(36:3)	9	1.019	1.084	0.755	0.066	1.228	1.307	0.539	0.079
PC(36:2)	10	0.810	0.921	0.664	0.111	0.792	0.699	0.338	-0.093
PC(36:1)	11	0.003	0.001	0.074	-0.003	0.000	0.000	0.326	0.000
PC(38:6)	12	0.010	0.009	0.5778	-0.001	0.018	0.021	0.423	0.002
PC(38:5)	13	0.021	0.017	0.501	-0.003	0.031	0.031	0.855	-0.001
PC(38:4)	14	0.026	0.027	0.913	0.001	0.048	0.045	0.59	-0.003
PC(38:3)	115	0.073	0.075	0.925	0.002	0.129	0.135	0.634	0.006
PC(38:2)	16	0.045	0.045	0.956	0.000	0.065	0.058	0.313	-0.007
PC(40:5)	17	0.002	0.002	0.86	0.000	0.006	0.007	0.273	0.002
PC(40:4)	18	0.004	0.004	0.777	0.001	0.008	0.008	0.937	0.000
PC(40:3)	19	0.020	0.019	0.698	-0.002	0.023	0.027	0.243	0.004
PC(40:2)	20	0.024	0.024	0.917	0.001	0.034	0.036	0.652	0.002
TOTAL PC		10.258	10.207	0.982	-0.051	16.086	14.832	0.465	-1.254
PE(32:3)	142	0.000	0.001	0.65	0.000	0.005	0.006	**0.021**	0.002
PE(32:2)	143	0.001	0.002	0.108	0.001	0.015	0.019	0.179	0.004
PE(32:1)	144	0.001	0.001	0.092	0.000	0.032	0.066	**0.036**	0.035
PE(32:0)	145	0.001	0.002	0.006	0.001	0.005	0.007	**0.015**	0.003
PE(34:4)	21	0.003	0.004	0.423	0.001	0.029	0.033	0.169	0.003
PE(34:3)	22	0.679	0.689	0.93	0.010	2.577	2.806	0.436	0.229
PE(34:2)	23	0.975	1.076	0.667	0.101	2.670	2.480	0.467	-0.190
PE(34:1)	24	0.042	0.061	**0.017**	0.018	0.116	0.096	0.055	-0.021
PE(36:6)	25	0.187	0.155	0.484	-0.032	0.670	0.728	0.533	0.058
PE(36:5)	26	0.659	0.553	0.463	-0.107	1.575	1.354	0.258	-0.221
PE(36:4)	27	0.563	0.500	0.602	-0.063	0.852	0.645	**0.042**	-0.208
PE(36:3)	28	0.172	0.206	0.237	0.034	0.440	0.486	0.272	0.045

PE(36:2)	29	0.204	0.265	0.187	0.061	0.366	0.371	0.876	0.005
PE(36:1)	30	0.001	0.003	0.129	0.001	0.002	0.000	0.078	-0.002
PE(38:6)	31	0.004	0.004	0.75	0.000	0.008	0.011	0.112	0.002
PE(38:5)	32	0.012	0.010	0.744	-0.002	0.013	0.014	0.234	0.001
PE(38:4)	33	0.013	0.011	0.467	-0.001	0.019	0.016	0.32	-0.003
PE(38:3)	34	0.026	0.030	0.413	0.005	0.049	0.061	**0.0045**	0.011
PE(40:3)	36	0.012	0.012	0.404	0.000	0.031	0.042	0.056	0.010
PE(40:2)	37	0.024	0.030	0.926	0.005	0.053	0.063	0.14	0.010
PE(42:4)	38	0.000	0.001	0.675	0.000	0.000	0.000	0.862	0.000
PE(42:3)	39	0.011	0.014	0.08	0.003	0.090	0.135	**0.001**	0.045
PE(42:2)	40	0.031	0.045	**0.025**	0.014	0.162	0.205	**0.004**	0.044
TOTAL PE		3.635	3.690	0.941	0.055	9.794	9.658	0.885	-0.136
PI(32:3)	146	0.000	0.000	0.17	0.000	0.001	0.001	0.08	0.000
PI(32:2)	147	0.001	0.000	0.089	0.000	0.001	0.001	0.773	0.000
PI(32:1)	148	0.002	0.002	0.793	0.000	0.004	0.004	0.267	-0.001
PI(32:0)	149	0.011	0.012	0.796	0.001	0.040	0.036	0.603	-0.004
PI(34:4)	41	0.004	0.002	0.164	-0.002	0.010	0.010	0.637	0.001
PI(34:3)	42	0.990	0.843	0.476	-0.148	2.492	2.411	0.781	-0.081
PI(34:2)	43	0.701	0.644	0.783	-0.057	1.547	1.259	0.191	-0.288
PI(34:1)	44	0.004	0.010	0.24	0.006	0.028	0.025	0.653	-0.004
PI(36:6)	45	0.051	0.041	0.367	-0.010	0.098	0.120	0.177	0.021
PI(36:5)	46	0.075	0.063	0.609	-0.012	0.145	0.134	0.532	-0.011
PI(36:4)	47	0.057	0.047	0.647	-0.010	0.109	0.089	0.144	-0.020
PI(36:3)	48	0.192	0.194	0.97	0.002	0.280	0.303	0.512	0.023
PI(36:2)	49	0.184	0.191	0.912	0.008	0.198	0.186	0.658	-0.012
PI(36:1)	50	0.001	0.001	0.601	0.000	0.005	0.004	0.341	-0.002
TOTAL PI		2.273	2.051	0.704	-0.222	4.960	4.583	0.543	-0.377
PS(34:4)	61	0.000	0.000	0.326	0.000	0.000	0.000	**0.012**	0.000
PS(34:3)	62	0.007	0.008	0.646	0.001	0.044	0.050	0.345	0.007
PS(34:2)	63	0.011	0.012	0.67	0.002	0.036	0.039	0.447	0.004

PS(34:1)	64	0.000	0.000	**0.024**	0.000	0.002	0.001	0.067	-0.001
PS(36:6)	65	0.000	0.000	0.959	0.000	0.001	0.002	0.462	0.000
PS(36:5)	66	0.004	0.004	0.85	0.000	0.003	0.003	0.196	0.000
PS(36:4)	67	0.002	0.001	0.073	-0.001	0.003	0.005	0.055	0.002
PS(36:3)	68	0.009	0.010	0.71	0.001	0.022	0.027	0.0617	0.006
PS(36:2)	69	0.015	0.010	0.28	-0.005	0.018	0.019	0.675	0.001
PS(36:1)	70	0.000	0.000	0.178	0.000	0.000	0.000	**0.01**	0.000
PS(38:6)	71	0.000	0.000	**0.49**	0.000	0.000	0.000	0.843	0.000
PS(38:5)	72	0.000	0.000	0.075	0.000	0.000	0.000	0.674	0.000
PS(38:4)	73	0.000	0.000	**0.049**	0.000	0.001	0.001	0.95	0.000
PS(38:3)	74	0.008	0.007	0.898	0.000	0.021	0.025	0.203	0.004
PS(38:2)	75	0.019	0.014	0.37	-0.005	0.021	0.022	0.829	0.001
PS(38:1)	76	0.000	0.000	0.326	0.000	0.001	0.001	0.138	0.000
PS(40:4)	77	0.000	0.000	0.153	0.000	0.000	0.000	0.15	0.000
PS(40:3)	78	0.020	0.015	0.34	-0.005	0.042	0.049	0.26	0.007
PS(40:2)	79	0.040	0.023	0.031	-0.018	0.037	0.038	0.84	0.001
PS(40:1)	80	0.001	0.001	0.866	0.000	0.001	0.000	0.051	-0.001
PS(42:4)	81	0.000	0.000	0.258	0.000	0.000	0.001	0.068	0.001
PS(42:3)	82	0.021	0.013	0.097	-0.009	0.112	0.146	**0.021**	0.034
PS(42:2)	83	0.040	0.022	0.042	-0.018	0.102	0.106	0.793	0.004
PS(42:1)	84	0.000	0.000	0.529	0.000	0.001	0.001	0.644	0.000
PS(44:3)	85	0.001	0.001	0.439	0.000	0.012	0.012	0.949	0.000
PS(44:2)	86	0.004	0.002	0.042	-0.002	0.015	0.011	0.231	-0.004
TOTAL PS		0.201	0.144	0.189	-0.057	0.495	0.559	0.249	0.064
PA(32:0)	150	0.000	0.001	0.17	0.000	0.025	0.044	**0.18**	0.019
PA(34:6)	51	0.000	0.000	0.07	0.000	0.000	0.001	0.23	0.000
PA(34:5)	151	0.000	0.000	0.326	0.000	0.000	0.000	0.769	0.000
PA(34:4)	52	0.000	0.000	0.728	0.000	0.003	0.004	0.271	0.001
PA(34:3)	53	0.025	0.022	0.433	-0.003	0.382	0.455	0.101	0.073
PA(34:2)	54	0.022	0.021	0.799	-0.001	0.312	0.318	0.877	0.006

PA(34:1)	55	0.001	0.002	**0.048**	0.001	0.019	0.027	0.135	0.008
PA(36:6)	56	0.004	0.003	0.346	-0.001	0.087	0.123	**0.01**	0.036
PA(36:5)	57	0.011	0.010	0.784	-0.001	0.169	0.175	0.805	0.006
PA(36:4)	58	0.008	0.008	0.939	0.000	0.104	0.088	0.119	-0.016
PA(36:3)	59	0.006	0.008	**0.026**	0.002	0.069	0.084	0.219	0.015
PA(36:2)	60	0.005	0.006	0.612	0.001	0.055	0.062	0.468	0.007
TOTAL PA		0.083	0.082	0.94	-0.001	1.226	1.380	0.311	0.153
Total analyzed lipids		125.210	70.338	**0.02**	-54.871	37.420	34.376	0.397	-3.044