Table S1. The N concentration of *Eucalyptus and D. odorifera* under different N application rate and planting system at 90, 135 and 180 days.

Species	N Level	Intercropping									Monoculture								
		Roots			Stems			Leaves			Roots			Stems			Leaves		
		90 d	135 d	180 d	90 d	135 d	180 d	90 d	135 d	180 d	90 d	135 d	180 d	90 d	135 d	180 d	90 d	135 d	180 d
E. urophylla × *grandis*	CK	3.45	2.35	3.08	2.31	1.61	2.09	8.90	5.49	5.86	2.93	1.51	2.56	2.16	1.32	2.63	8.30	4.17	4.51
	N_1	4.83	2.53	3.03	3.87	2.06	2.42	12.99	5.61	5.77	3.93	1.84	2.82	3.00	1.67	3.07	10.25	5.17	4.80
	N_2	5.30	2.78	2.82	5.22	2.55	1.94	16.69	7.68	5.57	4.26	2.39	3.33	3.60	2.31	3.29	14.04	6.33	4.92
	N_3	8.09	4.49	5.15	5.94	3.40	4.02	20.77	12.65	6.26	6.03	3.30	4.54	5.08	2.81	2.04	16.01	9.97	7.48
D. odorifera	CK	6.38	8.70	9.41	7.33	6.45	12.86	21.67	18.24	16.15	8.10	7.32	9.63	5.67	4.74	10.74	12.24	9.48	16.06
	N_1	8.69	11.24	10.15	8.82	7.94	12.49	20.64	19.29	15.63	9.24	8.47	10.17	5.59	5.30	12.93	13.74	10.90	15.11
	N_2	10.18	9.68	9.13	8.74	8.22	10.08	25.77	20.73	13.39	10.69	11.43	9.62	7.28	6.88	10.93	17.95	18.58	15.71
	N_3	12.01	9.71	8.78	9.35	9.63	12.29	26.77	19.66	16.01	12.44	10.04	9.12	12.30	8.72	12.68	25.76	15.54	15.87

Table S2. The *F* statistic and *P* values for Nitrogen levels (N), time (T) and planting systems (P-S) ANOVA effects on dry matter yield of *Eucalyputs urophylla* × *grandis* and *D. odorifera.*

Source of variation	N		T		P-S		N × T		T × P-S		N × P-S		N × P-S × T	
	F	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*
E. urophylla × *grandis*	3529.33	< 0.001	8788.71	< 0.001	1036.57	< 0.001	394.61	< 0.001	237.65	< 0.001	21.68	< 0.001	6.64	< 0.001
D. odorifera	818.89	< 0.001	6214.65	< 0.001	1038.04	< 0.001	50.59	< 0.001	78.74	< 0.001	55.66	< 0.001	27.25	< 0.001

Table S3. The *F* statistic and *P* values for Nitrogen levels (N), time (T) and planting systems (P-S) ANOVA effects on N content of *Eucalyputs urophylla* × *grandis* and *D. odorifera.*

Source of variation	N		T		P-S		N × T		T × P-S		N × P-S		N × P-S × T	
	F	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*
E. urophylla × *grandis*	2897.37	< 0.001	443.93	< 0.001	663.56	< 0.001	29.06	< 0.001	9.69	< 0.001	48.17	< 0.001	4.88	< 0.001
D. odorifera	1125.79	< 0.001	282.55	< 0.001	55.08	< 0.001	7.68	< 0.001	3.54	0.034	4.88	0.004	1.92	0.089

Table S4. Mean of atom % ^{15}N (standard error) in plants compartments of *D. odorifera* and *Eucalyptus* before ^{15}N labeling (^{15}N abundance values).

Species	N level	Roots	Stems	Leaves
Eucalyptus	CK	0.364 (0.012)	0.357 (0.009)	0.393 (0.010)
	N_1	0.362 (0.019)	0.353 (0.012)	0.388 (0.005)
	N_2	0.357 (0.010)	0.350 (0.011)	0.385 (0.011)
	N_3	0.355 (0.013)	0.348 (0.014)	0.386 (0.015)
D. odorifera	CK	0.345 (0.009)	0.352 (0.012)	0.360 (0.012)
	N_1	0.344 (0.012)	0.353 (0.010)	0.360 (0.010)
	N_2	0.344 (0.007)	0.349 (0.007)	0.353 (0.011)
	N_3	0.338 (0.012)	0.346 (0.014)	0.354 (0.010)

Note: All the ^{15}N abundance values were measured on June 1st, 2017, which was occurred before labeling and after N application.

Table S5. The *F* statistic and *P* values for Nitrogen levels (N) and time (T) ANOVA effects on N transfer.

Source of variation	N		T		N × T	
	F	*P*	*F*	*P*	*F*	*P*
E. urophylla × *grandis* as donor	207.70	< 0.001	22.83	< 0.001	9.99	< 0.001
D. Odorifera as donor	79.27	< 0.001	48.47	< 0.001	6.68	< 0.001

Table S6. The *F* statistic and *P* values for nitrogen levels (N), time (T) and planting systems (P-S) ANOVA effects on soil TN, NH_4^+-N and NO_3^--N concentration under the pot conditions.

Source of variation	N		T		P-S		N × T		T × P-S		N × P-S		N × P-S × T	
	F	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*
TN	31.63	< 0.001	17.57	< 0.001	19.70	< 0.001	0.19	0.98	0.46	0.767	1.29	0.266	0.30	0.988
NH_4^+-N	85.04	< 0.001	22.73	< 0.001	735.09	< 0.001	1.52	0.179	3.18	0.016	8.47	< 0.001	1.59	0.104
NO_3^--N	247.27	< 0.001	25.35	< 0.001	146.03	< 0.001	12.43	< 0.001	2.48	0.048	95.12	< 0.001	1.56	0.115

Table S7. The *F* statistic and *P* values for Nitrogen levels (N) and planting system (P-S) ANOVA effects on dry matter yield under field conditions.

Source of variation	Dry matter yield						N content					
	N		P-S		N × P-S		N		P-S		N × P-S	
	F	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*
E. urophylla × *grandis*	24.80	< 0.001	18.51	< 0.001	0.41	0.749	84.80	< 0.001	20.039	< 0.001	0.054	0.983
D. odorifera	9.02	0.006	37.65	< 0.001	0.99	0.414	13.137	0.001	74.415	< 0.001	2.377	0.095

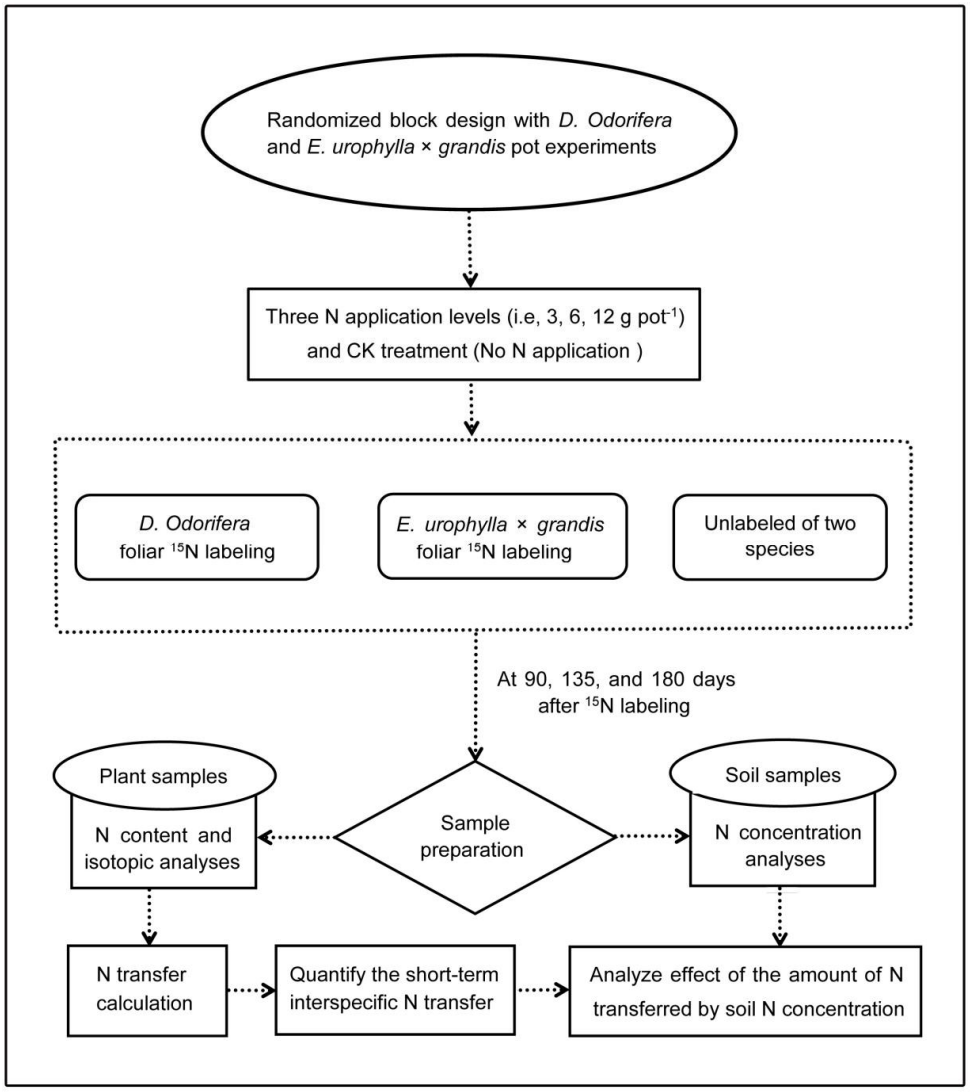

Figure S1. Flow diagram of ^{15}N-labeled experiment.