Appendix A The different rice cultivars tested in this study in 2017 and 2018.

Code	Varieties	Type	Year	Planting area ($\times10^4$ha)	Code	Varieties	Type	Year	Planting area ($\times10^4$ha)
1	Liangyoupeijiu	HIs	1999	604	24	Huaidao5	IJs	1994	175
2	Zhongzheyou1	HIs	1999	155	25	Wuyunjing7	IJs	1995	363
3	Fengyouxiangzhan	HIs	2001	49	26	Wujing14	IJs	1999	126
4	Zhongzheyou8	HIs	2001	70	27	Ningjing1	IJs	2001	106
5	Xingliangyou6	HIs	2003	217	28	Ningjing2	IJs	2001	13
6	Guangliangyouxiang66	HIs	2005	50	29	Ningjing3	IJs	2001	34
7	Yliangyou1	HIs	2005	249	30	Nanjing46	IJs	2004	14
8	Zhunliangyou608	HIs	2006	25	31	Nanjing5055	IJs	2005	72
9	Shengliangyou5814	HIs	2007	157	32	Wuyunjing23	IJs	2005	99
10	Tianyouhuazhan	HIs	2007	150	33	Wuyunjing24	IJs	2006	75
11	Liangyou688	HIs	2008	41	34	Suxiangjing3	IJs	2006	
12	Zhongzheyou10	HIs	2008	8	35	Ningjing4	IJs	2007	143
13	Yixiangyou2115	HIs	2009	53	36	Ningjing5	IJs	2007	5
14	Yangliangyou6	HIs	2009	287	37	Ningjing6	IJs	2009	2
15	Qianyou930	HIs	2009		38	Nanjing52	IJs	2009	5
16	Qianyou911	HIs	2010		39	Nanjing9108	IJs	2009	111
17	Cliangyouhuazhan	HIs	2010	63	40	Nanjing0212	IJs	2010	3
18	Huiliangyou898	HIs	2011	10	41	Wuyunjing31	IJs	2010	10
19	Jvliangyou60	HIs	2012		42	Suxiangjing100	IJs	2011	
20	Yliangyou900	HIs	2013	25	43	Ningjing7	IJs	2011	
21	Quanyou3301	HIs	2013		44	Ningjing8	IJs	2012	
22	Super1000	HIs	2014		45	Yongyou1540	IJHs	2010	8
23	Wuyujing3	IJs	1990	608	46	Yongyou15	IJHs	2013	29

Detailed information is supported by China Rice Data Center(http://www.ricedata.cn)

HIs, Hybrid Indica varieties; IJs, Inbred Japonica varieties; IJHs, Indica Japonica Hybrid varieties. The same as below.

Appendix B Apparent export rate, leaf angle of the upper 3 leaves of different rice varieties in 2017 and 2018.

Code	Nitrogen level(kg ha^{-1})	2017				2018			
		FLA (°)	SLA (°)	TLA (°)	Apparent export (%)	FLA (°)	SLA (°)	TLA (°)	Apparent export (%)
1	0	6.7	17.0	10.0	12.7	2.3	8.7	5.7	8.1
1	150	7.3	13.7	10.7	13.3	5.7	9.0	11.0	1.1
1	300	13.0	17.7	22.3	11.2	12.0	12.8	11.7	2.0
2	0	9.0	11.7	13.7	13.8	8.3	10.0	7.7	6.9
2	150	8.3	12.3	18.3	13.5	1.7	12.0	5.0	3.1
2	300	14.3	19.7	20.0	15.2	13.0	9.3	7.3	5.5
3	0	12.7	21.3	30.0	10.8	7.7	8.3	13.3	4.6
3	150	13.3	39.7	28.7	12.6	8.0	12.7	17.3	6.3
3	300	20.0	31.0	29.7	20.3	10.0	9.7	19.0	11.9
4	0	16.3	13.3	17.3	16.7	11.3	12.0	15.7	3.4
4	150	19.0	22.7	32.0	20.1	15.0	21.7	20.0	8.6
4	300	42.7	52.3	31.7	22.7	23.3	36.0	36.7	12.9
5	0	32.7	41.0	50.7	28.8	12.3	27.3	5.3	16.3
5	150	35.0	53.3	33.7	29.2	24.3	25.0	14.0	24.1
5	300	40.7	38.7	37.7	24.6	23.7	29.7	25.7	23.7
6	0	14.3	30.3	23.7	15.0	13.7	27.7	38.7	11.8
6	150	64.7	52.7	60.0	31.4	23.3	27.3	43.3	14.2
6	300	63.4	85.8	83.7	38.8	39.0	45.0	52.3	24.9
7	0	27.7	36.0	45.7	21.8	13.3	16.0	20.7	9.8
7	150	33.7	39.7	35.7	15.0	13.3	36.0	20.7	13.2
7	300	43.8	46.3	29.0	23.2	14.7	20.3	21.3	11.0
8	0	48.7	54.7	50.7	26.4	8.3	34.7	23.7	12.9
8	150	50.0	68.3	48.7	36.7	16.7	21.3	20.7	7.3
8	300	63.8	66.3	49.0	40.3	15.0	26.0	24.7	4.0
9	0	13.0	14.7	21.3	11.8	9.3	25.3	19.3	5.4
9	150	18.3	41.0	25.7	19.7	9.3	25.3	18.7	1.8
9	300	33.3	68.7	63.7	22.5	10.9	41.3	24.0	2.5
10	0	14.7	21.0	40.0	16.0	4.0	6.7	8.7	4.5
10	150	25.7	23.7	22.7	24.1	13.0	15.3	18.7	8.6
10	300	50.0	68.3	48.7	27.4	7.0	17.7	13.7	2.6
11	0	34.3	35.0	24.0	29.1	6.3	7.0	9.3	7.7
11	150	41.7	46.3	45.7	25.5	9.3	14.7	15.0	1.6
11	300	62.7	72.3	51.7	31.1	7.7	16.3	25.0	2.5
12	0	12.7	12.3	18.7	11.1	13.3	15.0	8.0	12.0
12	150	31.0	24.7	24.3	28.4	25.0	43.3	23.7	23.5
12	300	41.7	43.7	50.0	25.7	28.3	63.7	58.7	36.2
13	0	8.7	12.7	13.7	13.6	7.7	7.3	13.7	-1.1
13	150	18.0	14.3	12.3	18.1	9.7	16.0	35.0	4.9
13	300	29.3	30.0	19.0	22.1	21.0	14.7	14.3	6.9

Appendix B continued

Code	Nitrogen level(kg ha^{-1})	2017				2018			
		FLA (^{o})	SLA (^{o})	TLA (^{o})	Apparent export (%)	FLA (^{o})	SLA (^{o})	TLA (^{o})	Apparent export (%)
14	0	40.0	46.7	45.0	29.9	15.7	13.7	12.7	6.1
14	150	54.3	48.7	53.0	23.1	22.7	31.0	40.7	11.1
14	300	53.3	88.7	83.7	27.8	49.3	43.7	48.0	24.7
15	0	10.7	14.0	16.0	5.6	11.3	8.3	12.3	3.7
15	150	17.3	15.0	31.7	17.8	13.8	14.3	17.7	4.9
15	300	17.3	32.3	10.3	17.5	19.3	29.7	16.3	8.1
16	0	11.3	12.0	14.3	7.8	12.7	11.3	10.0	-2.1
16	150	17.7	16.3	15.0	17.9	11.7	18.7	20.0	-3.2
16	300	17.0	43.0	16.7	17.3	14.0	17.7	27.0	-5.4
17	0	21.7	23.7	30.0	20.9	11.3	19.3	24.3	7.2
17	150	18.3	20.0	13.0	20.0	16.7	18.7	25.0	10.5
17	300	58.3	54.7	41.3	30.4	28.3	63.7	58.7	36.2
18	0	13.3	15.0	12.7	12.3	8.0	9.7	16.3	2.8
18	150	44.7	32.7	40.0	22.8	37.7	47.3	26.7	20.1
18	300	40.0	51.0	49.7	30.2	39.7	27.7	35.0	25.1
19	0	26.7	28.7	35.0	27.9	12.5	27.7	27.0	11.5
19	150	25.0	36.0	34.7	23.7	13.8	31.0	32.0	10.9
19	300	38.3	73.7	68.7	29.4	20.7	40.6	48.0	25.0
20	0	16.7	23.7	25.0	16.9	10.8	17.8	20.0	2.9
20	150	19.7	25.3	26.3	20.2	12.3	19.3	22.3	12.5
20	300	25.0	31.7	30.0	23.7	16.9	21.3	25.0	11.1
21	0	18.3	21.0	25.7	19.6	9.5	13.7	20.7	12.0
21	150	16.3	24.3	29.3	16.7	11.9	20.3	25.3	16.2
21	300	47.7	56.0	65.7	26.3	20.2	36.0	35.7	23.7
22	0	18.0	20.3	23.7	19.1	3.7	7.7	8.7	1.8
22	150	26.0	19.7	19.3	21.3	3.3	7.3	13.3	4.2
22	300	30.0	48.3	28.7	22.3	9.0	15.0	12.3	8.9
23	0	14.3	17.3	24.3	10.0	11.0	8.0	12.7	3.2
23	150	16.4	23.0	30.7	1.2	3.3	5.7	6.3	-9.0
23	300	10.0	12.5	12.7	3.9	8.7	8.7	13.3	4.8
24	0	3.3	5.7	6.3	-0.6	6.7	9.7	12.3	2.2
24	150	8.7	10.7	13.3	4.6	11.3	12.3	13.7	0.5
24	300	7.7	9.7	12.3	8.0	6.0	9.7	11.3	3.8
25	0	10.3	12.3	13.7	2.9	5.0	8.7	17.0	6.7
25	150	6.0	9.7	11.3	3.8	7.7	2.7	16.0	0.6
25	300	5.0	8.7	17.0	9.5	7.7	2.3	18.3	-0.8
26	0	7.7	11.7	16.0	4.1	10.0	17.0	22.7	-6.8
26	150	7.7	13.3	18.3	6.1	16.0	18.7	19.3	13.8
26	300	10.0	17.0	22.7	-9.7	21.7	15.0	15.0	21.1

Appendix B continued

Code	Nitrogen level(kg ha^{-1})	2017				2018			
		FLA (^{o})	SLA (^{o})	TLA (^{o})	Apparent export (%)	FLA (^{o})	SLA (^{o})	TLA (^{o})	Apparent export (%)
27	0	16.0	18.7	19.3	5.4	4.7	16.0	21.7	-14.9
27	150	11.7	15.0	15.0	-2.3	5.7	13.3	18.3	-10.1
27	300	6.7	16.0	21.7	2.1	5.9	14.0	14.7	14.9
28	0	6.5	13.3	18.3	2.2	6.5	14.0	9.0	13.1
28	150	5.9	14.0	14.7	8.1	7.3	14.0	20.0	10.5
28	300	6.5	14.0	9.0	7.5	7.9	14.0	20.0	11.2
29	0	8.2	14.0	20.0	9.0	5.0	12.0	24.3	3.2
29	150	9.3	14.0	20.0	2.4	17.0	14.3	21.7	1.7
29	300	9.0	12.0	24.3	9.1	13.0	13.7	21.7	3.0
30	0	12.0	14.3	21.7	-1.2	11.7	12.0	18.0	5.8
30	150	13.0	13.7	21.7	3.4	17.7	25.7	18.7	9.8
30	300	11.7	12.0	18.0	9.8	9.3	19.7	25.3	7.2
31	0	17.7	25.7	18.7	-0.8	5.0	5.7	7.3	8.3
31	150	9.3	19.7	25.3	-5.1	6.7	6.7	6.7	-0.7
31	300	5.0	5.7	7.3	-13.6	6.7	9.0	7.0	3.8
32	0	6.7	6.7	6.7	3.0	18.7	23.0	26.7	4.8
32	150	6.7	9.0	7.0	12.9	13.7	26.0	27.1	3.4
32	300	18.7	23.0	26.7	8.3	7.3	19.0	25.0	1.5
33	0	13.7	26.0		8.6	10.7	17.7	23.0	0.9
33	150	10.3	19.0	25.0	1.0	14.7	25.0	26.7	-8.0
33	300	11.7	17.7	23.0	5.4	4.7	11.0	13.3	3.3
34	0	14.7	25.0	26.7	1.1	15.7	12.3	18.3	7.7
34	150	8.8	11.0	13.3	-0.7	7.3	16.3	17.3	-0.2
34	300	15.7	12.3	18.3	-9.9	4.3	11.7	27.7	4.2
35	0	7.3	16.3	17.3	-2.0	4.0	8.7	15.3	-2.7
35	150	4.3	11.7	27.7	5.5	10.7	15.3	23.0	-3.6
35	300	4.0	8.7	15.3	9.5	3.0	12.0	15.7	-2.2
36	0	10.7	15.3	23.0	9.6	5.7	7.3	10.0	0.4
36	150	3.0	12.0	15.7	4.0	10.7	16.0	30.3	2.2
36	300	5.7	7.3	10.0	-4.2	4.7	18.3	31.7	4.0
37	0	10.7	16.0	30.3	7.4	6.3	4.0	8.7	0.2
37	150	4.7	18.3	31.7	2.5	4.3	5.0	12.0	3.0
37	300	6.3	4.0	8.7	7.0	9.0	6.0	4.0	1.4
38	0	4.3	5.0	12.0	3.0	13.3	5.3	16.3	6.3
38	150	9.0	6.0	4.0	9.5	7.7	8.7	7.3	1.2
38	300	6.6	5.3	16.3	6.9	14.7	11.0	15.3	9.8
39	0	7.7	8.7	7.3	6.3	17.7	16.0	24.7	9.8
39	150	14.7	11.0	15.3	9.9	26.7	9.7	30.0	6.6
39	300	17.7	16.0	24.7	14.7	17.7	25.0	32.0	-1.8

Appendix B continued

Code	Nitrogen level(kg ha^{-1})	2017				2018			
		FLA (^{o})	SLA (^{o})	TLA (^{o})	Apparent export (%)	FLA (^{o})	SLA (^{o})	TLA (^{o})	Apparent export (%)
40	0	6.7	9.7	30.0	12.8	6.0	8.7	16.0	1.4
40	150	17.7	25.0	32.0	-19.4	7.3	12.0	22.7	0.2
40	300	6.0	8.7	16.0	-18.8	1.0	12.3	14.3	7.4
41	0	7.3	12.0	22.7	6.7	7.7	16.0	28.3	0.7
41	150	1.0	12.3	14.3	0.8	18.3	17.0	21.2	2.1
41	300	7.7	16.0	28.3	-1.9	15.3	11.7	18.7	12.2
42	0	18.3	17.0	19.0	9.0	5.5	10.2	12.0	3.3
42	150	15.3	11.7	18.7	2.2	6.0	11.5	13.1	4.1
42	300	19.5	16.6	20.2	12.8	6.2	12.2	12.7	3.9
43	0	11.5	12.2	18.9	7.5	8.8	9.5	18.8	3.5
43	150	10.3	13.6	20.5	8.0	8.5	10.2	17.9	4.9
43	300	12.2	13.2	22.6	6.9	9.4	11.0	17.0	6.7
44	0	13.8	14.9	17.9	7.7	10.1	9.5	19.0	6.6
44	150	14.2	17.6	23.8	9.4	12.1	12.7	20.5	7.2
44	300	14.5	17.8	22.9	10.1	11.5	13.2	20.3	5.9
45	0	7.5	5.3	16.3	12.9	9.0	9.3	13.7	6.0
45	150	8.0	8.7	7.3	6.8	4.7	9.3	20.7	4.1
45	300	9.2	11.0	15.3	7.2	8.7	20.0	21.3	4.1
46	0	11.0	13.1	16.6	8.2	6.0	15.3	27.0	7.2
46	150	13.5	14.5	15.5	8.6	14.3	17.3	24.3	7.9
46	300	14.2	14.0	16.0	2.9	15.3	23.0	30.7	4.6

FLA, flag leaf angle; SLA, second leaf angle; TLA, third leaf angle. The same as below.