

**Table S1.** Temperature and light during grain-filling periods of different varieties (2017)

T	C	Heading date	Maturity date	EAT	ESR	MT
IJHs	Yongyou1540	9/7	11/2	502.0	294.9	19.0
	Yongyou15	9/10	11/9	492.9	328.4	18.1
IHs	Liangyoupeijiu	9/6	10/24	388.8	228.6	20.1
	Shengliangyou5814	9/4	10/24	412.1	236.5	20.2
	Liangyou688	9/4	10/24	412.1	236.5	20.2
	Yixiangyou2115	8/31	10/24	459.3	252.4	20.5
	Qianyou911	9/4	10/24	412.1	236.5	20.2
	Yliangyou900	9/6	10/24	388.8	228.6	20.1
	Super1000	9/1	10/24	448.5	248.6	20.5
	Yangliangyou6	9/3	10/23	423.9	234.5	20.5
	Zhongzheyoun8	9/4	10/22	409.5	218.3	20.5
	Zhunliangyou608	9/4	10/22	409.5	218.3	20.5
	Qianyou930	9/4	10/22	409.5	218.3	20.5
	Zhongzheyoun1	8/31	10/21	455.2	228.1	20.9
	Fengyouxiangzhan	9/2	10/21	433.6	221.5	20.8
	Guangliangyouxiang66	9/5	10/21	396.4	210.3	20.6
	Yliangyou1	9/2	10/21	433.6	221.5	20.8
	Tianyouhuazhan	9/5	10/21	396.4	210.3	20.6
	Zhongzheyoun10	8/31	10/21	455.2	228.1	20.9
	Cliangyouhuazhan	8/24	10/21	550.5	278.2	21.5
	Huiliangyou898	8/24	10/21	550.5	278.2	21.5
	Quanyou3301	9/5	10/21	396.4	210.3	20.6
	Jvliangyou60	8/31	10/21	452.0	228.1	21.0
	Xingliangyou6	8/21	10/11	563.1	263.8	23.0
JIs	Nanjing46	9/15	11/9	393.7	256.1	17.5
	Suxiangjing100	9/15	11/9	397.7	263.9	17.5
	Wuyunjing30	9/9	11/4	471.5	297.1	18.4
	Nanjing5055	9/8	11/4	487.8	300.7	18.6
	Ningjing7	9/1	11/4	587.1	331.1	19.2
	Ningjing3	9/7	11/3	502.0	294.9	18.8
	Wujing14	9/6	11/2	610.6	294.2	20.7
	Wuyunjing23	9/9	11/2	470.7	280.1	18.7
	Ningjing4	8/26	11/2	674.4	347.4	19.9
	Wuyunjing31	9/9	11/2	470.7	280.1	18.7
	Ningjing8	9/8	11/2	487.1	283.8	18.9
	Huaidao5	9/7	10/30	489.8	266.2	19.2
	Ningjing1	9/9	10/30	458.7	259.9	19.0
	Ningjing2	9/5	10/30	518.4	279.9	19.4

	Nanjing9108	9/2	10/30	561.6	291.1	19.7
	Nanjing0212	9/2	10/30	561.6	291.1	19.7
	Wuyujing3	8/31	10/29	586.4	289.3	19.9
	Wuyunjing24	9/1	10/29	573.5	285.5	19.9
	Ningjing5	8/31	10/29	586.4	289.3	19.9
	Nanjing52	9/1	10/29	573.5	285.5	19.9
	Suxiangjing3	8/17	10/3	685.5	292.3	24.3
	Ningjing6	8/17	10/3	685.5	292.3	24.3
IIs	Yangdao6	9/2	10/14	416.3	186.6	21.7
	Huanghuazhan	8/24	9/23	371.6	170.6	24.0

T, type; C, cultivars; EAT, effective accumulated temperature; ESR, effective solar radiation; MT, daily mean temperature.

**Table S2.** Temperature and light during grain-filling periods of different varieties (2018)

T	C	Heading date	Maturity date	EAT	ESR	MT
IJHs	Yongyou1540	9/9	10/21	442.4	343.6	22.5
	Yongyou15	9/13	10/23	396.7	331.8	21.9
IHs	Yixiangyou2115	9/4	10/14	412.4	367	22
	Liangyoupeijiu	9/2	10/12	402.4	357.5	21.9
	Zhongzheyu1	9/2	10/12	402.4	357.5	21.9
	Shengliangyou5814	9/2	10/12	402.4	357.5	21.9
	Zhongzheyu10	9/2	10/12	402.4	357.5	21.9
	Yliangyou900	9/3	10/12	387.6	343.6	21.8
	Quanyou3301	9/1	10/12	419.1	367.4	22.1
	Super1000	8/30	10/12	450.1	382	22.3
	Zhongzheyu8	8/29	10/11	462.7	383.4	24
	Zhunliangyou608	8/29	10/11	462.7	383.4	24
	Qianyou911	8/29	10/11	462.7	383.4	24
	Guangliangyouxiang66	9/2	10/10	395.4	339.6	22.3
	Liangyou688	9/3	10/10	380.5	325.7	22.3
	Yangliangyou6	9/2	10/10	395.4	339.6	22.3
	Qianyou930	9/2	10/10	395.4	339.6	22.3
	Fengyouxiangzhan	9/2	10/10	395.4	339.6	22.3
	Yliangyou1	9/2	10/9	393.6	329.5	22.5
	Cliangyouhuazhan	8/26	10/8	508.9	398.7	23.6
	Huiliangyou898	8/25	10/8	525.8	409.9	24.1
	Jvliangyou60	8/28	10/5	450.2	349.8	23.8
	Xingliangyou6	8/21	9/25	479.2	326.4	25.7
	Tianyouhuazhan	8/24	9/25	437.6	290.4	25.7
JIs	Nanjing46	9/9	11/4	517.3	439.3	19.2
	Suxiangjing100	9/9	11/4	517.3	439.3	19.2
	Wuyunjing30	8/31	10/29	622	494.8	20.5
	Nanjing5055	9/2	10/29	584.7	473.1	20.3
	Ningjing8	8/31	10/29	622	494.8	20.5
	Wuyunjing23	9/2	10/27	574.5	457.4	20.4
	Wuyunjing24	8/27	10/27	687.6	521.4	21.3
	Nanjing9108	8/27	10/27	687.6	521.4	21.3
	Nanjing0212	8/27	10/27	687.6	521.4	21.3
	Ningjing7	8/30	10/27	628.2	481.9	20.8
	Wujing14	9/2	10/24	561.4	431	20.8
	Huaidao5	8/29	10/25	641.4	473.1	21.3
	Ningjing2	9/1	10/24	580.2	440.8	20.9
	Ningjing4	8/25	10/24	713.2	521.5	21.9
	Wuyunjing31	9/2	10/24	561.4	431	20.8

	Wuyujing3	8/30	10/23	607.9	452.2	21.3
	Ningjing1	9/2	10/23	554.2	427.7	20.9
	Ningjing3	9/2	10/23	554.2	427.7	20.9
	Nanjing52	8/28	10/23	647.4	476.3	21.6
	Ningjing5	8/25	10/18	672.9	491.2	22.6
	Ningjing6	8/15	10/1	719.4	453.9	24.9
	Suxiangjing3	8/18	9/25	601.3	350.3	25.8
IIs	Yangdao6	8/31	10/12	435.7	379.2	22.2
	Huanghuazhan	8/24	9/22	408.3	259.6	26.6

T, type; C, cultivars; EAT, effective accumulated temperature; ESR, effective solar radiation; MT, daily mean temperature.