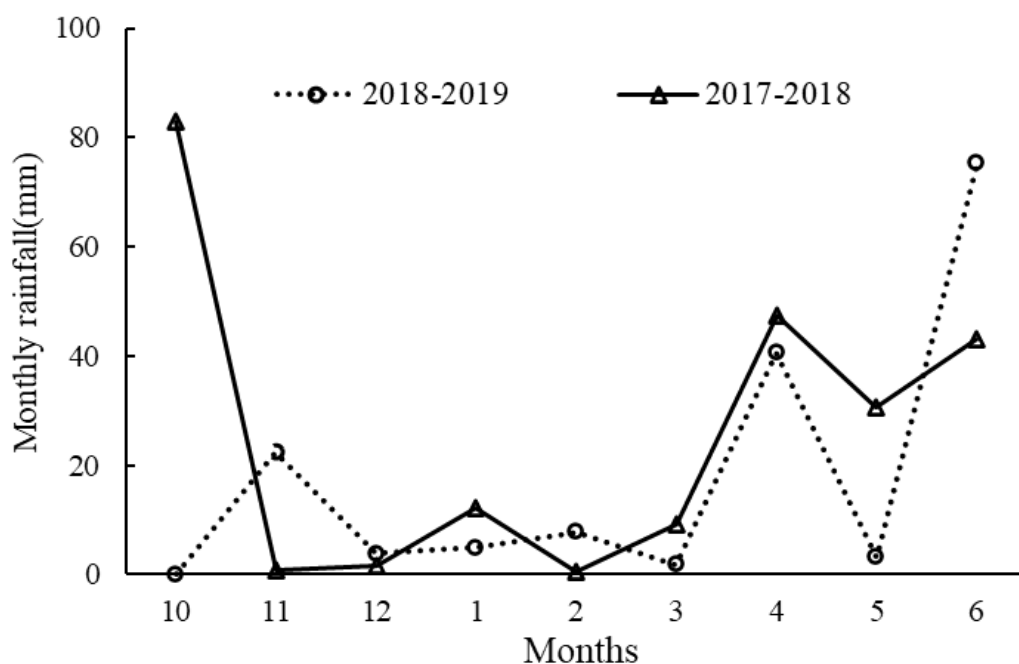


Appenxi A Wheat varieties in Panel-1.

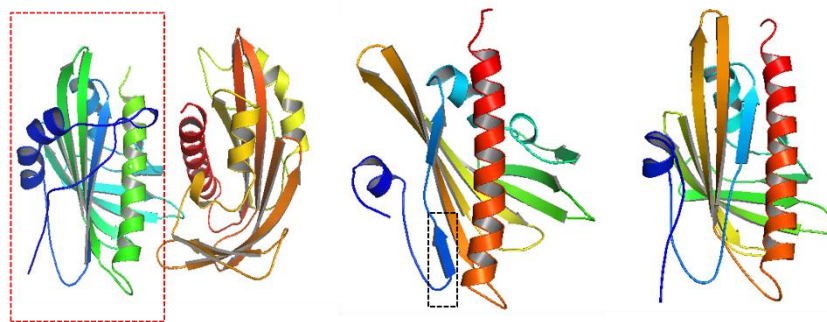
Accession	Cultivars	Genotype		
		A	B	D
XBM	Xiaobaimai	1	1	1
ZY9507	Zhongyou 9507	1	1	1
YM158	Yangmai158	1	1	1
ND18	Nongda 18	3	2	1
Funo	Funo	2	1	1
JM47	Jinmai 47	2	1	1
ND2419	Nanda 2419	1	1	1
Orofen	Orofen	2	1	1
EP	Early Premium	3	2	1
Triumph	Triumph	1	2	1
FZ30	Fuzhuang30	1	1	1
BM1	Bima 1	1	1	1
TS1	Taishan1	3	1	1
SJZ407	Shijiazhuang407	3	2	1
NC4	Ningchun 4	3	1	1
LM14	Lumai14	1	1	1
F6	Fan6	1	1	1
CH7034	CH7034	1	1	1
SY95-71	SY95-71	3	1	1
TC29	Taichang29	3	1	1
C6878	Chang6878	3	2	2
JM33	Jimai33	3	2	1
JM5	Jinmai5	3	2	1
YN19	Yannong19	1	1	1
LH7	Luohan7	3	1	2
LF5064	Lifen5064	1	1	1
JM63	Jinmai63	3	1	1
QM7	Qingmai7	3	1	1
C8744	Chang8744	1	1	1
ND3338	Nongda3338	1	1	1
JM84	Jimai84	3	1	1
CS	Chinese Spring	1	1	1
LZ953	Laizhou 953	1	1	1
BMZ	Baimaizi	1	1	1
PYXBM	Pingyaoxiaobaimai	3	2	1



Appendix B The rainfall condition during growing season of wheat in Linfen in two years.

Appendix C *TaPYLA* amplification primers

Primer	Primer sequence (5'-3')	T _m (°C)	Description
<i>TaPYLA-2AS-1F</i>	TCACAGGAAAATGTGTTTTTTTT	58	Specific primers for CDS of <i>TaPYLA-2A</i>
<i>TaPYLA-2AS-1R</i>	GCGATTGGATCGAGCGAT		
<i>TaPYLA-2BL-1F</i>	ACTAGCTGCAACCGGAAGC	58	Specific primers for CDS of <i>TaPYLA-2B</i>
<i>TaPYLA-2BL-1R</i>	CGAGGCTGGGCTTGAGTT		
<i>TaPYLA-2DS-1F</i>	CACCAAACAAACAGCTAGCA	60	Specific primers for CDS of <i>TaPYLA-2D</i>
<i>TaPYLA-2DS-1R</i>	GGTCGGATCGATCGATCAC		
<i>TaPYLA-2AS-2F</i>	CCGTCTCCTCTCTCCCTTAA	53	Specific primers for promoter region of <i>TaPYLA-2A</i>
<i>TaPYLA-2AS-2R</i>	AAAAAAAACACATTTTCCTGTGA		
<i>TaPYLA-2BL-2F</i>	CGGTGCTGCTATAGCGGCA	60	Specific primers for promoter region of <i>TaPYLA-2B</i>
<i>TaPYLA-2BL-2R</i>	TATGTGGAGCGAGACGCACTA		
<i>TaPYLA-2DS-2F</i>	AGAAGATAATCGCTCTGTTGA	58	Specific primers for promoter region of <i>TaPYLA-2D</i>
<i>TaPYLA-2DS-2R</i>	GGTCGGATCGATCGATCAC		
<i>TaPYLA-2AS-3F</i>	CAGTAAGGTTGGTTGCATCG	56	Specific markers for <i>TaPYLA-2AS</i>
<i>TaPYLA-2AS-3R</i>	AAGTGTGTAGAAATTTGGCGAA		
<i>TaPYLA-2BL-3F</i>	CCGCCACGAGCGACAATT	56	Specific markers for <i>TaPYLA-2BL</i>
<i>TaPYLA-2BL-3R</i>	GAGGTAACCTCCTTGTCAAAAC		



TaPYL4-2A

TaPYL4-2B

TaPYL4-2D

Appendix D Tertiary structure of the three TaPYL4 homoeologues in Chinese Spring.

Appendix E Nucleotide variation sites in the promoter region of TaPYL4-2AS

Number	Location (bp)	<i>TaPYL4-2AS-H</i>	<i>TaPYL4-2AS-H</i>	<i>TaPYL4-2AS-H</i>	<i>TaPYL4-2AS-H</i>
		<i>ap-1</i>	<i>ap-2</i>	<i>ap-3</i>	<i>ap-4</i>
1	-761	G	A	A	G
2	-747	A	G	A	A
3	-678	T	T	C	T
4	-672	G	G	A	G
5	-667	T	T	A	A
6	-563	G	A	A	G
7	-532	-----	-----	TATTTTGC	-----
8	-490	G	G	A	G
9	-484	G	T	G	G
10	-475	G	A	G	G
11	-466	-----	AAAGAT	AAAGAT	-----
12	-378	G	G	A	G
13	-358	-	A	A	-
14	-346	A	A	G	A
15	-229	G	A	G	G
16	-222	G	C	G	G
17	-207	G	G	A	G
18	-185	T	C	C	T
19	-172	GT	C-	CG	GT
20	-156	T	C	C	T
21	-85	C	T	T	C
22	-2	G	T	T	G

Appendix F Haplotype of *TaPYLA-2A*, *TaPYLA-2B* and *TaPYLA-2D* among 145 resequencing genotypes

NO.	Type	Name	Country	NCBI	<i>TaPYLA-2AS</i>	<i>TaPYLA-2B</i>	<i>TaPYLA-2D</i>
MP001	IMC	Quality (BiYuMai)	Australia	SAMC087022	3	1	1
MP002	IMC	Mentana (NanDai2419)	Italy	SAMC087005	1	1	1
MP003	IMC	Villa Glori (ZhongNong28)	Italy	SAMC087080	1	1	1
MP004	IMC	CI 12203 (GanSu96)	USA	SAMC086942	1	1	1
MP005	IMC	Early Premium (ZaoYangMai)	USA	SAMC087006	3	1	1
MP006	IMC	Funo (AFu)	Italy	SAMC087004	1	1	1
MP007	IMC	Abbondanza (ABo)	Italy	SAMC087014	3	1	1
MP008	IMC	Orofen (OuRou)	Chile	SAMC087013	2-1	1	1
MP009	IMC	St 1472/506 (ZhengYin1Hao)	Italy	SAMC086950	2-1	1	1
MP010	IMC	Lovrin 10 (LuoFuLin10Hao)	Romania	SAMC087016	3	1	1
MP011	IMC	St 2422/464 (ZhengYin4Hao)	Italy	SAMC087015	2-1	1	1
MP012	IMC	Mexipak 66 (MoBa66)	Pakistan	SAMC087018	3	2	1
MP013	IMC	Rieti (RuiTi)	Italy	SAMC087023	3	1	1
MP014	IMC	Wilhelmina (WeiErHeMingNa)	Holland	SAMC087024	3	1	1
MP015	IMC	Akagomughi (ChiXiaoMai)	Japan	SAMC087025	3	1	1
MP016	IMC	Mara (MaLa)	Italy	SAMC087067	3	1	1
MP017	IMC	Autonomia (AoTuoNuoMiYa)	Italy	SAMC087075	3	1	1
MP018	IMC	San Pastore (ASang)	Italy	SAMC087083	3	1	1
MP019	IMC	Fontarronco (FengTaLongKe)	Italy	SAMC087084	1	1	1
MP020	IMC	Neuzucht (NiuZhuTe)	Germany	SAMC087086	3	1	1
MP021	CL	YanDai1817	China	SAMC087001	3	1	1
MP022	CL	JiangDongMen	China	SAMC087003	1	1	1
MP023	CL	YouZiMai	China	SAMC087009	3	1	1
MP024	CL	MaZhaMai	China	SAMC087010	1	1	1

MP025	CL	ChengDouGuangTou	China	SAMC087011	1	1	1
MP026	CL	ZhongGuoChun	China	SAMC087026	1	1	1
MP027	CL	FuMai	China	SAMC087028	1	1	1
MP028	CL	LaoGaiDaiQingMang	China	SAMC087050	1	1	1
MP029	CL	QiangWeiMai	China	SAMC087051	1	1	1
MP030	CL	XiaTuo	China	SAMC087052	1	1	1
MP031	CL	BaiShanMai	China	SAMC087053	3	1	1
MP032	CL	YouZiTou	China	SAMC087054	1	1	1
MP033	CL	HeZhouDaiMai	China	SAMC087055	1	1	1
MP034	CL	GuangTouBaiSanMai	China	SAMC087056	1	1	1
MP035	CL	ChanBuZi	China	SAMC087057	1	1	1
MP036	CL	ZaoXiaoMai	China	SAMC087058	1	1	1
MP037	CL	PaoZiMai	China	SAMC087059	1	1	1
MP038	CL	SanYueHuang	China	SAMC087060	3	1	1
MP039	CL	ZiJieHong	China	SAMC087061	3	1	1
MP040	CL	GaLaoHan	China	SAMC087062	1	1	1
MP041	CL	HuoLiYan	China	SAMC087063	1	1	1
MP042	CL	BaiMaZha	China	SAMC087064	3	1	1
MP043	CL	BaiHuaMai	China	SAMC087065	1	1	1
MP044	CL	ZhuShiMai	China	SAMC087066	1	1	1
MP045	CL	WangShuiBai	China	SAMC087027	1	1	1
MP046	MCC	BiMa1Hao	China	SAMC086943	3	1	1
MP047	MCC	BiMa4Hao	China	SAMC087007	3	1	1
MP048	MCC	WuYiMai	China	SAMC087002	2-1	1	1
MP049	MCC	XiNong6028	China	SAMC087008	2-1	1	1
MP050	MCC	YueJin5Hao	China	SAMC087068	3	1	1

MP051	MCC	NeiXiang5Hao	China	SAMC086946	3	1	1
MP052	MCC	JiNan2Hao	China	SAMC086945	3	1	1
MP053	MCC	DanJiaZhuang54	China	SAMC086944	3	1	1
MP054	MCC	XuZhou14	China	SAMC086949	1	1	1
MP055	MCC	BeiJing8Hao	China	SAMC087012	3	1	1
MP056	MCC	GanMai8Hao	China	SAMC086953	2-1	1	1
MP057	MCC	JiNan9Hao	China	SAMC086948	3	1	1
MP058	MCC	FengChan3Hao	China	SAMC086951	1	1	1
MP059	MCC	JiNing3Hao	China	SAMC087069	3	1	1
MP060	MCC	BoAi7023	China	SAMC086947	3	1	1
MP061	MCC	JinMai10Hao (WeiDong8Hao)	China	SAMC087073	1	1	1
MP062	MCC	TaiShan1Hao	China	SAMC086952	3	1	1
MP063	MCC	AiFeng3Hao	China	SAMC087081	1	1	1
MP064	MCC	YanShi4Hao	China	SAMC087070	1	1	1
MP065	MCC	BoNong3217	China	SAMC086966	2-1	1	1
MP066	MCC	NingChun4Hao (YongLiang4Hao)	China	SAMC086980	1	1	1
MP067	MCC	XiaoYan6Hao	China	SAMC087019	2-1	1	1
MP068	MCC	ShanNongFu63	China	SAMC086963	1	1	1
MP069	MCC	ShanNong7859	China	SAMC086967	1	1	1
MP070	MCC	MianYang11	China	SAMC086960	3	1	1
MP071	MCC	YuMai2Hao	China	SAMC086968	3	1	1
MP072	MCC	LuMai1Hao (AiMengNiu)	China	SAMC087020	3	1	1
MP073	MCC	MianYang15	China	SAMC086961	3	1	1
MP074	MCC	JiNan13	China	SAMC086970	3	1	1
MP075	MCC	YuMai7Hao	China	SAMC086957	3	1	1
MP076	MCC	EEn1Hao	China	SAMC086972	3	1	1

MP077	MCC	YangMai5Hao	China	SAMC086969	1	1	1
MP078	MCC	MianYang20	China	SAMC086962	1	1	1
MP079	MCC	XinKeHan9Hao	China	SAMC086965	1	1	1
MP080	MCC	BoNong791	China	SAMC087082	3	1	1
MP081	MCC	JiMai26	China	SAMC086971	1	1	1
MP082	MCC	Zhou8425B	China	SAMC087021	2-1	2	1
MP083	MCC	YuMai13	China	SAMC086956	1	1	1
MP084	MCC	XiAn8Hao	China	SAMC086958	3	1	1
MP085	MCC	ChuanMai22	China	SAMC086964	3	1	1
MP086	MCC	LuMai14	China	SAMC086954	3	1	1
MP087	MCC	YuMai17	China	SAMC086959	1	1	1
MP088	MCC	YuMai18	China	SAMC086982	3	1	1
MP089	MCC	LuMai15	China	SAMC086985	3	1	1
MP090	MCC	PH82-2-2	China	SAMC087076	2-1	1	1
MP091	MCC	YuMai21Hao (ZhouMai9Hao)	China	SAMC086981	3	1	1
MP092	MCC	YangMai158	China	SAMC086977	1	1	1
MP093	MCC	MianYang26Hao	China	SAMC086984	1	1	1
MP094	MCC	JinMai47	China	SAMC087035	1	1	1
MP095	MCC	XiNong881	China	SAMC087077	3	1	1
MP096	MCC	LuMai21	China	SAMC086973	3	1	1
MP097	MCC	YuMai41	China	SAMC086983	1	1	1
MP098	MCC	JiMai38	China	SAMC086987	1	1	1
MP099	MCC	GaoYou503	China	SAMC086986	2-1	1	1
MP100	MCC	Dan4185	China	SAMC086993	1	1	1
MP101	MCC	FengYou3Hao (YuMai47)	China	SAMC087071	1	1	1
MP102	MCC	JiNan16	China	SAMC086975	1	1	1

MP103	MCC	WenMai6Hao (YuMai49)	China	SAMC086979	1	1	1
MP104	MCC	GaoCheng8901	China	SAMC087032	1	1	1
MP105	MCC	XiaoYan22	China	SAMC087048	4	1	1
MP106	MCC	JiNan17	China	SAMC086978	4	1	1
MP107	MCC	YanNong19	China	SAMC086974	4	1	1
MP108	MCC	JiMai19	China	SAMC086988	4	1	1
MP109	MCC	HanDan6172	China	SAMC086990	3	1	1
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MP111	MCC	DanJiaZhuang8Hao	China	SAMC087049	1	1	1
MP112	MCC	HuaiMai20	China	SAMC086995	3	1	1
MP113	MCC	ZhouMai16	China	SAMC086999	3	1	1
MP114	MCC	YanNong21Hao	China	SAMC087040	4	1	1
MP115	MCC	JiMai20	China	SAMC086976	1	1	1
MP116	MCC	ChuanMai42	China	SAMC087031	1	1	2
MP117	MCC	YanZhan4110	China	SAMC087046	3	1	1
MP118	MCC	LunXuan987	China	SAMC087047	1	1	1
MP119	MCC	ZhouMai18	China	SAMC086991	3	1	1
MP120	MCC	HengGuan35	China	SAMC086996	4	1	1
MP121	MCC	ShiLuan02-1	China	SAMC087033	2-1	1	1
MP122	MCC	LiangXing99	China	SAMC087038	1	1	1
MP123	MCC	XuMai856	China	SAMC087044	1	1	1
MP124	MCC	ZhengMai366	China	SAMC086989	1	1	1
MP125	MCC	BoNongAK58	China	SAMC086998	1	1	1
MP126	MCC	XiNong979	China	SAMC087000	4	1	1
MP127	MCC	JiMai22	China	SAMC086992	4	1	1
MP128	MCC	ZhouMai22Hao	China	SAMC086997	1	1	1

MP129	MCC	ZhongMai175	China	SAMC087034	4	1	1
MP130	MCC	LiangXing66	China	SAMC087037	4	1	1
MP131	MCC	XinMai26	China	SAMC087041	4	1	1
MP132	MCC	FengDeCunMai5Hao	China	SAMC087030	2-1	1	1
MP133	MCC	XuMai35	China	SAMC087045	1	1	1
MP134	MCC	ZhongMai66	China	SAMC087029	3	1	1
MP135	MCC	BoNong201	China	SAMC087042	3	1	1
MP136	MCC	BoNong4199	China	SAMC087043	1	1	1
MP137	MCC	Fan6	China	SAMC087017	3	1	1
MP138	MCC	KeChun14	China	SAMC087078	1	1	1
MP139	MCC	XiaoYan96	China	SAMC087079	1	1	1
MP140	MCC	MengXian201	China	SAMC087085	3	1	1
MP141	MCC	JiMai30	China	SAMC086955	1	1	1
MP142	MCC	XiNong65	China	SAMC087072	2-1	1	1
MP143	MCC	Shan213	China	SAMC087074	2-1	1	1
MP144	MCC	SuMai3Hao	China	SAMC087039	1	1	1
MP145	MCC	ZhongYou9507	China	SAMC087036	1	1	1
