

Time-series multispectral indices from unmanned aerial vehicle imagery reveal senescence rate in bread wheat

Muhammad Adeel Hassan¹, Mengjiao Yang^{1,2}, Awais Rasheed^{1,4}, Xiuliang Jin³, Xianchun Xia¹, Yonggui Xiao^{1,*} and Zhonghu He^{1,4,*}

¹Institute of Crop Sciences, National Wheat Improvement Centre, Chinese Academy of Agricultural Sciences (CAAS), Beijing 100081, China

²College of Agronomy, Xinjiang Agricultural University, Urumqi 830052, China

³INRA, UMR-EMMAH, UMT-CAPTE, UAPV, 228 Route de l'aérodrome CS 40509, 84914 Avignon, France

⁴International Maize and Wheat Improvement Centre (CIMMYT) China Office, c/o CAAS, Beijing 100081, China

*Authors for correspondence; Yonggui Xiao; Email: xiaoyonggui@caas.cn and Zhonghu He; Email: zhhecaas@163.com; Phone: +861082108547

Appendix: Supplementary material

Table S1: Pedigree details of tested cultivars and advance lines.

Genotype	Name	Pedigree
V1	CA0391-1	H3033/H1067
V2	CA0493	CA9614/Zhongyou 9507
V3	CA0958	CA9722/Wanmai 33//Jing 411
V4	CA1091	CA9722/Zhongyou 9507//CA9722
V5	CA1146	[(Pm12/Bainong 3217)/Pm16//CA9550]/Lumai 13
V6	CA1152	Shi 4185/Lunxuan 987//Lunxuan 987
V7	CA12077	Lunxuan 987/CA0435//Lunxuan 987
V8	CA12092	Zhongmai415/Jingken49//Zhongmai415
V9	Zhongyou 206	CA9614/Zhongyou 9507
V10	Zhongyou 335	Zhongyou 9701/CA9553
V11	Zhongyou 9507	Zhong7606/Jing7771/Yin1053(Durum wheat)
V12	Zhongmai 1062	Yumai 34/3*Lunxuan 987
V13	Zhongmai 1197	Yanzhong 144/Lovrin 10//Gaocheng 8901
V14	Zhongmai 12	Jing 411/Yanzhong 144
V15	Zhongmai 14	Zhongmai 18/Jining 13
V16	Zhongmai 175	BPM27/Jing 411
V17	Zhongmai 415	Guinong 11/Jing 411//Jing 411
V18	Zhongmai 818	CA9722/Lunxuan 987
V19	Zhongmai 998	Yumai 34/3*Lunxuan 987
V20	Fengkang 2	Mangbai 4//Lovrin 10
V21	Jing 411	Fengkang 2/Changfeng 1
V22	Jing 9428	Jing 411/Deguoyidunban
V23	Jingdong 17	Jingdong 8/RHT3//931
V24	Jingdong 22	Selected from Taigu genic male sterile wheat
V25	Jingdong 8	Avrora/5238-016//Hongliang 4/3/Jingnong 79-106
V26	Nongda 211	Nongda 3338/S180
V27	Nongda 5181	3097/Lunxuan 987
V28	Beijing 0045	Jing 411/Zhongmai 9
V29	Beijing 841	Beijing 18/Fengkang 4//Nongda 139
V30	Hangmai 247	Linmai 2/Lunxuan 987
V31	Lunxuan 1690	Jingdong 8/Lunxuan 987
V32	Lunxuan 987	Selected from dwarf male sterile wheat