**Genome wide association mapping through 90K SNP array against Leaf rust pathogen in bread wheat genotypes under field conditions**

JKSUS 101628

**Supplementary Table 1 Genotypes code, name and pedigree of 105 spring wheat genotypes**

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| Code | Name | Pedigree |
| G1 | 9493 | LU26’S’/Pb96 |
| G2 | 9496 | 5039/Rawal87 |
| G3 | 9508 | 5039/Pb96 |
| G4 | 9515 | 4770/Pb76 |
| G5 | 9610 | Pasban90/4943 |
| G6 | 9618 | Pb96/Pasban90 |
| G7 | 9675 | N/A |
| G8 | 9707 | 8060/Rawal87 |
| G9 | 9736 | Inq91/30th SAWSN 30 (1998-99) |
| G10 | 9796 | N/A |
| G11 | 9797 | N/A |
| G12 | 9869 | N/A |
| G13 | 9870 | N/A |
| G14 | 9877 | 9244/PBW222 |
| G15 | 9883 | 9244/Iqbal2000 |
| G16 | 9930 | N/A |
| G17 | 9970 | DN49/ Seher06 |
| G18 | 9889 | 9244/Parwaz94 |
| G19 | 9970 | DN49/Seher06 |
| G20 | 9764 | WLRG 3 1-8 (1993-94)/5039 |
| G21 | BWL-812 | C 591/RN//JN/3/CHR/HD 1941 |
| G22 | PBW-175 | HD2160/4/JN/GAGE//JN/KALYANSONA/3/V-18/C-273; HD-2160/WG-1025; |
| G23 | Anza | LERMA-ROJO-64//NORIN-10/BREVOR/3/3\*ANDES-ENANO |
| G24 | PBW 222 | NP 890 /HD 2160 |
| G25 | HD 2307 | HD-2160/116-1-3 |
| G26 | DPW-621-50 | KAUZ//ALTAR-84/(AOS)AWNED-ONAS/3/MILAN/KAUZ/4/HUITES |
| G27 | PBW 343 | Attila |
| G28 | HD 2967 | ALD/COC//URES/HD2160M/HD2278 |
| G29 | BWL-1793 | ND/VG9144 //KAL/BB/3/YCO"S'/4/VEE#5 "S' |
| G30 | BWL-9022 | N/A |
| G31 | BWL-0924 | N/A |
| G32 | C-78711 | N/A |
| G33 | C-252782 | N/A |
| G34 | BWL-1771 | N/A |
| G35 | C-252874 | N/A |
| G36 | C-252803 | N/A |
| G37 | C-118737 | N/A |
| G38 | C-128196 | N/A |
| G39 | 10111 | N/A |
| G40 | C-212185 | N/A |
| G41 | C-32586 | N/A |
| G42 | C-532653 | N/A |
| G43 | C-437081 | N/A |
| G44 | 10115 | N/A |
| G45 | BWL-0814 | N/A |
| G46 | Sonara-64 | N/A |
| G47 | PBN-51 | N/A |
| G48 | C-586642 | N/A |
| G49 | Sakha | INIA-66(S)/NAPO-63 |
| G50 | PBW 621 | KAUZ//ALTAR-84/(AOS)AWNED-ONAS/3/MILAN/KAUZ/4/HUITES |
| G51 | 10117 | N/A |
| G52 | Bareukee | N/A |
| G53 | Redfiled | N/A |
| G54 | Gutha | GAMENYA//GABO\*3/KHAPSTEIN(M-146)/3/FALCON\*3/CHILE. |
| G55 | Sunstar | CONDOR,AUS/4/2\*WW-15/3/STEINWEDEL/YAROSLAV-EMMER//LA-PREVISION |
| G56 | Watan | LU26/HD 2179 |
| G57 | AARI-2011 | SH-88/90A-204//MH97 |
| G58 | Aas-2011 | PRL/PASTOR//2236 |
| G59 | Abadgar-93 | PSN/BOW |
| G60 | Anmol-91 | KVZ/TRM//PTM/ANA |
| G61 | Chakwal-86 | FORLANI/ACC//ANA or Fln/ACS//ANA |
| G62 | Uqab-2000 | CROW'S'/NAC//BOW'S' |
| G63 | Bahawal-97 | PFAU'S'/SERI |
| G64 | Bwp-2000 | AU/UP301//GLL/Sx/3/PEW S/4/MAI S/MAY A S//PEWS |
| G65 | Bakhtawar-94 | Mentana/Mayo//4-11 |
| G66 | Bakhar-2002 | P102/PIMA//F371/TTR/BOW/3/PVN |
| G67 | Bakhtawar-93 | AU/UP301//GLL/SX/3/PEW/4/MAI/MAYA//PEW |
| G68 | Pasban-90 | INIA F66/TH.DISTICHUM//INIAF66/3/GENARO T81 or INIA F66/A.DISTCHUM//INIA66/3/GEN |
| G69 | Bathoor-2008 | URES/JUN//KAUZ |
| G70 | Chakwal-50 | ATTILA/3/HUI/CARC//CHEN/CHTO/4/ATTILA |
| G71 | AS-2002 | KHP/D31708//CMH74A370/3/ENO79/4/R26043/\*4NAC |
| G72 | Chakwal-97 | BUC'S'/FCT'S' |
| G73 | Shafaq-2006 | LU 26/HD 2179/ 2\*INQALAB 91 |
| G74 | Fakhar-e-Sarhad | NORD-DESPREZ(ND)/VG-9144//KALYANSONA/BLUEBIRD/3/YACO/4/VEERY-5 |
| G75 | Fareed-2006 | PT'S'/3/TOB/LFN//BB/4/BB/HD-832-5//ON/5/G-V/ALD'S'//HPO |
| G76 | FSD-2008 | PBW65/2\*Pastor |
| G77 | Millat-2011 | CHENAB2000/INQ-91 |
| G78 | FSD-85 | MAYA/MON//KVZ/TRM |
| G79 | GA 2002 | DWL5023/SNB//SNB |
| G80 | Galaxy-2013 | Pb96/Watan/MH-97 |
| G81 | Gomal-2008 | Attila |
| G82 | Hashim-2008 | JUP/ALD'S'//KLT'S'/3/VEE'S'/6/BEZ//TOB/8156/4/ON/3/6\*TH/KF//6\*LEE/KF/--------- |
| G83 | Inq-91 | WL 711/CROW "S" |
| G84 | Iqbal-2000 | BURGUS/SORT 12-13//KAL/BB/3/PAK 81 |
| G85 | Kaghan-93 | TTR/JUN |
| G86 | Khyber-87 | KVZ/TRM//PTM/ANA |
| G87 | Kohistan-97 | V-1562//CHRC'S'/HORK/3/KUFRA-I/4/CARP'S'/BJY'S' |
| G88 | Kohinoor-83 | ORE F1 158/FDL//MFN/2\*TIBA63/3/COC |
| G89 | Kohsar-95 | PSN/BOW |
| G90 | Lasani-2008 | LUAN/KOH-97 |
| G91 | Ufaq-2002 | V.84133/V83150 |
| G92 | Marvi-2000 | CMH-77A917/PKV 1600//RL6010/6\*SKA |
| G93 | Maxi-Pak 65 | PJ/GB55 |
| G94 | Mehran-89 | KVZ/BUHO//KAL/BB |
| G95 | MH-97 | Attila |
| G96 | FSD-83 | FURY//KAL/BB |
| G97 | Mairaj-08 | SPARROW/INIA//V.7394/WL711/3/BAUS |
| G98 | Moomal-2002 | BUC or BUCS/4/TZPP/IRN46 |
| G99 | Margalla-99 | OPATA/BOW'S' |
| G100 | NARC-2009 | INQALAB 91\*2/TUKURU |
| G101 | Nifa-barsat 2010 | FRET2 |
| G102 | Nowshera-96 | BUC/FLK//MYNA/VUL |
| G103 | Pak-81 | VEERY. |
| G104 | Parwaz-94 | V.5648/PARULA or V.5648/PRL |
| G105 | BARS-2009 | PFAU/SERI//BOW |

G1-G20 (origin) PBG-UAF= Department of Plant Breeding and Genetics, University of Agriculture, Faisalabad Pakistan.

G21-G55 (origin) Exotic = Foreign (other than Pakistan) spring wheat genotypes.

G56-G105 (origin) Indigenous = Pakistani spring wheat genotypes.