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| **Table S2 Annotated genes from chromosome 5H long arm region spanning 10 Mb** |
| **Gene** | **Annotation** |
| HORVU5Hr1G121540.1 | Conserved oligomeric Golgi complex subunit 2 |
| HORVU5Hr1G121550.1 | unknown function |
| HORVU5Hr1G121570.9 | Nucleotide-diphospho-sugar transferase family protein |
| HORVU5Hr1G121600.4 | Chromosome 3B, genomic scaffold, cultivar Chinese Spring |
| HORVU5Hr1G121440.13 | receptor kinase 2 |
| HORVU5Hr1G121610.4 | B-cell receptor-associated protein 31-like |
| HORVU5Hr1G121620.2 | Actin-related protein 2/3 complex subunit 4 |
| HORVU5Hr1G121640.2 | Rust resistance-like protein RP1 |
| HORVU5Hr1G121650.2 | Aspartokinase |
| HORVU5Hr1G121660.1 | Aspartokinase 1, chloroplastic |
| HORVU5Hr1G121700.2 | Aspartokinase 3 |
| HORVU5Hr1G121710.2 | NAC domain containing protein 2 |
| HORVU5Hr1G121720.1 | Adenylate cyclase |
| HORVU5Hr1G121730.1 | Integral membrane protein |
| HORVU5Hr1G121760.2 | Peptidyl-prolyl cis-trans isomerase Pin1 |
| HORVU5Hr1G121800.4 | undescribed protein |
| HORVU5Hr1G121810.2 | undescribed protein |
| HORVU5Hr1G121860.2 | Sec14p-like phosphatidylinositol transfer family protein |
| HORVU5Hr1G121870.1 | Protein kinase superfamily protein |
| HORVU5Hr1G121880.1 | unknown function |
| HORVU5Hr1G121900.1 | RNA-binding KH domain-containing protein |
| HORVU5Hr1G121910.1 | Basic blue protein |
| HORVU5Hr1G121920.1 | unknown function |
| HORVU5Hr1G121940.5 | Sec14p-like phosphatidylinositol transfer family protein |
| HORVU5Hr1G121970.2 | unknown function |
| HORVU5Hr1G121980.1 | Abscisic acid receptor PYR1 |
| HORVU5Hr1G122000.7 | unknown function |
| HORVU5Hr1G122020.1 | sucrose phosphate synthase 1F |
| HORVU5Hr1G122040.1 | Basic blue protein |
| HORVU5Hr1G122060.2 | Basic blue protein |
| HORVU5Hr1G122070.1 | transferases, transferring glycosyl groups |
| HORVU5Hr1G122080.1 | Sec14p-like phosphatidylinositol transfer family protein |
| HORVU5Hr1G122090.1 | Ribosomal protein-like |
| HORVU5Hr1G122100.1 | unknown function |
| HORVU5Hr1G122110.1 | Zinc transporter 7 |
| HORVU5Hr1G122130.1 | dihydroflavonol 4-reductase |
| HORVU5Hr1G122150.2 | dihydroflavonol 4-reductase-like1 |
| HORVU5Hr1G122170.4 | Nascent polypeptide-associated complex subunit beta |
| HORVU5Hr1G122190.2 | Disease resistance protein |
| HORVU5Hr1G122180.1 | Disease resistance protein (CC-NBS-LRR class) family |
| HORVU5Hr1G122220.6 | Terpene cyclase/mutase family member |
| HORVU5Hr1G122250.3 | unknown function |
| HORVU5Hr1G122260.1 | Ribonucleoside-diphosphate reductase |
| HORVU5Hr1G122280.4 | Chromosome 3B, genomic scaffold, cultivar Chinese Spring |
| HORVU5Hr1G122290.1 | Chromosome 3B, genomic scaffold, cultivar Chinese Spring |
| HORVU5Hr1G122310.2 | Disease resistance protein (CC-NBS-LRR class) family |
| HORVU5Hr1G122340.3 | glutaredoxin 4 |
| HORVU5Hr1G122350.2 | Elongation factor Tu |
| HORVU5Hr1G122360.1 | 3-ketoacyl-CoA synthase 6 |
| HORVU5Hr1G122390.1 | protein kinase family protein |
| HORVU5Hr1G122410.1 | undescribed protein |
| HORVU5Hr1G122430.1 | 26S proteasome non-ATPase regulatory subunit 12 homolog A |
| HORVU5Hr1G122440.2 | Geranylgeranyl diphosphate synthase |
| HORVU5Hr1G122450.1 | Monothiol glutaredoxin-S7, chloroplastic |
| HORVU5Hr1G122460.1 | Monothiol glutaredoxin-S7, chloroplastic |
| HORVU5Hr1G122470.1 | F-box/RNI-like superfamily protein |
| HORVU5Hr1G122490.1 | Glutaredoxin 3 |
| HORVU5Hr1G122510.1 | Leucine-rich receptor-like protein kinase family protein |
| HORVU5Hr1G122520.1 | undescribed protein |
| HORVU5Hr1G122530.1 | Geranylgeranyl diphosphate synthase |
| HORVU5Hr1G122540.2 | Cytochrome P450 superfamily protein |
| HORVU5Hr1G122550.1 | Geranylgeranyl diphosphate synthase |
| HORVU5Hr1G122560.1 | 26S proteasome non-ATPase regulatory subunit 12 homolog A |
| HORVU5Hr1G122620.1 | Disease resistance protein |
| HORVU5Hr1G122640.6 | U2 small nuclear ribonucleoprotein A |
| HORVU5Hr1G122660.4 | Disease resistance protein |
| HORVU5Hr1G122680.1 | FRIGIDA |
| HORVU5Hr1G122700.1 | undescribed protein |
| HORVU5Hr1G122720.1 | undescribed protein |
| HORVU5Hr1G122750.2 | Pentatricopeptide repeat-containing protein |
| HORVU5Hr1G122800.2 | WRKY family transcription factor |
| HORVU5Hr1G122810.7 | transducin family protein / WD-40 repeat family protein |
| HORVU5Hr1G122820.4 | Ankyrin repeat domain-containing protein 2A |
| HORVU5Hr1G122830.1 | Heat shock 70 kDa protein 16 |
| HORVU5Hr1G122760.13 | Eukaryotic aspartyl protease family protein |
| HORVU5Hr1G122840.1 | Eukaryotic aspartyl protease family protein |
| HORVU5Hr1G122860.5 | tropinone reductase |
| HORVU5Hr1G122900.1 | Protein of Unknown Function (DUF239) |
| HORVU5Hr1G122950.2 | Leucine-rich receptor-like protein kinase family protein |
| HORVU5Hr1G122960.18 | Disease resistance protein |
| HORVU5Hr1G122990.1 | Disease resistance protein (CC-NBS-LRR class) family |
| HORVU5Hr1G123010.1 | receptor kinase 2 |
| HORVU5Hr1G123020.1 | undescribed protein |
| HORVU5Hr1G123040.1 | RING/U-box superfamily protein |
| HORVU5Hr1G123050.1 | Chromatin accessibility complex protein 1 |
| HORVU5Hr1G123060.1 | Protein TIME FOR COFFEE |
| HORVU5Hr1G123080.7 | Transducin family protein / WD-40 repeat family protein |
| HORVU5Hr1G123110.1 | Acyl-[acyl-carrier-protein] 6-desaturase |
| HORVU5Hr1G123120.3 | hydroxyproline-rich glycoprotein family protein |
| HORVU5Hr1G123150.1 | Pentatricopeptide repeat-containing protein |
| HORVU5Hr1G123160.2 | DERLIN-2.2 |
| HORVU5Hr1G123180.1 | RING/U-box superfamily protein |
| HORVU5Hr1G123190.1 | Protein TIME FOR COFFEE |
| HORVU5Hr1G123200.1 | unknown function |
| HORVU5Hr1G123210.2 | unknown protein; BEST Arabidopsis thaliana protein match is: unknown protein . |
| HORVU5Hr1G123220.1 | Ycf20-like protein |
| HORVU5Hr1G123240.5 | Pentatricopeptide repeat-containing protein |
| HORVU5Hr1G123280.1 | undescribed protein |
| HORVU5Hr1G123300.1 | Cysteine/Histidine-rich C1 domain family protein |
| HORVU5Hr1G123290.2 | Cysteine/Histidine-rich C1 domain family protein |
| HORVU5Hr1G123310.1 | Cysteine/Histidine-rich C1 domain family protein |
| HORVU5Hr1G123320.1 | undescribed protein |
| HORVU5Hr1G123330.3 | Cysteine/Histidine-rich C1 domain family protein |
| HORVU5Hr1G123340.1 | RING/U-box superfamily protein |
| HORVU5Hr1G123350.5 | methyl-CPG-binding domain 9 |
| HORVU5Hr1G123360.1 | methyl-CPG-binding domain 9 |
| HORVU5Hr1G123370.3 | Cleavage and polyadenylation specificity factor subunit 3-I |
| HORVU5Hr1G123390.1 | methyl-CPG-binding domain 9 |
| HORVU5Hr1G123400.2 | BREVIS RADIX-like 1 |
| HORVU5Hr1G123410.9 | Ribonuclease P protein subunit P38-related |
| HORVU5Hr1G123420.4 | GC-rich sequence DNA-binding factor-like protein |
| HORVU5Hr1G123440.1 | unknown function |
| HORVU5Hr1G123450.1 | FAR1-related sequence 5 |
| HORVU5Hr1G123460.2 | Chaperone protein ClpB |
| HORVU5Hr1G123470.1 | Indole-3-acetaldehyde oxidase |
| HORVU5Hr1G123480.1 | Disease resistance protein |
| HORVU5Hr1G123490.3 | Protein BCCIP homolog |
| HORVU5Hr1G123520.3 | tRNA uridine 5-carboxymethylaminomethyl modification enzyme MnmG |
| HORVU5Hr1G123530.1 | AIG2-like (avirulence induced gene) family protein |
| HORVU5Hr1G123540.2 | receptor kinase 1 |
| HORVU5Hr1G123550.1 | receptor kinase 2 |
| HORVU5Hr1G123570.3 | unknown function |
| HORVU5Hr1G123590.1 | ADP-ribosylation factor GTPase-activating protein 2 |
| HORVU5Hr1G123600.1 | Protein of unknown function (DUF674) |
| HORVU5Hr1G123610.1 | Leucine aminopeptidase 1 |
| HORVU5Hr1G123620.1 | Leucine aminopeptidase 1 |
| HORVU5Hr1G123630.3 | F-box/RNI-like superfamily protein |
| HORVU5Hr1G123660.1 | undescribed protein |
| HORVU5Hr1G123670.1 | Ribonuclease III family protein |
| HORVU5Hr1G123680.1 | RNA-binding protein 34 |
| HORVU5Hr1G123690.1 | Exosome complex component RRP46 |
| HORVU5Hr1G123700.7 | E3 ubiquitin-protein ligase listerin |
| HORVU5Hr1G123770.1 | heat shock transcription factor A2 |
| HORVU5Hr1G123860.1 | DNA mismatch repair protein MutL |
| HORVU5Hr1G123880.1 | myb domain protein 30 |
| HORVU5Hr1G123920.1 | xyloglucan endotransglucosylase/hydrolase 30 |
| HORVU5Hr1G123930.2 | Beta-fructofuranosidase, insoluble isoenzyme 3 |
| HORVU5Hr1G123970.5 | Beta-fructofuranosidase, insoluble isoenzyme 4 |
| HORVU5Hr1G124010.1 | Inactive poly [ADP-ribose] polymerase RCD1 |
| HORVU5Hr1G124020.1 | undescribed protein |
| HORVU5Hr1G124030.19 | Beta-fructofuranosidase, insoluble isoenzyme 4 |
| HORVU5Hr1G124040.1 | xyloglucan endotransglucosylase/hydrolase 30 |
| HORVU5Hr1G124070.4 | Pentatricopeptide repeat-containing protein |
| HORVU5Hr1G124090.14 | F-box protein PP2-B1 |
| HORVU5Hr1G124120.4 | gibberellin 20 oxidase 2 |
| HORVU5Hr1G124150.1 | 30S ribosomal protein S7 |
| HORVU5Hr1G124160.1 | Chlorophyll a-b binding protein 2, chloroplastic |
| HORVU5Hr1G124170.2 | Protein kinase superfamily protein |
| HORVU5Hr1G124210.5 | PGR5-LIKE A |
| HORVU5Hr1G124240.2 | Domain of unknown function (DUF303) |
| HORVU5Hr1G124260.3 | P-loop containing nucleoside triphosphate hydrolases superfamily protein |
| HORVU5Hr1G124290.5 | P-loop containing nucleoside triphosphate hydrolases superfamily protein |
| HORVU5Hr1G124310.1 | RAD-like 6 |
| HORVU5Hr1G124320.9 | WRKY DNA-binding protein 35 |
| HORVU5Hr1G124330.1 | RAD-like 6 |
| HORVU5Hr1G124350.1 | Outer envelope pore protein 24, chloroplastic |
| HORVU5Hr1G124360.1 | Jasmonate O-methyltransferase |
| HORVU5Hr1G124370.1 | Mitochondrial outer membrane protein porin 2 |
| HORVU5Hr1G124380.2 | Light-repressed protein A |
| HORVU5Hr1G124390.5 | 2-oxoglutarate (2OG) and Fe(II)-dependent oxygenase superfamily protein |
| HORVU5Hr1G124410.12 | 5'-AMP-activated protein kinase subunit gamma-2 |
| HORVU5Hr1G124430.1 | Light-repressed protein A |
| HORVU5Hr1G124440.1 | undescribed protein |
| HORVU5Hr1G124450.1 | Heavy metal transport/detoxification superfamily protein |
| HORVU5Hr1G124470.1 | Plant invertase/pectin methylesterase inhibitor superfamily protein |
| HORVU5Hr1G124490.4 | RNA-binding protein 47 |
| HORVU5Hr1G124500.2 | Luc7-like protein 3 |
| HORVU5Hr1G124520.3 | unknown function |
| HORVU5Hr1G124550.2 | unknown protein; BEST Arabidopsis thaliana protein match is: unknown protein . |
| HORVU5Hr1G124560.1 | F-box family protein |
| HORVU5Hr1G124580.1 | Pentatricopeptide repeat-containing protein |
| HORVU5Hr1G124590.14 | unknown function |
| HORVU5Hr1G124600.1 | Late embryogenesis abundant (LEA) hydroxyproline-rich glycoprotein family |
| HORVU5Hr1G124620.1 | Late embryogenesis abundant (LEA) hydroxyproline-rich glycoprotein family |
| HORVU5Hr1G124610.8 | LOCATED IN: mitochondrion, chloroplast thylakoid membrane, chloroplast, plastid, chloroplast envelope; EXPRESSED IN: 24 plant structures; EXPRESSED DURING: 14 growth stages; |
| HORVU5Hr1G124630.3 | Glutathione S-transferase T1 |
| HORVU5Hr1G124640.1 | Transmembrane protein, putative |
| HORVU5Hr1G124650.12 | ABC transporter G family member 48 |
| HORVU5Hr1G124670.3 | TBC1 domain family member 15 |
| HORVU5Hr1G124710.2 | Leucine-rich repeat receptor-like protein kinase family protein |
| HORVU5Hr1G124750.1 | Cytokinin riboside 5'-monophosphate phosphoribohydrolase |
| HORVU5Hr1G124770.13 | exportin 1A |
| HORVU5Hr1G124800.1 | Serine/threonine-protein kinase |
| HORVU5Hr1G124810.4 | receptor kinase 1 |
| HORVU5Hr1G124820.2 | Fatty acyl-CoA reductase 1 |
| HORVU5Hr1G124850.11 | transducin family protein / WD-40 repeat family protein |
| HORVU5Hr1G124860.1 | Transducin beta-like protein 2 |
| HORVU5Hr1G124880.1 | MATE efflux family protein |
| HORVU5Hr1G124890.1 | undescribed protein |
| HORVU5Hr1G124900.1 | unknown function |
| HORVU5Hr1G124920.1 | DUF1499 family protein |
| HORVU5Hr1G124940.5 | unknown function |
| HORVU5Hr1G124950.1 | Orphans transcription factor |
| HORVU5Hr1G124960.1 | La domain containing protein, expressed |
| HORVU5Hr1G124980.2 | GDSL esterase/lipase |
| HORVU5Hr1G125000.2 | GDSL esterase/lipase |
| HORVU5Hr1G125010.1 | ABC transporter G family member 3 |
| HORVU5Hr1G125030.6 | Heavy metal transport/detoxification superfamily protein |
| HORVU5Hr1G125080.1 | unknown function |
| HORVU5Hr1G125050.30 | Mediator of RNA polymerase II transcription subunit 13 |
| HORVU5Hr1G125110.14 | RNA polymerase sigma-C factor |
| HORVU5Hr1G125120.3 | Transcription cofactor, putative |
| HORVU5Hr1G125130.1 | 60 kDa chaperonin 2 |
| HORVU5Hr1G125140.1 | early nodulin-like protein 6 |
| HORVU5Hr1G125150.6 | OTU domain-containing protein 5 |
| HORVU5Hr1G125180.1 | Activating signal cointegrator 1 |
| HORVU5Hr1G125190.1 | WRKY transcription factor 37 |
| HORVU5Hr1G125200.11 | serine/threonine protein phosphatase 2A |
| HORVU5Hr1G125220.8 | Protein of unknown function, DUF547 |
| HORVU5Hr1G125230.1 | Transcriptional corepressor LEUNIG |
| HORVU5Hr1G125240.1 | Transducin/WD40 repeat-like superfamily protein |
| HORVU5Hr1G125250.1 | Protein of unknown function (DUF594) |
| HORVU5Hr1G125260.3 | unknown function |
| HORVU5Hr1G125270.1 | Protein kinase superfamily protein |
| HORVU5Hr1G125280.1 | Activating signal cointegrator 1 |
| HORVU5Hr1G125290.3 | Protein kinase superfamily protein |
| HORVU5Hr1G125300.3 | Activating signal cointegrator 1 |
| HORVU5Hr1G125310.1 | ER membrane protein complex subunit 7 homolog |
| HORVU5Hr1G125320.1 | 2-oxoglutarate (2OG) and Fe(II)-dependent oxygenase superfamily protein |
| HORVU5Hr1G125330.1 | Fusarium graminearum chromosome 2, complete genome |
| HORVU5Hr1G125340.2 | Disease resistance protein RPM1 |
| HORVU5Hr1G125350.1 | Disease resistance protein |
| HORVU5Hr1G125360.3 | unknown function |
| HORVU5Hr1G125370.1 | Chromosome 3B, genomic scaffold, cultivar Chinese Spring |
| HORVU5Hr1G125380.1 | FAR1-related sequence 5 |
| HORVU5Hr1G125390.1 | FAR1-related sequence 4 |
| HORVU5Hr1G125400.2 | undescribed protein |
| HORVU5Hr1G125410.2 | 2-oxoglutarate (2OG) and Fe(II)-dependent oxygenase superfamily protein |
| HORVU5Hr1G125420.4 | ubiquitin-conjugating enzyme 5 |
| HORVU5Hr1G125430.21 | myosin 2 |
| HORVU5Hr1G125450.1 | AWPM-19-like family protein |
| HORVU5Hr1G125460.4 | AWPM-19-like family protein |
| HORVU5Hr1G125500.1 | AWPM-19-like family protein |
| HORVU5Hr1G125550.1 | Disease resistance protein |
| HORVU5Hr1G125560.2 | Flavin-containing monooxygenase family protein |
| HORVU5Hr1G125570.1 | undescribed protein |
| HORVU5Hr1G125580.1 | LysM domain containing protein, expressed |
| HORVU5Hr1G125590.1 | undescribed protein |
| HORVU5Hr1G125600.1 | Aquaporin-like superfamily protein |