Combined Large-Scale Phenotyping and Transcriptomics in Maize Reveals a Robust Growth Regulatory Network[1[OPEN]]

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Leaves are vital organs for biomass and seed production because of their role in the generation of metabolic energy and organic compounds. A better understanding of the molecular networks underlying leaf development is crucial to sustain global requirements for food and renewable energy. Here, we combined transcriptome profiling of proliferative leaf tissue with in-depth phenotyping of the fourth leaf at later stages of development in 197 recombinant inbred lines of two different maize (*Zea mays*) populations. Previously, correlation analysis in a classical biparental mapping population identified 1,740 genes correlated with at least one of 14 traits. Here, we extended these results with data from a multiparent advanced generation intercross population. As expected, the phenotypic variability was found to be larger in the latter population than in the biparental population, although general conclusions on the correlations among the traits are comparable. Data integration from the two diverse populations allowed us to identify a set of 226 genes that are robustly associated with diverse leaf traits. This set of genes is enriched for transcriptional regulators and genes involved in protein synthesis and cell wall metabolism. In order to investigate the molecular network context of the candidate gene set, we integrated our data with publicly available functional genomics data and identified a growth regulatory network of 185 genes. Our results illustrate the power of combining in-depth phenotyping with transcriptomics in mapping populations to dissect the genetic control of complex traits and present a set of candidate genes for use in biomass improvement.

In plants, leaves are the main organs for fundamental biological functions, such as photosynthesis and respiration. The size, shape, and number of leaves strongly determine a plant's photosynthetic capacity and the efficiency with which water and nutrients are used. Consequently, the size of the leaves influences plant biomass and yield (Linkies et al., 2010; Pérez-Pérez et al., 2010). Therefore, understanding the mechanisms controlling various aspects of leaf development, such as growth rate and final size, is of great interest, in particular since the demands in food, feed, and renewable bioenergy are envisaged to increase strongly in the next decades (Godfray et al., 2010).

Leaf size is a complex trait determined by the interplay of several factors. The dynamics of leaf development have been studied in detail in various plant species at the organ and cellular levels, but insight into the underlying molecular mechanisms remains limited. Typically, leaf development starts with the recruitment of founder cells at the peripheral zone of the shoot apical meristem, followed by a phase of cell proliferation and successive cell expansion. During this postprimordial development, leaf differentiation progresses basipetally in monocots: the region containing proliferating cells becomes gradually restricted to the base of the organ; as a consequence, a growing leaf shows a developmental gradient with dividing cells at the base, fully differentiated mature cells at the tip, and in between a region of expanding cells (Poethig, 1984; Sylvester et al., 1990). At the molecular level, some genes that affect leaf size have been identified, primarily in the model species Arabidopsis (*Arabidopsis thaliana*; for review, see Gonzalez et al., 2012; Hepworth and Lenhard, 2014). Although regulators of both cell division and cell expansion have been identified, mutants or transgenic

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D.I. conceived and coordinated the study; J.B., M.E.P., M.D., S.M., H.N., and D.I. designed the study; J.B. and J.D.B. carried out the plant measurements; J.D.B. carried out the sampling and RNA preparations; F.C. performed the RNA sequencing analysis; J.B., D.H., and B.S. performed computational data analyses; J.B., S.M., H.N., and D.I. interpreted the results; J.B. wrote the article with input from the other authors; all authors read and approved the final article.

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lines with larger leaves tend to be composed of more cells rather than larger cells (Niklas, 1994; Gonzalez et al., 2010). For instance, leaves of maize (*Zea mays*) plants with altered levels of GA are affected in their growth rates, and the size of the division zone (DZ) is changed correspondingly (Nelissen et al., 2012). Examples in Arabidopsis of genes that are regulators of final leaf size by influencing cell proliferation are *AVP1*, *JAW*, and *BRI1* (Gonzalez et al., 2010), *GROWTH-REGULATING FACTOR1* (*GRF1*) and *GRF2* (Kim and Kende, 2004), *GRF5* (Horiguchi et al., 2005), *DA1* and *ENHANCER OF DA1* (Li et al., 2008), *ANGUSTIFOLIA3* (*AN3*)/*GRF-INTERACTING FACTOR* (Lee et al., 2009), and *KLUH* (Kazama et al., 2010). These examples illustrate that cell proliferation seems to be a key contributing factor to final leaf size.

Exploiting natural variation has been proposed as a complementary approach to the traditional, gene-centric reverse and forward genetics approaches to identify new genes (Weigel, 2012). Knockdown or overexpression of single genes does not capture the extensive genetic variation present in natural populations, which results from a combination of single-nucleotide substitutions, insertions, deletions, copy number variations, epigenetic changes, and expression differences. In the monocotyledonous species maize, the intraspecific variation is large and offers great potential to relate genotype to phenotype. Also, several mapping populations are available, but until now, only a few were used to determine the genetic control of leaf-related traits via quantitative trait locus (QTL) or genome-wide association studies (Pelleschi et al., 2006; Ku et al., 2010, 2012; Tian et al., 2011; Dignat et al., 2013). Although several small-effect QTLs were identified in these studies, further fine-mapping using complementary approaches or a priori knowledge is required to find the genes underlying the quantitative trait.

Previous studies found evidence that the phenotypic diversity in maize is mainly under transcriptional control (Li et al., 2012; Wallace et al., 2014). The recent availability of cost-efficient and high-throughput sequencing technologies to analyze transcriptomes provides new opportunities to gain further insights into the molecular basis of leaf size. In maize, several recent studies applied next-generation sequencing technologies to assess transcriptomic differences between leaf developmental stages and leaf cell types. Transcriptomes of different regions of a growing leaf, representing different developmental stages, were compared by Li et al. (2010) and Pick et al. (2011). Transcriptional dynamics during early development of embryonic leaves were surveyed by Liu et al. (2013b) and Yu et al. (2015). Additionally, the regulatory and functional differentiation of various leaf cell types was examined by transcriptome analysis (Li et al., 2010; Wang et al., 2013, 2014). The transcriptional variation between tissue types and cell types during development (Li et al., 2010; Wang et al., 2013, 2014) illustrates the importance of focusing the analysis of a given process on those tissues where the process takes place. Since leaf growth is driven by proliferation and expansion, zooming in on proliferative and/or expanding tissue is required to identify the regulatory networks underlying leaf development. The developmental gradient in growing maize leaves and the large size of the leaf makes it possible to dissect these specific growth zones for further analysis (Nelissen et al., 2012). Since it was recently suggested that it is the final number of cells that primarily determines final leaf size (Gonzalez et al., 2010; Nelissen et al., 2012), we focus our transcriptome analysis specifically on proliferative tissue of the growing leaf.

Although analyses of transcriptional variation during maize leaf development have provided us with new insights, all these studies were restricted to one genetic background (Li et al., 2010; Pick et al., 2011; Liu et al., 2013b; Wang et al., 2013, 2014; Yu et al., 2015). Adding an additional layer of information, phenotypic variation in mapping populations, and combining this with transcriptome variation in these populations offers new opportunities to identify genes and regulatory mechanisms that are at the basis of phenotypic differences (Andorf et al., 2012).

Recently, we associated phenotypic variation with transcriptome variation in 103 lines of a biparental recombinant inbred line (RIL) population (Baute et al., 2015). We described the relationship of leaf size traits, such as final leaf area and leaf weight, and transcriptional variation in fully proliferative tissue sampled during early leaf development. Although the genetic and phenotypic variation in a classical biparental RIL mapping population provides a valuable source of information, the possibility to detect variation in expression that is associated with phenotypic variation remains limited, since it depends on the polymorphisms between only two parents. In multiparent advanced generation intercross (MAGIC) populations, RILs are generated from multiple parents by mixing the genomes of the founder lines through several rounds of mating, followed by inbreeding to obtain a set of stable homozygous lines (Churchill et al., 2004; Cavanagh et al., 2008; Kover et al., 2009). Such a MAGIC population was recently established for maize, and a panel of 529 lines was genotyped (Dell'Acqua et al., 2015). The population has a larger genetic diversity than biparental populations, and as such, the number of components in the regulatory network that can be identified is expected to be higher. Moreover, integrating results from different populations may allow for the identification of the most robust players in the growth-related molecular network across different lines. In this study, we performed detailed phenotyping and transcriptome analysis of 94 lines of the MAGIC population and combined this with the previously described phenotyping and transcriptome analysis of 103 lines of the biparental B73 × H99 population. We identified a set of 226 genes with expression levels in the DZ of the growing leaf (anti)correlating with leaf phenotype measurements in both populations. Some of these genes have homologs in Arabidopsis with a known function in leaf development. However, the majority of the genes had no known function or were not annotated before as having a role in this process, implying that these might be interesting candidates to further decipher the molecular network underlying leaf development. Additionally, integration of publicly available functional genomics data (De Bodt et al., 2012) led to the identification of a subset of 185 genes that are interconnected through expression correlations or protein-protein interactions.

RESULTS AND DISCUSSION

Correlation between Leaf Size and Shoot Traits Is Similar in the Two Different Populations

Previously, in-depth phenotyping of 103 lines of a biparental RIL population derived from the inbred parents B73 and H99 (Marino et al., 2009) was combined with transcriptome profiling to dissect leaf size, growth, and shoot-related traits into phenotypic and molecular components (Baute et al., 2015). Here, a similar analysis was conducted on the recently established multiparent MAGIC population (Dell'Acqua et al., 2015), and results of both analyses were integrated. Concerning phenotyping, final leaf size-related traits, such as leaf length (LL), leaf width (Lwi), leaf area (LA), and leaf weight (Lwe), were complemented with measurements that capture growth kinetics, such as growth rate (leaf elongation rate [LER]) and duration (emergence, time point of maximal LER [Tm], time point when leaf 4 reaches its final length [Te], and leaf elongation duration [LED5-e]; Voorend et al., 2014), and cellular measurements, such as the size of the cell DZ. In addition, whole-shoot variables were measured at the seedling stage: fresh weight, dry weight, leaf number (LN), and vegetative (V)-stage (maize leaf stage; Baute et al., 2015; Fig. 1; Supplemental Table S1).

Pearson correlation coefficients (PCCs) between the traits were determined based on the data obtained for the MAGIC population (Table I), for the combined data of both populations (Supplemental Table S2), and compared with our previous analysis for the biparental RIL population (Table I; Baute et al., 2015). All three analyses gave comparable results and supported the separation of the traits into three groups: leaf size traits (LL, Lwe, LA, Lwi, LER, and DZ size), shoot-related

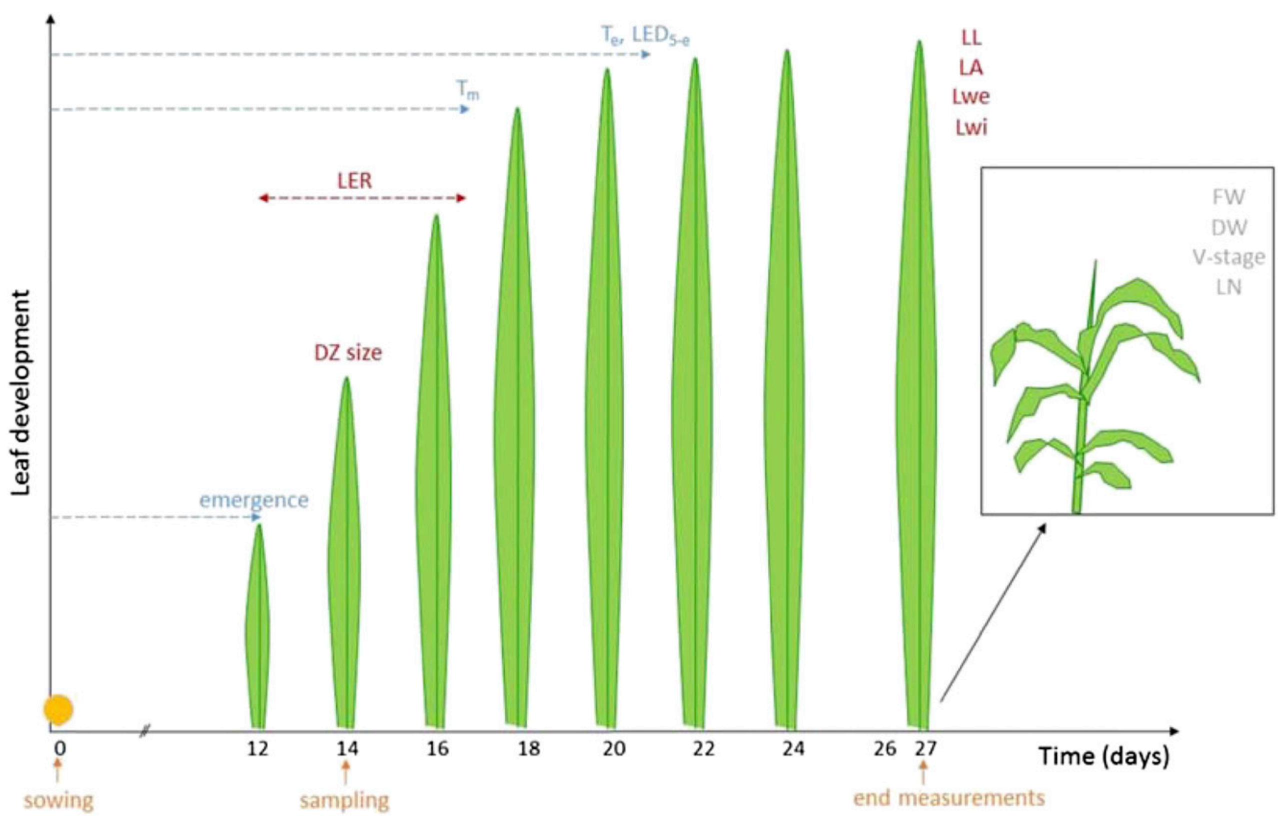

Figure 1. Schematic representation of maize leaf development as a function of time and phenotyping strategy. Shown is the leaf growth of B73. LL was measured daily from emergence from the surrounding leaves until 27 d after sowing. LER, T_m, T_e, and $LED_{5\text{-}e}$ were deduced from these daily measurements. DZ size was determined 2 d after leaf emergence, at the same time that leaf material was sampled for RNA sequencing. End measurements, LL, LA, Lwe, Lwi, fresh weight (FW), dry weight (DW), V-stage, and LN, were determined 27 d after sowing, when leaf 4 had reached its mature size for all RILs.

Table I. *PCC for the analyzed traits, grouped as leaf size, shoot-related, and timing-related traits for biparental and MAGIC RIL populations*

Significant correlations are indicated by asterisks (**, $P < 0.01$ and *, $P < 0.05$); highly significant positive correlations are indicated in italics, and highly significant negative correlations are indicated in bold.

Biparental RIL Population (Bottom Diagonal)	MAGIC RIL Population (Top Diagonal)													
	LER	LL	Lwe	LA	Lwi	DZ Size	Fresh Weight	Dry Weight	LN	V-Stage	Emergence	T_e	T_m	LED_{5-e}
LER		0.772**	0.517**	0.466**	0.151	0.347**	0.607**	0.658**	0.187	0.081	–0.069	–0.082	–0.054	–0.045
LL	0.738**		0.775**	0.782**	0.487**	0.615**	0.355**	0.427**	–0.259*	–0.435**	0.239*	0.421**	0.387**	0.502**
Lwe	0.493**	0.750**		0.904**	0.787**	0.562**	0.418**	0.419**	–0.286**	–0.500**	0.338**	0.496**	0.461**	0.556**
LA	0.479**	0.781**	0.915**		0.880**	0.603**	0.289**	0.356**	–0.354**	–0.585**	0.399**	0.585**	0.528**	0.660**
Lwi	0.063	0.316**	0.688**	0.794**		0.478**	0.102	0.14	–0.435**	–0.623**	0.475**	0.616**	0.565**	0.659**
DZ size	0.507**	0.594**	0.516**	0.526**	0.308**		0.279**	0.315**	–0.137	–0.301**	0.142	0.320**	0.248*	0.423**
Fresh weight	0.520**	0.215*	0.413**	0.297**	0.17	0.211*		0.939**	0.614**	0.456**	–0.473**	–0.455**	–0.481**	–0.342**
Dry weight	0.502**	0.206*	0.311**	0.245*	0.098	0.219*	0.893**		0.601**	0.414**	–0.499**	–0.433**	–0.476**	–0.297**
LN	0.176	–0.255	–0.258	–0.273	–0.267	–0.251	0.521**	0.377*		0.834**	–0.735**	–0.816**	–0.818**	–0.752**
V-stage	0.083	–0.423**	–0.420**	–0.472**	–0.375*	–0.266	0.435**	0.326*	0.834**		–0.725**	–0.887**	–0.866**	–0.860**
Emergence	0.007	0.245*	0.258**	0.291**	0.307**	0.097	–0.455**	–0.462**	–0.649**	–0.599**		0.865**	0.911**	0.742**
T_e	–0.105	0.379**	0.328**	0.414**	0.365**	0.113	–0.582**	–0.557**	–0.621**	–0.701**	0.620**		0.976**	0.960**
T_m	–0.048	0.374**	0.334**	0.413**	0.379**	0.118	–0.568**	–0.557**	–0.601**	–0.675**	0.650**	0.979**		0.880**
LED_{5-e}	–0.114	0.424**	0.332**	0.418**	0.298**	0.147	–0.470**	–0.420**	–0.568**	–0.656**	0.461**	0.894**	0.787**	

traits (fresh weight, dry weight, LN, and V-stage), and timing-related traits (emergence, T_m, T_e, and $LED_{5\text{-}e}$; Table I; Supplemental Table S2; Supplemental Fig. S1). Also between groups of traits, the correlations were largely the same in the two populations.

In general, the PCCs were higher for the MAGIC population than for the biparental RIL population, especially among leaf, shoot, and timing traits and between leaf-shoot and leaf-timing traits, which may be due to the fact that the phenotype variation in the MAGIC population is generally larger than that of the biparental RIL population (i.e. the phenotype distributions are broader; Supplemental Table S1; Supplemental Fig. S2), which may suppress the negative influence of stochastic and measurement noise on PCC values. A larger phenotypic variation in the eight-way RIL population was expected, given the increased variation in the phenotypes of the parents compared with the biparental mapping population (Supplemental Fig. S2). As an exception, the PCC between LER and DZ size was lower in the MAGIC population than in the biparental population, 0.347 and 0.507, respectively. Also, the anticorrelations between the timing traits and shoot traits fresh weight and dry weight were slightly stronger in the biparental population than in the MAGIC population (Table I). Possibly, the biparental population already covers a large part of the variability for the timing and shoot traits, while additional power is available in the MAGIC population for the leaf size traits. This is confirmed if we determine the positions of the parental lines in the distributions of the two populations (Supplemental Fig. S2): for the leaf size traits LL, Lwe, LA, and Lwi, values for the parental lines B73 and H99 are very similar, while they are more diverse for the other traits.

Correlation between Traits Is Fully Supported at the Transcriptome Level

In both populations, DZ size correlated positively with the leaf size traits and, to some extent, with shoot fresh weight and dry weight (Table I; Supplemental Table S2; Supplemental Fig. S2). This supports the hypothesis that the number of dividing cells is one of the key factors in the determination of final organ size and that the transcriptional differences between genotypes in proliferative tissue may inform us on important players that determine final size traits. We previously performed RNA sequencing of proliferative leaf tissue of 103 lines of the biparental RIL population (Baute et al., 2015) and extended this here with RNA sequencing of comparable tissue of 94 lines of the MAGIC population.

Linear correlation between phenotypes and transcript levels was determined by calculating PCCs between the expression level of each transcript and each trait in both populations separately. The $q_{0.99}$ and $q_{0.01}$ PCC (i.e. the correlation coefficient of the 1% best [anti] correlating transcripts) were determined before and after permutation of the trait data (for details, see "Materials and Methods"). For the majority of the traits, the $q_{0.99}$ and $q_{0.01}$ PCC values were significantly higher than those expected at random (Fig. 2), indicating that the gene sets identified by this arbitrarily chosen limit of 1% contain genes whose expression levels in proliferative tissue of a growing leaf correlate significantly with final size measurements. For the leaf size traits in particular, the $q_{0.99}$ and $q_{0.01}$ PCC were higher in the MAGIC population than in the biparental RIL population. As the cutoffs defined by permuting the data were very comparable for both populations (Fig. 2), this resulted in a higher number of genes with a PCC greater than the $q_{0.99,random}$ PCC in the MAGIC population (Table II), indicating that the higher variability in the MAGIC population facilitates the identification of significant transcript-phenotype correlations for leaf size traits. On the other hand, $q_{0.99}$ and $q_{0.01}$ PCC for fresh weight and dry weight were considerably lower in the MAGIC population than in the biparental RIL population, suggesting that the relationship between gene expression and fresh weight and dry weight traits in the eight-way population may be more complex and nonlinear in nature than in the two-way population, due to an increased number of different alleles that play a role. Accordingly, the number of genes with a PCC higher than the $q_{0.99,random}$ PCC or lower than the $q_{0.01,random}$ PCC for dry weight and fresh weight in the MAGIC population was lower than in the biparental population, and the number of genes in the intersection of both populations was limited and not higher than expected by chance (Table II). Also for LER, the percentage of genes found in common for the two populations was small and not higher than expected by chance ($P > 0.05$), while for all other traits, the overlap was significant (Table II). In both populations, the $q_{0.99}$ and $q_{0.01}$ PCC for LER were lower than for the other traits (Fig. 2). The lack in significant overlap between the two populations of transcripts whose expression correlated to LER, fresh weight, and dry weight indicates that another range of growth mechanisms and networks may be active and/or captured for these three traits in the different populations.

Further analyses were restricted to the 1% best correlating and anticorrelating genes for each trait, or 286 genes for each trait, referred to below as the correlated and anticorrelated gene sets. Importantly, although some traits had $q_{0.99}$ and $q_{0.01}$ PCC close to the corresponding q_{random} PCC, in all cases the selected 286 genes had a PCC higher or lower than the $q_{0.99}$ and $q_{0.01}$ thresholds, respectively, and thus higher or lower than the corresponding q_{random} PCC. The total number of genes thus selected for at least one trait was 22% lower in the MAGIC population (1,367) than in the biparental RIL population (1,740), since the gene selection for the MAGIC population contains a higher proportion of genes that correlate with several traits compared with the biparental RIL population (Fig. 3A). This might be due to the higher correlation between the leaf size traits in the MAGIC population. In the MAGIC population, we found 21 genes (Supplemental Table S3) associated with nine traits, the maximum in the biparental RIL population being eight traits. One of these 21 genes, *GRMZM2G389768*, with homology to cold shock

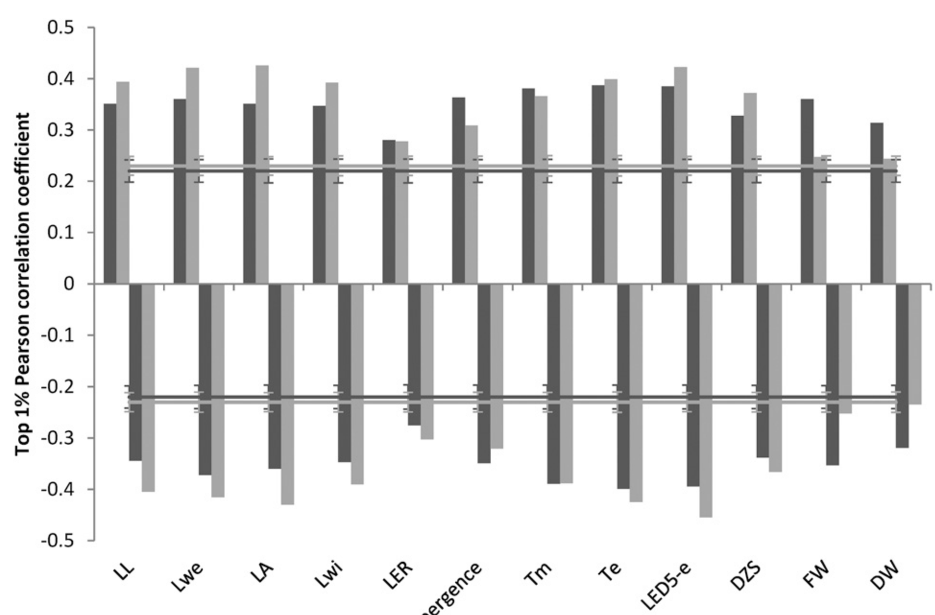

Figure 2. The 0.99 and 0.01 quantiles of distribution of Pearson correlation between transcript expression levels and traits. Real data are shown in dark gray (biparental RIL population) and light gray (MAGIC RIL population) bars; permuted data are shown in dark gray (biparental RIL population) and light gray (MAGIC RIL population) lines. Error bars indicate SD of the permuted data ($n = 1,000$) in dark gray for the biparental population and in light gray for the MAGIC population. DW, Dry weight; FW, fresh weight.

Table II. *Number of genes correlating with traits in biparental and MAGIC RIL populations, and number and percentage of genes in the intersections*

Significance is designated as follows: *, significantly enriched ($P < 0.05$); NS, not significant ($P > 0.05$), according to hypergeometric probability testing.

Trait	Correlation (Random)[a]			Significance	Correlation (Quantiles)[b]			Significance
	Biparental	MAGIC	Intersection		Biparental	MAGIC	Intersection	
LL	2,206	3,111	740 (34%)	*	286	286	51 (18%)	*
Lwe	2,596	3,141	928 (36%)	*	286	286	54 (19%)	*
LA	2,230	3,165	1,039 (47%)	*	286	286	71 (25%)	*
Lwi	2,477	2,504	789 (32%)	*	286	286	30 (10%)	*
LER	1,073	1,174	70 (7%)	NS	286	286	6 (2%)	NS
DZ size	1,927	2,228	765 (40%)	*	286	286	82 (29%)	*
Emergence	2,490	1,463	436 (30%)	*	286	286	25 (9%)	*
T_m	3,171	2,368	903 (38%)	*	286	286	24 (8%)	*
T_e	3,260	2,892	1,202 (42%)	*	286	286	34 (12%)	*
$LED_{5\text{-}e}$	3,003	3,419	1,335 (44%)	*	286	286	58 (20%)	*
Fresh weight	2,259	530	77 (15%)	NS	286	286	4 (1%)	NS
Dry weight	1,707	401	56 (14%)	NS	286	286	5 (2%)	NS

[a]Numbers of genes with PCC greater than q_{random} PCC. [b]Genes in $q_{0.01}$ and $q_{0.99}$ in the intersection of two data sets.

domain proteins, correlated with eight traits in the biparental RIL population. In both populations, the numbers of (anti)correlating genes shared between traits was higher within the three trait groups (leaf size, timing, and shoot) than between these groups (Fig. 3, B and C), in accordance with the correlations found at the phenotype level. As for the biparental population (Baute et al., 2015), no opposite gene-trait correlations with traits that were categorized in the same group were found for the MAGIC population (numbers in blue in Fig. 3, B and C). Opposite correlation of a transcript with multiple traits was very limited in both populations, 84 and 28 genes in the two-way and eight-way populations, respectively, and was observed only for timing-related traits versus shoot-related traits, traits that are also anticorrelated at the phenotype level.

Combining the Two Populations Identifies Genes That Are Robustly Associated with the Traits

In the separate populations, expression levels of 1,740 and 1,367 genes in the biparental and MAGIC populations, respectively, correlated with at least one of the traits. Of these genes, 226 were (anti)correlating with at least one of the traits in both populations, a strong reduction compared with the numbers found in the populations separately (Supplemental Table S3). The expression levels of the 226 (anti)correlating genes in all RILs and their association with the traits were visualized in a clustered heat map (Fig. 4), revealing a clear gradient in expression levels that were coinciding with (Fig. 4A) or opposite to (Fig. 4B) the phenotypic variation observed in the RILs. The 226 genes in common for both populations were unevenly distributed over the different traits. The percentage of (anti) correlating genes in the quantiles that was shared between the two populations ranged from a few percent for LER, fresh weight, and dry weight up to 29% for DZ size (Table II). For all traits except LER, fresh weight, and dry weight, the number of genes in the intersection was larger than expected by chance (hypergeometric test; $P < 0.05$), and overall, the number of genes in the intersection was highest for leaf size traits. It is worth noting that for none of the traits were there correlating genes in one population and anticorrelating genes in the other population. The strong reduction of the number of correlated genes by combining the two populations, combined with the fact that the overlap remains significantly higher than expected by chance for the majority of the traits, indicates that this approach is efficient in identifying the genes that are more robustly associated with a specific trait, regardless of the population context, and thus might be more relevant to characterize functionally.

Enriched Functional Categories Are Partially Overlapping for the Two Populations

All genes were assigned to MapMan functional categories (Thimm et al., 2004), and tests for the enrichment of functional categories in the correlating gene sets for the different traits were performed for the two populations separately, to verify if gene sets were enriched for comparable categories in the two populations (Supplemental Fig. S3). For positively correlating genes, the major enriched functional category in both populations was regulation of transcription. The functional categories hormone metabolism, protein modifications, and protein degradation were enriched for several traits in the biparental RIL population but not or for only one trait in the MAGIC population. Regulation of transcription, protein synthesis, and cell wall synthesis and degradation were significantly enriched categories for the negatively correlated gene sets for multiple traits in both populations. Thus, the major enriched functional categories are regulation of transcription, protein synthesis, and cell wall synthesis

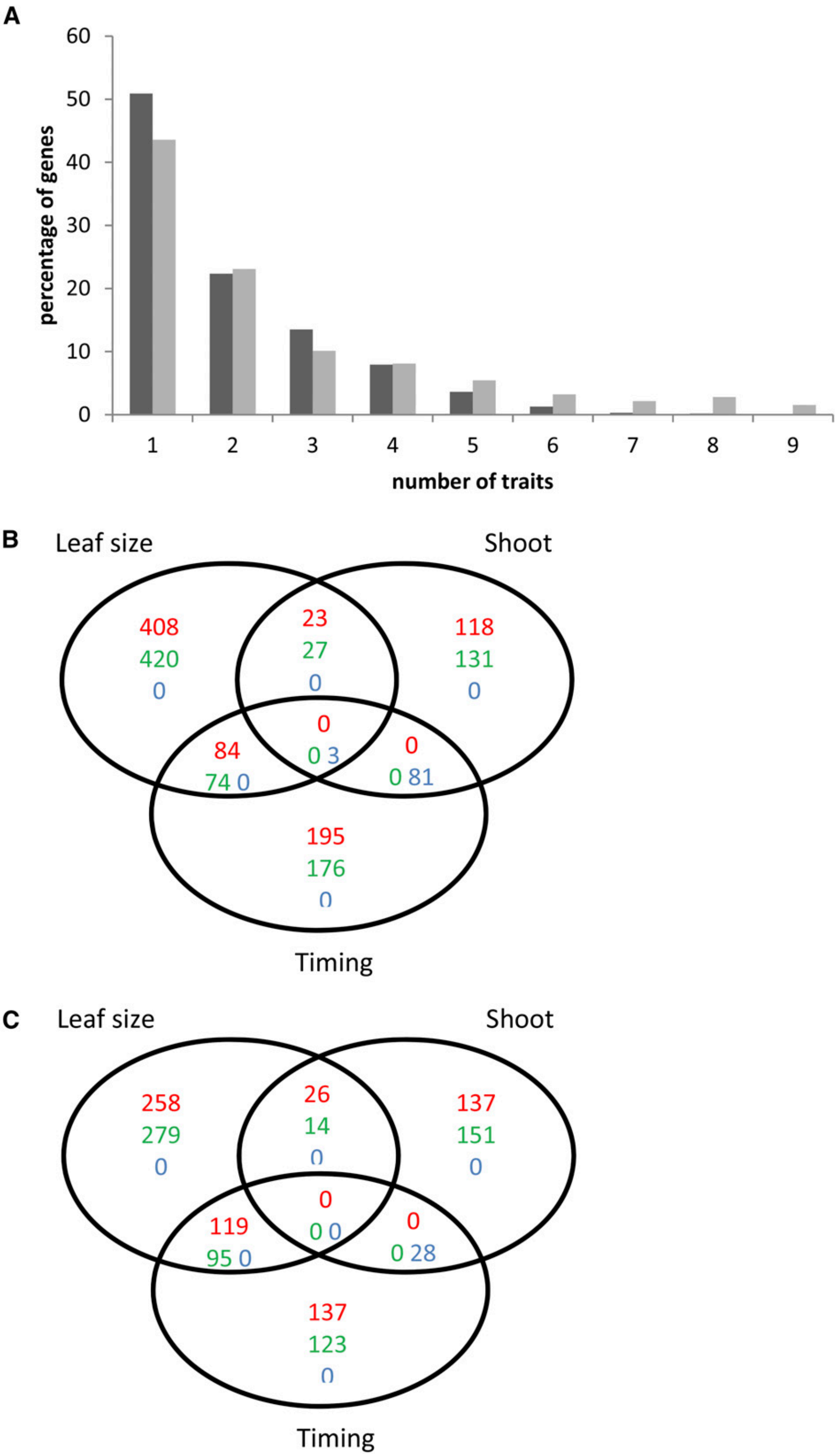

Figure 3. Number of genes correlating with one or multiple traits. A, Percentage of genes (anti)correlating with the traits in the biparental RIL population (dark gray) and the MAGIC population (light gray). B and C, Venn diagrams of the number of genes correlating (numbers in red), anticorrelating (numbers in green), or both (numbers in blue) with at least one of the leaf size, shoot, and timing traits in the biparental RIL population (B) and the MAGIC population (C).

and degradation, with 56, 28, and 15 genes in common between the two populations.

Next, we compared the frequencies of all functional categories in the intersection of both populations (i.e. the 226 genes) with their frequencies in the populations independently (i.e. the 1,740 and 1,367 genes in the biparental and MAGIC populations, respectively) to try to understand the nature of processes conserved

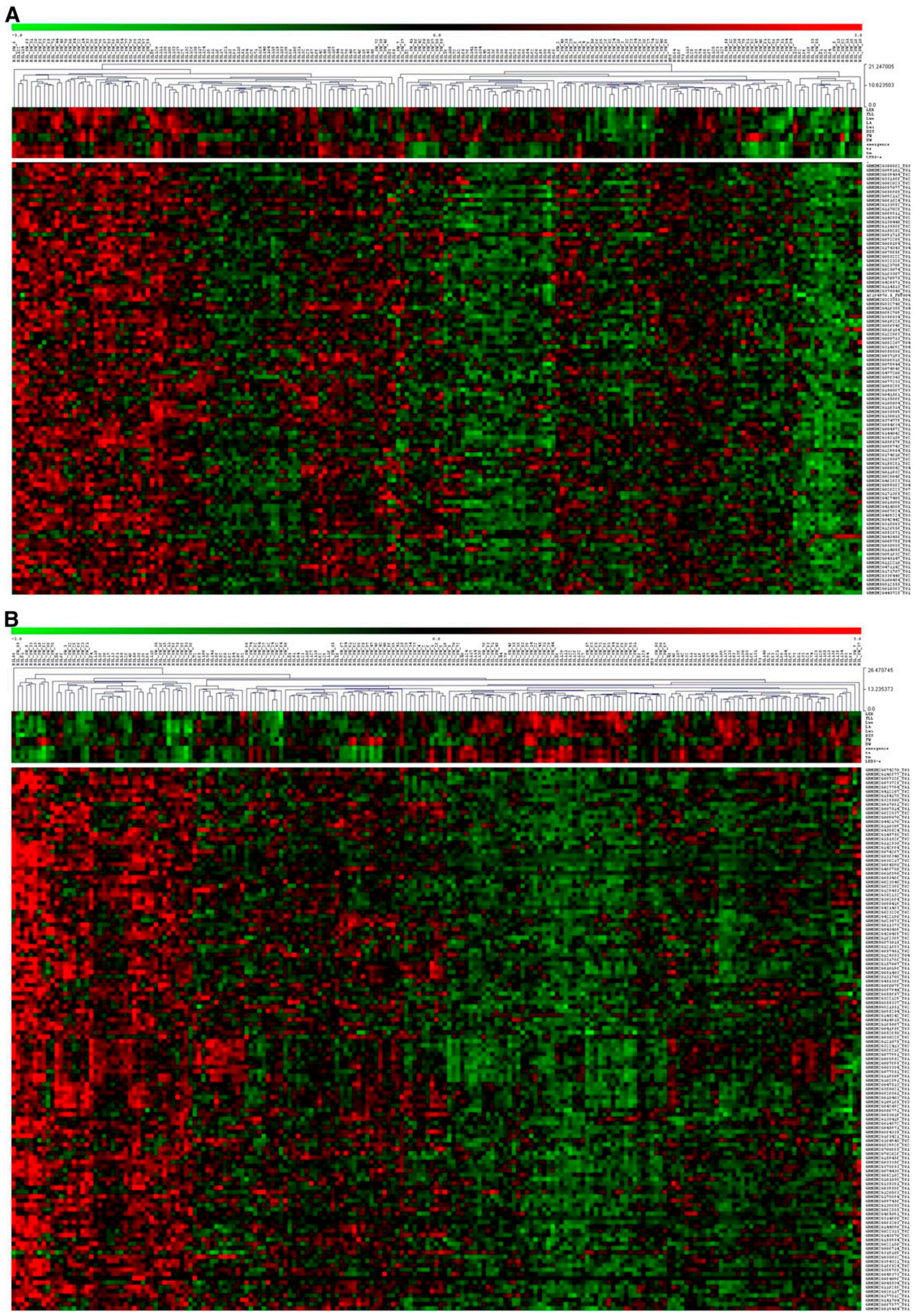

Figure 4. Expression levels of the 226 correlating and anticorrelating genes in all RILs. A, Correlated genes. B, Anticorrelated genes. Columns represent RILs of the two populations that were hierarchically clustered, and rows represent gene expression profiles with, on top, above the white separation, a heat map of the phenotypic traits. Green indicates low values and red indicates high values.

across the two populations. The functional categories regulation of transcription, protein synthesis, and cell wall synthesis and degradation were significantly ($P < 0.05$) enriched 1.8-, 3-, and 2.5-fold, respectively, in the intersection compared with the complete gene set correlated with the biparental population, while compared with the MAGIC population, the two functional categories regulation of transcription and cell wall synthesis and degradation were enriched significantly ($P < 0.05$) 1.4- and 1.8-fold, respectively. This underscores the usefulness of focusing on the intersection for identifying the processes conserved in different populations, since largely the same processes are enriched in both analyses.

The three major functional categories we identified, regulation of transcription, protein synthesis, and cell wall synthesis and degradation, are described in more detail in the following sections.

Transcription Factors Involved in Hormone Regulation, Leaf Architecture Traits, and Chromatin Structure Correlate Robustly with Leaf Size

To obtain a better understanding of the nature of the regulatory processes during leaf growth, we focused on the 56 transcription factor (TF) genes whose expression levels were correlating with traits in both populations. Breakdown of the functional category regulation of transcription into the different TF families revealed that the major classes of TFs in the gene sets that are positively correlated with the traits are *ARGONAUTE*, *MADS* box, *SQUAMOSA PROMOTER-BINDING PROTEIN* (*SBP*), *SET*, *GRF*, and *bZIP*, while the major classes of TFs that are negatively correlated with the traits are *bHLH*, *GATA*, and *TRIHELIX* (Fig. 4). As determined with the Bio-Analytic Resource for maize gene expression (http://bar.utoronto.ca/efp_maize), about one-third of these TFs are expressed specifically in the DZ (Fig. 5). This is less than expected, since, according to Li et al. (2010), approximately 70% of all TFs show DZ-specific expression. Among the 56 TFs, we could identify 22 reported before to be linked to growth (Fig. 5). Many of these are related to hormone signaling, leaf architecture, and chromatine structure, three classes that are discussed in more detail below.

Our data set contains three GATA-type TFs that show a negative correlation with the leaf size-related traits (Fig. 5). In Arabidopsis, two redundant GATA-type TFs, *GATA, NITRATE-INDUCIBLE, CARBON-METABOLISM INVOLVED* (*GNC*) and *GNC-LIKE/CYTOKININ-RESPONSIVE GATA FACTOR1* (*GNL/CGA1*), were identified to regulate multiple aspects of plant development by repressing GA signaling. In agreement with the anticorrelation between the transcript level and leaf size, double mutants displayed increased rosette sizes, while overexpression resulted in smaller plants (Richter et al., 2010). Moreover, it was shown that these GATA factors act downstream of *AUXIN RESPONSE FACTOR2* (*ARF2*), which was also identified in the subset of 56 TFs. *GNC* and *GNL* overexpressors show phenotypic similarities with *arf2* mutants (Richter et al., 2013). In agreement, *ARF2* expression levels were positively correlated with several traits (i.e. LL, Lwe, and LA), while expression levels of the GATA-type TFs were negatively correlated with these traits (Fig. 5). In addition, other TFs that are likely implicated in hormone regulation, such as *Arabidopsis Response Regulator* (*ARR*, cytokinin signaling; *GRMZM2G129954*; Ren et al., 2009) and *GRAS* (GA signaling; GRMZM2G097456) family members (Hirsch and Oldroyd, 2009), also correlated with the traits in both populations. A *bHLH* TF (*GRMZM2G159456*) with homology to the Arabidopsis and rice (*Oryza sativa*) paclobutrazol-resistant family of TFs, which mediate growth responses to multiple environmental and hormonal signals (Zhang et al., 2009; Bai et al., 2012), was negatively correlated with leaf size-related traits (Fig. 5).

Also correlated with leaf size traits were some TFs that are known to define leaf architecture traits. For example, the expression profile of LIGULELESS2 (LG2), a bZIP TF involved in establishing the position of the ligule (Walsh et al., 1998), was found to be positively correlated with leaf size- and timing-related traits (Fig. 5). Mutations in *LG2* affect leaf architecture due to a change in the leaf angle. However, no clear effect on leaf size has been reported (Tian et al., 2011), although *LG2* was mapped within a meta-QTL for leaf length and leaf width (Ku et al., 2012). Moreover, LG2 functions in the same pathway as LIGULELESS NARROW (LGN) and *lg2* transcripts are reduced in *lgn* mutants, which display a severe reduction in leaf size and total plant height (Moon et al., 2013).

As another example, the expression levels of two *SBP/SBP-LIKE* (*SPL*) genes, which regulate a wide variety of processes associated with shoot development, correlated with leaf size traits in our data set (Fig. 4): one maize-specific gene (*GRMZM2G414805*) and one gene (*GRMZM2G067624*) with homology to Arabidopsis *SPL4*, which is involved in vegetative phase change (Wu and Poethig, 2006). Another class of genes known to affect leaf architecture traits are the *TCP* TFs that contain a bHLH domain and are involved in the coordination of cell proliferation, cell differentiation, and growth; as such, they play a role in leaf development (Ori et al., 2007). One of the genes identified as correlated with leaf size traits, GRMZM2G465091, shows homology to Arabidopsis class I TCP proteins. Quadruple and pentuple loss-of-function mutants of class I *TCP* genes in Arabidopsis have larger but fewer rosette leaves (Aguilar-Martínez and Sinha, 2013), in agreement with the negative correlation between leaf size traits and expression levels of this maize homologous gene.

A third set of TFs that correlated with leaf size traits were related to chromatin structure. Three positively correlating SET domain TF family proteins were identified with homology to Arabidopsis SU(VAR)3-9 RELATED4 (SUVR4) and ASH1-RELATED3 (ASHR3),

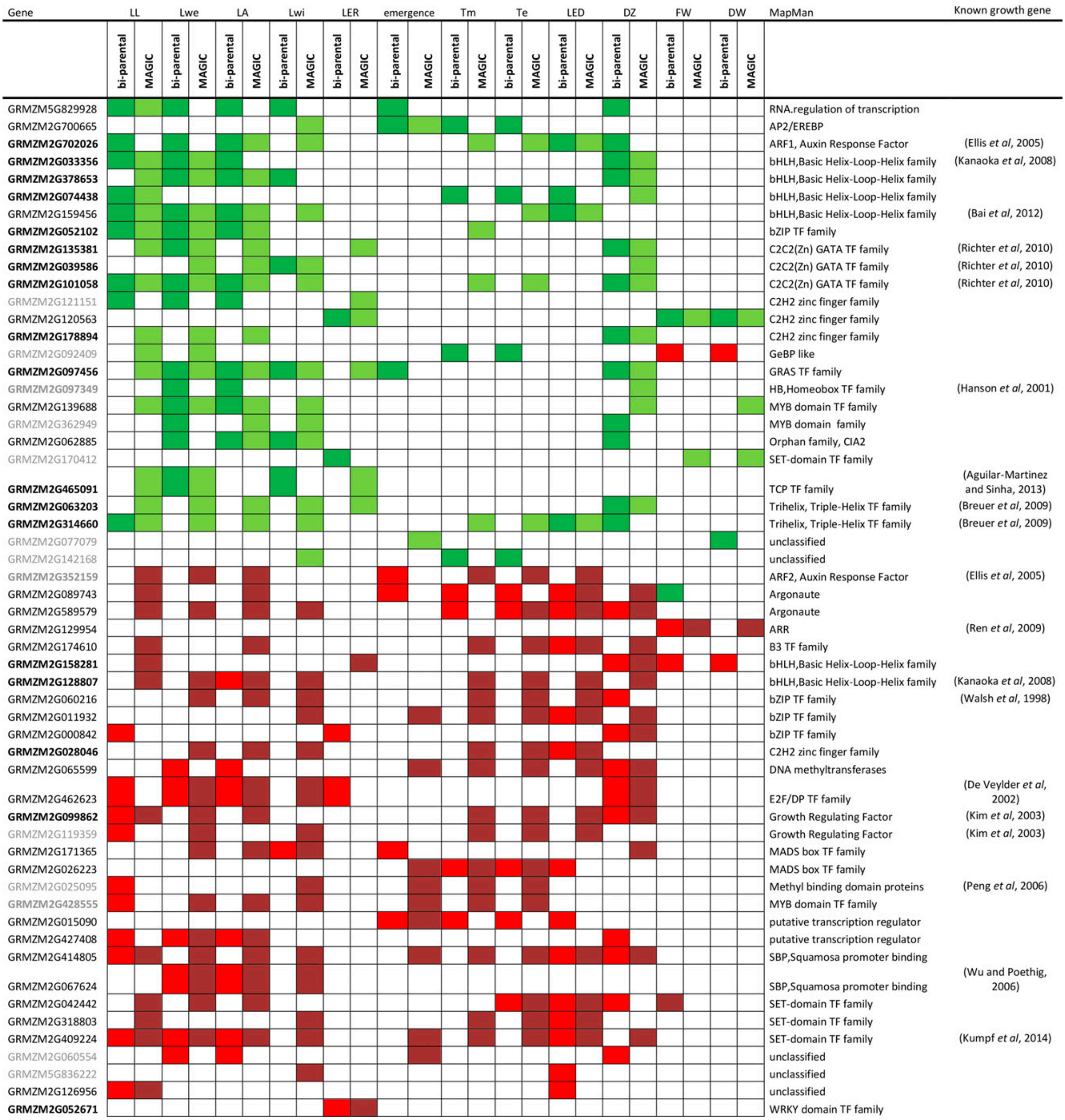

Figure 5. TFs with expression profiles correlating or anticorrelating with at least one of the traits in both populations. Bright red indicates positive correlation in the biparental population, dark red indicates positive correlation in the MAGIC population, dark green indicates negative correlation in the biparental population, and light green indicates negative correlation in the MAGIC population. DZ-specific TFs are indicated in boldface (Li et al., 2010). DW, Dry weight; FW, fresh weight.

involved in histone modification (Veiseth et al., 2011; Kumpf et al., 2014). ASHR3 is required for coordinated DNA replication and cell division, and the *ashr3* mutant has a reduced root apical meristem size and primary root size (Kumpf et al., 2014). Moreover, it was shown that expression levels of *ASHR3* are controlled by the E2Fa/E2Fb-DPa TF complex (Kumpf et al., 2014); in agreement, expression levels of *E2F/DP* TF (*GRMZM2G462623*) correlated positively with final leaf size traits and DZ size in both RIL populations (Fig. 5). Maintenance of epigenetic signatures by setting up the appropriate epigenetic marks is essential to regulate gene expression and establish euchromatin and heterochromatin. Furthermore, histone modification pathways are intertwined with DNA methylation, for instance by interaction between chromatin modifiers such as SET domain proteins and DNA methyltransferases (Cedar and Bergman, 2009) and/or methyl-CpG-binding domain proteins (MBDs; Zemach and Grafi, 2007), which read out the DNA methylation pattern. The subset of 56 TFs also includes a DNA methyltransferase, of which the expression levels in the DZ were positively correlated with Lwe, LA, DZ size, and the timing-related traits, and a MBD also positively correlated with the traits (Fig. 5). In agreement, the down-regulation of some Arabidopsis *MBD* genes results in developmental defects comparable to the down-regulation of genes with a role in chromatin remodeling and RNA-mediated silencing (Berg et al., 2003; Peng et al., 2006). Also, two *ARGONAUTE* (*AGO*) genes with homology to Arabidopsis *AGO4* involved in RNA-directed DNA methylation (Zilberman et al., 2004) showed a positive correlation with leaf size traits and timing-related traits (Fig. 5). In addition to the covalent histone modifications, chromatin remodeling also depends on ATP-dependent chromatin remodeling complexes that move, eject, or restructure nucleosomes. For instance, the transcription of *GRFs* is regulated by recruitment of the SWITCH/SUCROSE NONFERMENTING (SWI/SNF) chromatin-remodeling complexes to their promoters by the transcriptional coactivator AN3 (Vercruyssen et al., 2014; Nelissen et al., 2015). The phenotypes upon differential expression of *AN3*, *BRAHMA*, or *SWI/SNF-ASSOCIATED PROTEIN73B*, subunits of the SWI/SNF complex, reflect the importance of this chromatin-remodeling complex in the regulation of leaf growth (Farrona et al., 2004; Horiguchi et al., 2005; Vercruyssen et al., 2014), and constitutive overexpression of *GRF1* and *GRF2* also increased leaf and cotyledon size (Kim et al., 2003). In agreement, the subset of 56 TFs enclosed two GRFs that displayed a positive correlation with leaf size- and timing-related traits (Fig. 5).

More than one-third of the 56 TFs that were correlated with leaf-related traits in the two populations had homologs with a known role in growth, while most of the other TFs had an unknown function. We primarily identified genes required for hormone signaling, leaf architecture, and chromatin remodeling, next to TFs involved in other processes, such as Suc signaling (homeobox TF family; Hanson et al., 2001) and cell cycle regulation (Trihelix TF; Breuer et al., 2012).

Protein Synthesis Is Negatively Correlated to Leaf Growth

In the functional category protein synthesis, all 26 genes shared between the two populations are ribosomal proteins. Ribosomes provide the basis for protein production, which is essential to sustain cell growth. Therefore, the majority of the genes that encode for ribosomal proteins are highly expressed at the base of the leaf in the DZ (Li et al., 2010), and all selected ribosomal proteins in our data set, except for the chloroplast ribosomal proteins that showed the highest expression toward the elongation zone, were specifically expressed in the DZ, as determined by the Bio-Analytic Resource expression viewer (Fig. 6). The energy status of the cell tunes the transcription of ribosomal RNA and the production and maintenance of ribosomal proteins, which are substantial indirect costs of protein synthesis. Since protein synthesis is one of the most energy-consuming processes in the cell, one can expect selective pressure to achieve a frugal use of the translational machinery (Perry, 2007). Thus, a more efficient translational machinery that minimizes the indirect costs of protein synthesis is likely to allow a higher rate of cell proliferation and growth (Lempiäinen and Shore, 2009; Piques et al., 2009), a possible explanation for the anticorrelation we observe between transcript levels of genes encoding for ribosomal proteins and leaf size and timing traits.

The importance of the translational machinery is reflected in the effect that many mutations in ribosomal proteins have on leaf development (for review, see Byrne, 2009; Horiguchi et al., 2012). For instance, Arabidopsis *RPS13A* encodes a 40S ribosomal protein S13 involved in early leaf development. An insertion mutant of *RPS13A* gives rise to a whole range of phenotypic abnormalities, including an altered leaf shape of the first leaves and an increased number of leaves compared with the wild type (Ito et al., 2000). In our data set, transcript levels of the homologous maize gene *GRMZM2G158034* were anticorrelating with the leaf size and timing traits in both populations (Fig. 6). Also, the expression levels of several chloroplast ribosomal proteins were anticorrelated with the leaf size traits (Fig. 6). Many of the nucleus-encoded components of the plastid ribosomes are essential for plant growth and development, since their absence results in diverse phenotypic effects, such as embryo lethality, paleness, and reduced overall sizes (Magnard et al., 2004; Asakura et al., 2012; Romani et al., 2012). The Arabidopsis TF *CHLOROPLAST IMPORT APPARATUS2* (*CIA2*) was shown to up-regulate the expression of genes encoding chloroplast ribosomal proteins to accomplish the high protein demands of chloroplasts (Sun et al., 2009). Three of the eight chloroplast ribosomal proteins in our data set were homologs of the Arabidopsis genes up-regulated by CIA2. Also, the maize homolog of *CIA2*, *GRMZM2G062885*, was negatively correlated with leaf size traits (Fig. 4).

Leaf Growth Is Strongly Correlated with Cell Wall Characteristics

To allow cells to grow, cell wall expansion is indispensable, and this was also reflected in the overrepresentation of the functional category cell wall synthesis and degradation for genes with expression levels correlated with leaf size traits. The BioArray tool revealed that the 15 correlating genes in this functional category

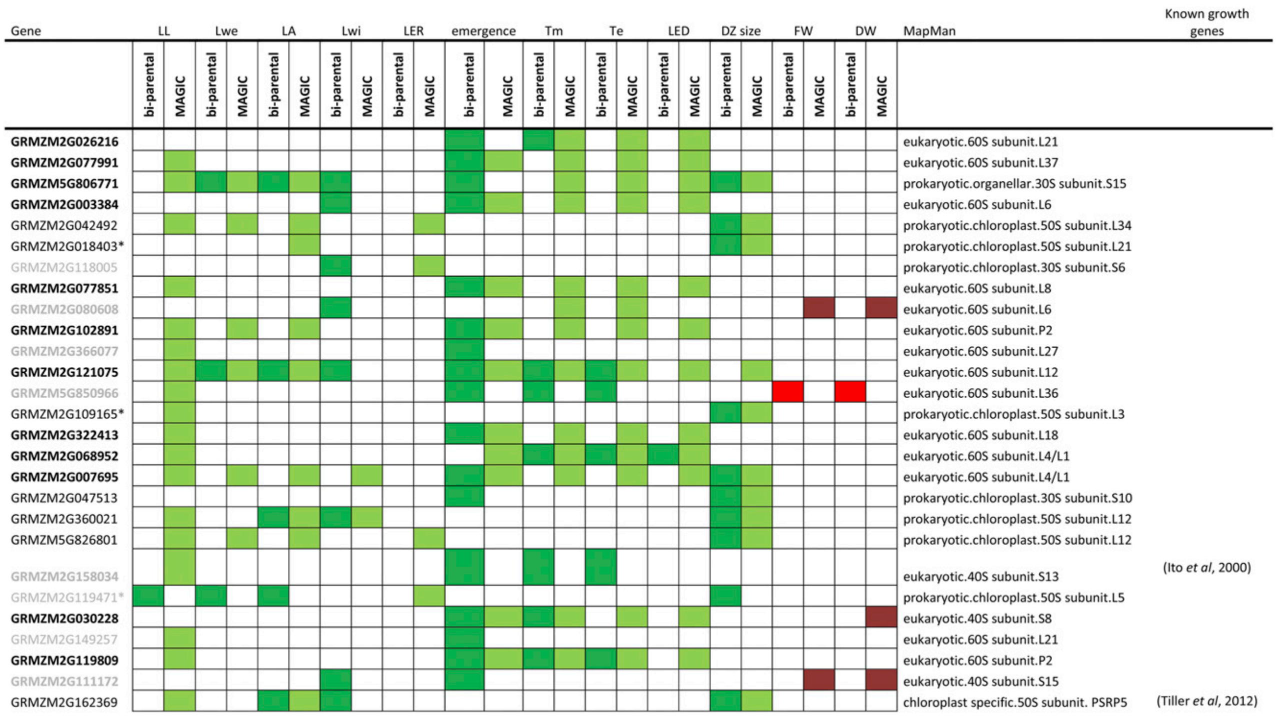

Figure 6. Ribosomal proteins with expression profiles correlating or anticorrelating with at least one of the traits in both populations. Bright red indicates positive correlation in the biparental population, dark red indicates positive correlation in the MAGIC population, dark green indicates negative correlation in the biparental population, and light green indicates negative correlation in the MAGIC population. Asterisks indicate genes that are homologs of the Arabidopsis chloroplast ribosomal genes up-regulated by *CIA2* (Sun et al., 2009). DZ-specific genes are indicated in boldface (Li et al., 2010). DW, Dry weight; FW, fresh weight.

are all highly expressed in the DZ (Li et al., 2010). Five of these genes are involved in cellulose synthesis, of which three were positively correlated with the traits while two showed anticorrelation (Fig. 7). Expression levels of the catalytic subunits of the cellulose synthase complex *CELLULOSE SYNTHASE3* (*ZmCESA3*; *GRMZM2G039454*), *ZmCESA5* (*GRMZM2G111642*), and *GRMZM2G099101* were positively correlating with leaf size traits (Fig. 7). Mutations in the respective Arabidopsis orthologs *CESA1*, *CESA3*, and *KORRIGAN* (*KOR*), which interact with specific CESA complexes (Mansoori et al., 2014), cause an abnormal plant morphology and severe dwarfism due to defects in cell wall formation (Sato et al., 2001; Beeckman et al., 2002; Persson et al., 2007). On the other hand, expression levels of *GRMZM2G027794* and *GRMZM2G074792*, which show homology to the CESA-like C family in Arabidopsis, were negatively correlated with leaf size traits (Fig. 7). This family is most likely involved in the biosynthesis of the glucan backbone of the hemicellulosic polysaccharide xyloglucan rather than cellulose (Liepman and Cavalier, 2012). Lower amounts of xyloglucans in growing tissue possibly increase the accessibility of the primary cell wall for cell wall-loosening enzymes to promote cell wall extension and cell expansion (Pauly et al., 2001). In addition, four genes, *GRMZM2G165357*, *GRMZM2G007404*, *GRMZM2G328500*, and *GRMZM5G862540*, involved in the biosynthesis of UDP-Xyl (Harper and Bar-Peled, 2002; Kärkönen et al., 2005; Reboul et al., 2011), a nucleotide sugar required for the synthesis of diverse plant cell wall polysaccharides including xyloglucan, had expression levels in the DZ that also negatively correlated with the leaf size traits (Fig. 7).

In addition to cell wall biosynthesis genes, genes involved in cell wall degradation were also identified. Expression levels of the cell wall-loosening enzyme endo-1,4-β-glucanase/cellulase (*GRMZM2G331566*) were positively correlated with LL and timing-related traits in our data set (Fig. 7). In accordance, it was demonstrated in transgenic Arabidopsis plants that the expression of poplar (*Populus* spp.) *CELLULASE1* resulted in enhanced growth rates (Park et al., 2003). Expression levels of *β-EXPANSIN4*, another cell wall-loosening enzyme, were negatively correlated with leaf size traits (Fig. 7), although up- and down-regulation of expansin expression in Arabidopsis and rice resulted in larger and smaller leaves, respectively (Cho and Cosgrove, 2000; Choi et al., 2003; Goh et al., 2012). However, more pleiotropic phenotypes were observed after constitutive modification of expansin gene expression, including a reduction in overall plant growth (Rochange and McQueen-Mason, 2000), demonstrating that the effect of expansin expression on leaf growth is

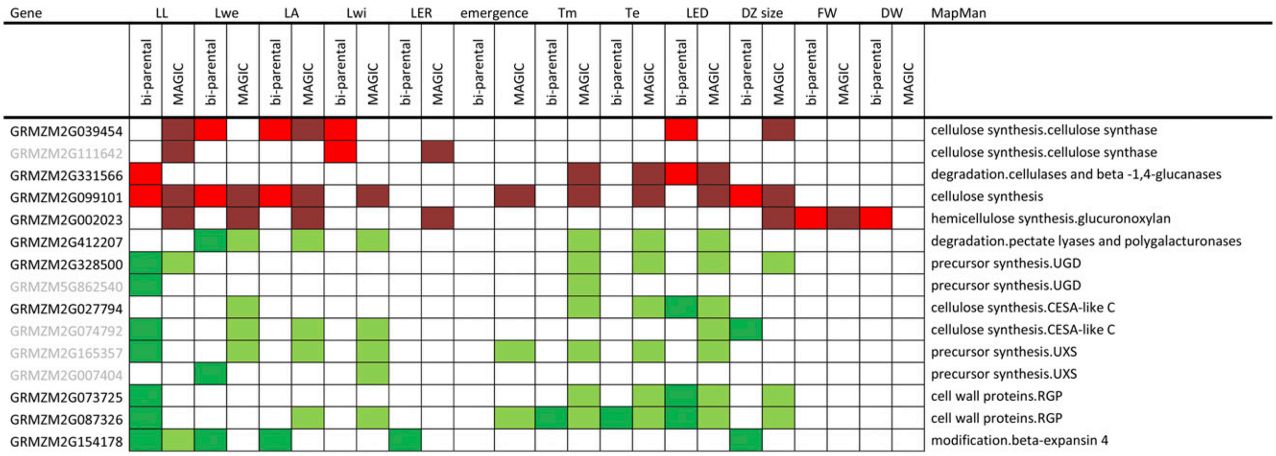

Figure 7. Cell wall-related proteins with expression profiles correlating or anticorrelating with at least one of the traits in both populations. Bright red indicates positive correlation in the biparental population, dark red indicates positive correlation in the MAGIC population, dark green indicates negative correlation in the biparental population, and light green indicates negative correlation in the MAGIC population. DW, Dry weight; FW, fresh weight.

context dependent and influenced by the growth phase of the leaf (Sloan et al., 2009).

Intriguingly, for many of the cell wall-related genes that were negatively correlated with leaf and shoot size traits in our data set, down-regulation of these genes or their orthologs has been shown previously to result in a growth reduction (Sato et al., 2001; Roberts et al., 2004; Rautengarten et al., 2011) or even embryo lethality (Goubet et al., 2003). We hypothesize that the difference between the direction of the correlation in our data set and the phenotypes of Arabidopsis homologs might be due to the comparison of more subtle variations in expression because of allelic effects in natural variants with more drastic effects of knockout or constitutive overexpression often in one genetic background in Arabidopsis. Most likely, to obtain growth-promoting effects, more subtle changes in expression levels should be applied during specific phases of development and/or by combinatorial perturbation of several genes.

Toward a Robust Growth Regulatory Network

Of the 226 genes we identified with expression levels in the DZ (anti)correlating with at least one of the traits in both populations, some were described previously to be associated with leaf size and growth. However, the majority of these genes was not identified until now as linked to growth, and 48 of these genes even had no assigned function. To obtain a better insight into the putative coregulation of these 226 genes, we used CORNET Corn (De Bodt et al., 2012) to identify networks of coexpressed genes based on the expression of these query genes in two publicly available expression compendia. Additionally, protein-protein interactions based on experimental and computational data (primarily inferred from Arabidopsis) were added to this network.

The resulting network incorporates 185 genes and 943 edges (Fig. 8). Of the other 41 genes, for seven no reliable probe sets were identified on the arrays used to generate the CORNET data sets, while for 34 genes no coexpression or interaction links were found.

Functional information and correlation to the three trait groups were visualized in the network for each gene, and four subnetworks were determined using CytoCluster (Fig. 8). Two of these subnetworks were enriched in the functional category protein synthesis. ribosomal proteins; subnetwork 1 contained genes anticorrelating primarily with the timing traits, and subnetwork 4 was primarily anticorrelated with leaf size traits (Fig. 8). The genes within the two subnetworks were highly connected to each other and to a limited set of other genes. For subnetwork 1, one of these other genes, *GRMZM2G038032*, shows homology to Arabidopsis *RECEPTOR FOR ACTIVATED C PROTEIN KINASE1* (*RACK1*) genes involved in ribosome biogenesis (Guo et al., 2011); it was shown that loss-of-function mutations in *RACK1* genes in Arabidopsis severely affect rosette leaf production and root growth (Guo and Chen, 2008). The ribosomal genes in this first subnetwork were also highly connected to *GRMZM2G067877*, a homolog of an Arabidopsis mitochondrial adenine nucleotide transporter (*ADNT1*) that plays a role in energy supply in heterotrophic tissues. This protein catalyzes the exchange between cytosolic AMP and intramitochondrial ATP, and plants with decreased *ADNT1* expression show an inhibition of root growth (Palmieri et al., 2008). A third gene that was coexpressed with the ribosomal genes in subnetwork 1 is *GRMZM2G389768*, a putative *COLD SHOCK DOMAIN* (*CSP*) gene. In Arabidopsis it was shown that *CSP1* associates with polysomes by binding to a specific set of mRNAs and acts as a chaperone under low temperatures. *CSP1* primarily binds mRNAs encoding for energy-consuming processes, such as ribosome

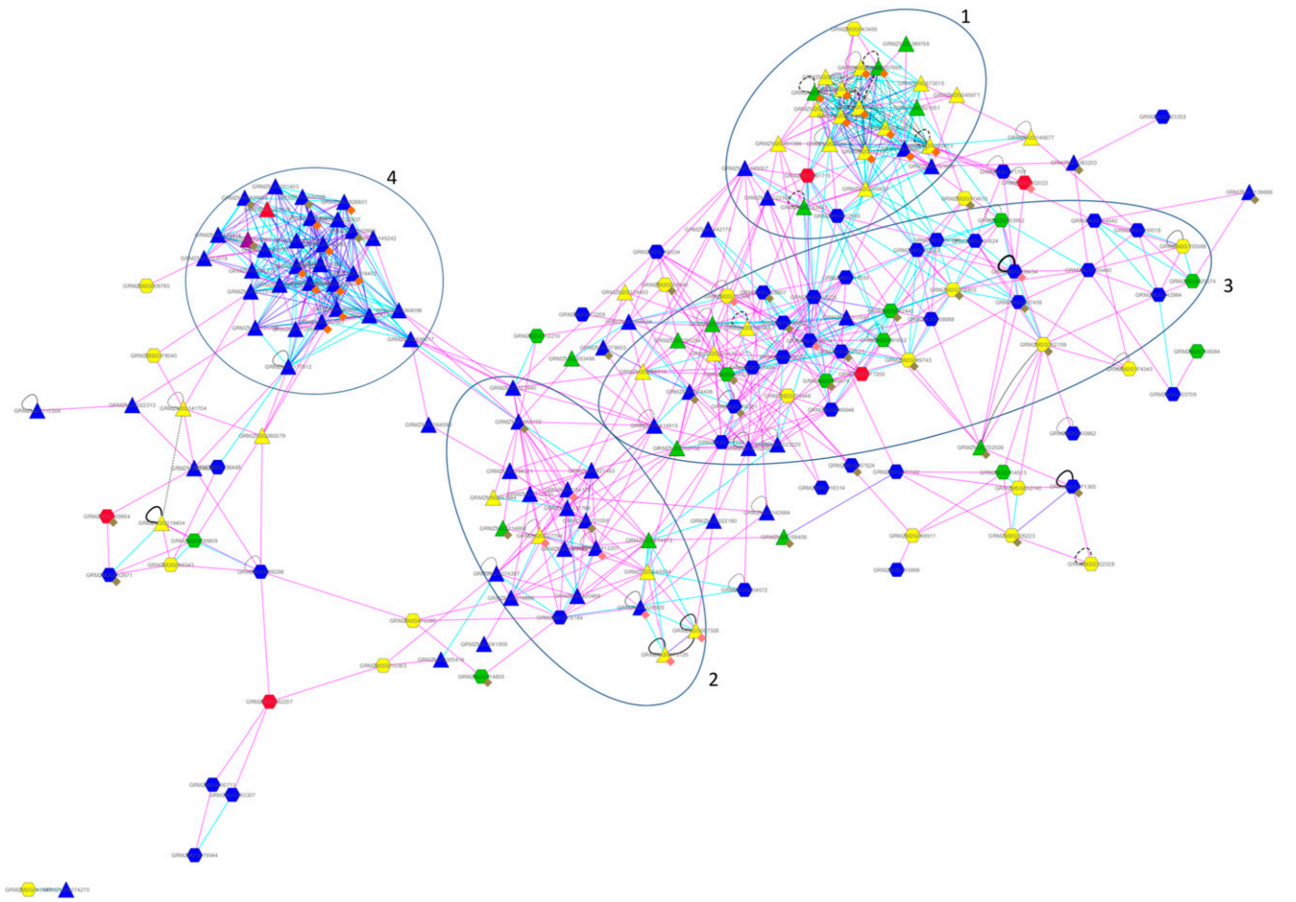

Figure 8. Coexpression and interaction network of genes with expression levels in the DZ correlating with leaf size traits in both populations. Negatively correlating genes are represented by triangles and positively correlating genes by hexagons. Node colors represent correlation with timing traits (yellow), leaf size traits (blue), shoot traits (red), timing and leaf size traits (green), and leaf size and shoot traits (purple). Small diamonds attached to the nodes represent the functional classification of the genes; orange squares indicate genes encoding ribosomal proteins, brown squares are TFs, and pink squares are cell wall-related genes; other functional categories are not indicated. Edges colored blue connect coexpressed genes with a PCC of at least 0.8, pink edges represent a PCC between 0.7 and 0.8, while black edges represent protein-protein interactions that were experimentally validated (solid lines) or computationally predicted (dashed lines). Subnetworks as determined by CytoCluster are indicated by numbers.

biogenesis, to maintain the translation of these specific mRNAs under stress conditions (Juntawong et al., 2013). Thus, this first subnetwork of coexpressed genes seems to be linked to energy consumption and supply, suggesting that the duration of leaf growth is associated with energy availability, as the genes in this subnetwork are anticorrelated with timing traits.

The network contained a second subset of strongly coexpressed genes encoding ribosomal proteins and a limited number of other negatively correlated genes, subnetwork 4 (Fig. 8). In contrast to subnetwork 1, these genes showed anticorrelating primarily to the leaf size traits (Fig. 8). Of the 31 nodes in this subnetwork, nine were ribosomal proteins all targeted to the chloroplasts. For most of these genes, the effect of perturbed expression was not analyzed before now (Tiller and Bock, 2014). However, two of the Arabidopsis orthologs of these ribosomal proteins, RPL21C and RPL3, were shown to be essential for plastid development and embryogenesis (Yin et al., 2012; Tiller and Bock, 2014), while reduced gene expression of the plastid-specific ribosomal protein PSRP5 resulted in severely delayed plant growth due to reduced plastid translation (Tiller et al., 2012). Additionally, this subnetwork contained one GATA TF (*GRMZM2G039586*) homologous to Arabidopsis *GCN*, described to function in chloroplast development, likely by regulating chloroplast division (Chiang et al., 2012). Interestingly, the majority of the other genes in this subnetwork were chloroplast targeted and involved in chloroplast development and/or functioning. We identified genes functioning in chloroplast biogenesis, for instance tetrapyrrole biosynthesis genes (Huang et al., 2009; Quesada et al., 2013) and the FZO-like protein FZL coding for a dynamin-related membrane-remodeling protein (Gao et al., 2006); genes with metabolic functions in chloroplast coding, for instance, for components of the NAD(P)H dehydrogenase complex (Ishida et al., 2009) essential for the supply of ATP for photosynthesis (Endo et al., 2008); and genes involved in plastid gene expression, such as the ribosomal proteins, components of the plastid-encoded RNA polymerase complex, the pfkB-type carbohydrate kinase FRUCTOKINASE-LIKE PROTEIN (Gilkerson et al., 2012), *MurE* (Garcia et al., 2008), and *PLASTID TRANSCRIPTIONALLY ACTIVE CHROMOSOME6* (Pfalz et al., 2006), CIA2 (Sun et al., 2009), genes involved in chloroplast protein import (Chiu and Li, 2008), and pentatricopeptide repeat proteins (Liu et al., 2013a). As a consequence, many mutants in these genes are chlorotic, white, or pale green due to abnormal plastid development and reduced photosynthetic competence. However, evidence for the impact of chloroplast development and plastid protein synthesis on leaf development and morphology independent of photosynthetic capacity has been suggested for a long time (for review, see Tiller and Bock, 2014).

Since the genes with a role in leaf development that are currently described are nucleus encoded, it seems likely that this effect of plastid translation on leaf development is the consequence of plastid-nucleus communication known as chloroplast retrograde signaling (Larkin, 2014). Recently, it was shown that chloroplast retrograde signaling regulates the spatial expression levels of genes involved in the expansion of leaf primordia, probably to avoid the expansion of leaves with reduced photosynthesis due to impaired plastid activity (Tameshige et al., 2013). Furthermore, in Arabidopsis, it was postulated that chloroplast retrograde signaling is an important regulator of the onset of cell expansion and photosynthesis (Andriankaja et al., 2012). Although the chloroplasts are still undifferentiated in the most basal part of the DZ we sampled for RNA sequencing (Majeran et al., 2010), it can be assumed that signaling between plastids and the nucleus starts early on, as plastid biogenesis is highly coordinated with organ development to ensure the presence of the appropriate number of plastids of the correct type in each stage of development (Terry and Smith, 2013). Subnetwork 4 with nucleus-encoded genes targeted to the chloroplasts and functioning in chloroplast development, and some possibly also in chloroplast retrograde signaling (Strand et al., 2003; Garcia et al., 2008; Gilkerson et al., 2012), showed a variation in expression levels in both RIL populations. This expression variation in the DZ between RILs and the anticorrelation with leaf size traits suggests an early coordination of extrachloroplastic processes with chloroplast function via chloroplast retrograde signaling.

Besides the two highly intraconnected subnetworks of genes encoding ribosomal proteins, two other subnetworks were identified. Subnetwork 2 consisted of 22 nodes, primarily anticorrelated with leaf size traits (Fig. 8). This subnetwork was enriched in cell wall biogenesis and degradation: six of the 22 genes in this subnetwork were involved in this process, and all negatively correlated with leaf size or timing traits. These cell wall-related genes as well as other genes of subnetwork 2 were coexpressed with *GRMZM2G045534*, an ATP-citrate lyase whose down-regulation of Arabidopsis orthologs results in pleiotropic phenotypes, including reduced size (Fatland et al., 2005). Also, three TFs were highly coexpressed with the genes in subnetwork 2: *GATA* TF (*GRMZM2G101058*) described above, a *bZIP* TF (*GRMZM2G052102*) of which the Arabidopsis orthologous mutant shows cell wall defects in pollen (Gibalová et al., 2009), and a *TRIHELIX* TF (*GRMZM2G314660*). The latter shows homology to Arabidopsis *GTL1*, a master regulator that negatively regulates cell growth (Breuer et al., 2012). Other examples of genes in this subnetwork that were already functionally annotated were *ZmPIN1b*, an auxin efflux carrier (Carraro et al., 2006), and *Zmβ-GLUCOSIDASE1*, involved in the (in)activation of cytokinins (Brzobohatý et al., 1993).

Subnetwork 3 consisted of 45 genes that were primarily positively correlated to leaf size and timing traits (Fig. 8). This subnetwork was enriched for two functional categories, regulation of transcription (12 genes) and cell wall synthesis and degradation (three genes). The node with the most edges in this subnetwork was a cell wall-related gene, *KOR* (*GRMZM2G099101*), and was coexpressed with eight TFs: three *bHLH* TFs, GRMZM2G074438, *GRMZM2G128807*, and *GRMZM2G158281*, the latter showing orthology to Arabidopsis *LONESOME HIGHWAY*, which is required for establishing and maintaining the normal vascular cell number and pattern in roots (Ohashi-Ito and Bergmann, 2007); two SET domain TFs, *GRMZM2G409224* and *GRMZM2G318803*, the latter being a homolog of Arabidopsis *SUVR4*; *E2F/DP* (*GRMZM2G462623*) and *GRF* (*GRMZM2G099862*), both having homologs in Arabidopsis with known roles in leaf development (De Veylder et al., 2002; Kim et al., 2003); and an *AGO* gene with homology to Arabidopsis *AGO4* (*GRMZM2G589579*). Other genes coexpressed in this subnetwork with know annotations include the cell cycle gene *CYCLIN A2* (*GRMZM2G017081*), involved in vein development in Arabidopsis (Donner and Scarpella, 2013), and *BRASSINOSTEROID SIGNALING KINASE2* (*GRMZM2G054634*), affecting growth through its role in the initial steps of brassinosteroid signal transduction in Arabidopsis (Sreeramulu et al., 2013). Still other genes in this subnetwork were primarily linked to metabolic processes and/or are not well described to date.

Within the set of 226 genes identified in the two-way and eight-way RIL populations, we found 185 genes to be coexpressed and four subnetworks could be distinguished, of which two were enriched in the functional category protein synthesis.ribosomal proteins. Of the 185 genes, 32 were TFs, and for some a function in leaf development and growth had already been described (see above). Coexpression relationships between these TFs and other genes may suggest potential regulatory influences; however, clear causal links between these TFs and potential targets cannot be established from the coexpression network alone, and further analyses are necessary to confirm these links.

CONCLUSION

In this study, we report an integrated analysis of transcript measurements in proliferative tissue and in-depth phenotyping of leaf size parameters of 197 RILs belonging to two different maize segregating populations to establish how variation in transcript levels relates to phenotypic changes. A set of 226 genes was identified for which the expression levels in the DZ correlated significantly with final leaf size and timing or shoot traits in both populations, a strong reduction compared with the 1,740 and 1,364 (anti)correlating genes identified separately in the biparental and MAGIC populations, respectively. Thus, combining data from different populations led to the identification of a limited set of genes, including 56 TFs, that may play a more general role in the molecular networks underlying the establishment of the various phenotypic traits across maize accessions. Of these 226 correlated genes, 185 were present in a highly connected network of coexpressed genes constructed from public expression compendia. The occurrence of several genes known to affect leaf size in this correlated gene list confirms that, already in the dividing cells of growing leaves, the molecular networks that will establish final leaf phenotypes are present. Besides these known genes, genes without a clear function or with no known role in leaf growth were also identified. In summary, our comparative analysis of transcriptome and phenotype variation in two RIL populations supports the conclusions reported earlier for one of the populations (Baute et al., 2015), extends our understanding of system-level processes that are active in leaf growth across different populations, and resulted in the identification of a set of interesting candidate genes for future follow-up studies.

MATERIALS AND METHODS

Plant Growth and Sampling

In this study, a subset of lines of two maize (*Zea mays*) RIL populations was used. A subset of 103 lines of a biparental RIL population derived from a cross between parental lines B73 and H99 (Marino et al., 2009) and a subset of 94 lines of a MAGIC maize population (Dell'Acqua et al., 2015) was phenotyped and sampled for RNA sequencing. The subset of 94 lines was chosen randomly from the set of 529 lines that was genotyped and phenotyped in the field (Dell'Acqua et al., 2015). Phenotyping and RNA sequencing analysis of the biparental RIL population was described by Baute et al. (2015), and analysis of the MAGIC population was performed accordingly. Briefly, plants were grown in a series of experiments in a single growth chamber in a randomized design each time along with B73 (MAGIC population) or B73 and H99 (biparental RIL population) under controlled growth chamber conditions (24°C, 55% relative humidity, light intensity of 170 mmol m^{-2} s^{-1} photosynthetic active radiation, in a 16-h/8-h day/night cycle). Traits measured were final LA, final Lwi, final Lwe, final leaf 4 blade weight, final LL, LER, DZ size of leaf 4, time point of leaf 4 emergence, T_m, T_e, and $LED_{5\text{-}e}$. Twenty-seven days after sowing, fresh weight, dry weight, V-stage, and total LN of the whole seedling were determined. In the biparental RIL population, V-stage (a method to determine leaf stage in maize by counting the number of leaves on a plant with visible leaf collars) and total LN were not determined for all 103 RILs but for a selection of 42. Since the results for final Lwe and leaf 4 blade weight were very similar, only results for final Lwe are shown. LER, DZ size, T_m, T_e, and $LED_{5\text{-}e}$ were determined as described previously (Rymen et al., 2007; Voorend et al., 2014). Briefly, LER was determined by measuring the leaf length, using the soil level as a reference point, on a daily basis from the time of emergence of leaf 4 until the leaf was fully grown and calculating the average growth rate during the steady-state growth phase. DZ size was estimated as the distance between the base of the leaf and the most distal mitotic cell in the epidermis that could be visualized after staining with 4′,6-diamidino-2-phenyindole. T_m, T_e, and $LED_{5\text{-}e}$ were determined using the tool LEAF-E, which allows one to perform nonlinear regression modeling (Voorend et al., 2014). All traits were determined for six to eight plants per RIL, except for DZ size (three plants per RIL) and time point of leaf 4 emergence (19 plants per RIL). Plants were sampled for RNA sequencing simultaneously with the phenotyping. As the size of the DZ differed considerably between the RILs (Supplemental Table S1; between 0.782 and 1.68 cm in the two-way RIL population and between 0.653 and 1.423 cm in the eight-way RIL population) and we wanted to restrict our analysis to fully proliferative leaf tissue, we chose to sample the first 0.5 cm of the most basal part of the leaf during steady-state growth (i.e. 3 d after leaf 4 appearance, always at the same time of the day to minimize diurnal effects). One biological replicate, consisting of proliferative tissue of four plants, was sampled for RNA sequencing. Total RNA was extracted using Trizol (Invitrogen) and subjected to DNA digestion with the RNase-free DNase I kit (Qiagen).

Transcriptome Analysis

RNA sequencing analysis was performed as described before, resulting in a set of 15,051 retained transcripts (Baute et al., 2015). In brief, after library preparation with the TruSeq RNA Sample Preparation Kit version 2 (Illumina), the quality of the raw data was verified with FastQC version 0.9.1 (http://www.bioinformatics.babraham.ac.uk/projects/fastqc/). Next, quality filtering was performed using FASTX-Toolkit version 0.0.13 (http://hannonlab.cshl.edu/fastx_toolkit/). Reads were subsequently mapped to the maize B73 reference genome (5b) using GSNAP (Wu and Nacu, 2010), allowing maximally five mismatches. The concordantly paired reads that uniquely map to the genome were used for quantification on the gene level with htseq-count from the HTSeq.py python package (Anders et al., 2015). To avoid artifacts in the mapping and consequently in transcript quantification because of diversity in the maize inbred lines (Morgante et al., 2007), we selected genes conserved in the eight parental lines of the MAGIC population (Dell'Acqua et al., 2015). Therefore, RNA sequencing data of proliferative tissue for these eight inbred lines were mapped to the B73 reference genome. A coverage cutoff was applied, using the R/Bioconductor package with default HTSFilter parameter settings (Rau et al., 2013), retaining 19,948 genes that were expressed in at least one of the parents. Next, single-nucleotide polymorphism calling was performed, and we selected genes with no more than 1.75% single-nucleotide polymorphisms, resulting in a set of 15,051 genes.

RNA sequencing count data were subsequently normalized for library size with the default normalization method in the DESeq2 package version 1.2.10 (Love et al., 2014). Next, transcripts expressed (nonzero count) in less than 5% of samples were removed. On the remaining transcripts, the inverse hyperbolic sine transformation was applied with the asinh function in R software. Additionally, another filter was applied that removed the 5% least varying transcripts, based on the coefficient of variation, resulting in the selection of 14,255 transcripts in the biparental population and 14,297 transcripts in the MAGIC population.

Correlation Analysis

PCCs among the traits were calculated on the means of the lines in SPSS (SPSS), separately for the two populations.

For correlation analysis between transcript levels and trait variation, PCCs were calculated between each transcript and all traits over all RILs for the two populations separately. As described before (Baute et al., 2015), for each trait in each population, the $q_{0.01}$ and $q_{0.99}$ quantiles of the set of transcript-trait PCC values were calculated and compared with a reference correlation coefficient. These reference correlation coefficients were determined by permuting the trait values 1,000 times and calculating the $q_{0.01}$ and $q_{0.99}$ quantiles for each permutation. The mean $q_{0.01}$ and $q_{0.99}$ quantiles after permutation, $q_{0.01,random}$ and $q_{0.99,random}$, were taken as the reference correlation coefficients expected by chance across all RIL samples of one population. The permutation of each trait was conducted in R software using the corr function for the calculation of PCC and the sample function for trait permutation. We focused on the genes with correlation coefficients lower and higher than the (real) $q_{0.01}$ and $q_{0.99}$ quantiles of the set of transcript-trait correlation coefficient values, respectively, referred to as the anticorrelating and correlating gene sets, respectively.

Principal component analysis was performed as a dimensionality reduction technique on the centered and scaled phenotype data, using the prcomp function in R.

To determine whether the number of (anti)correlating genes in the intersection of both populations was higher than expected by chance, we used hypergeometric tests.

Visualization of Expression Patterns

The expression patterns of the set of 226 genes (anti)correlating with at least one trait in both populations and the phenotypic measurements for all RILs were visualized in MeV (Saeed et al., 2003). Data were adjusted by normalizing the genes/row, and color scale limits were set at −3 and +3 as lower limit and upper limit, respectively, since these numbers approached the minimal and maximal data values after normalization. Next, we performed hierarchical clustering of the RILs, based on Euclidean distance and average linkage clustering, to visualize the gradient in expression levels and phenotypic measurements over all RILs.

Functional Enrichment Analysis

Functional enrichment analyses were based on pathways defined in MapMan (Thimm et al., 2004) and performed as described before (Baute et al., 2015).

Network Analysis

Coexpression analysis between the 226 genes for which expression levels in the DZ (anti)correlated with at least one of the traits in both populations was performed with the online tool CORNET (De Bodt et al., 2012), but with its in-house version, where the probe sets of publicly available Affymetrix and Nimblegen expression data sets for maize are mapped to gene models B73_RefGen_v2. For our analysis, we selected both expression data sets, Affymetrix and Nimblegen. The generated coexpression network was based on PCCs of 0.7 and higher, and protein-protein interactions between query genes based on both experimental and predicted data from CORNET were included and visualized in Cytoscape (Shannon et al., 2003). Subnetworks were identified using HC-PIN (Wang et al., 2011) in CytoCluster with standard settings and a ComplexSize threshold of 10.

Phenotypic measurements are included in Supplemental Table S4.

Sequence data from this article can be found in the GenBank/EMBL data libraries under accession numbers E-MTAB-3965.

Supplemental Data

The following supplemental materials are available.

Supplemental Figure S1. PCA analysis of the phenotype data.

Supplemental Figure S2. Histograms of the leaf size and seedling related traits in the bi-parental RIL and MAGIC RIL population.

Supplemental Figure S3. Enrichment of functional categories for correlating and anti-correlating genes in the bi-parental and MAGIC RIL populations.

Supplemental Table S1. Mean, maximum, minimum and percentage difference of the traits within the two populations.

Supplemental Table S2. Pearson CC for the analyzed traits, grouped as leaf size, shoot related and timing related traits combined for bi-parental and MAGIC RIL populations.

Supplemental Table S3. Genes with expression levels (anti-)correlating with at least one of the traits in one of the populations.

Supplemental Table S4. Phenotypic measurements for the MAGIC population.

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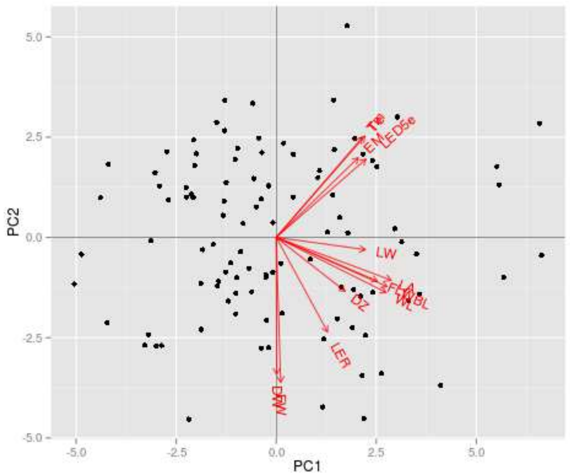

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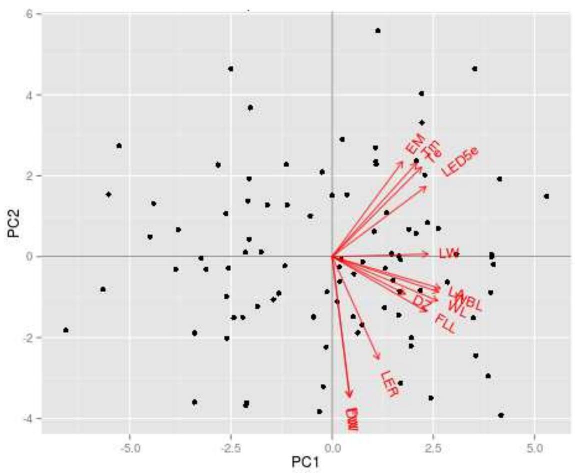
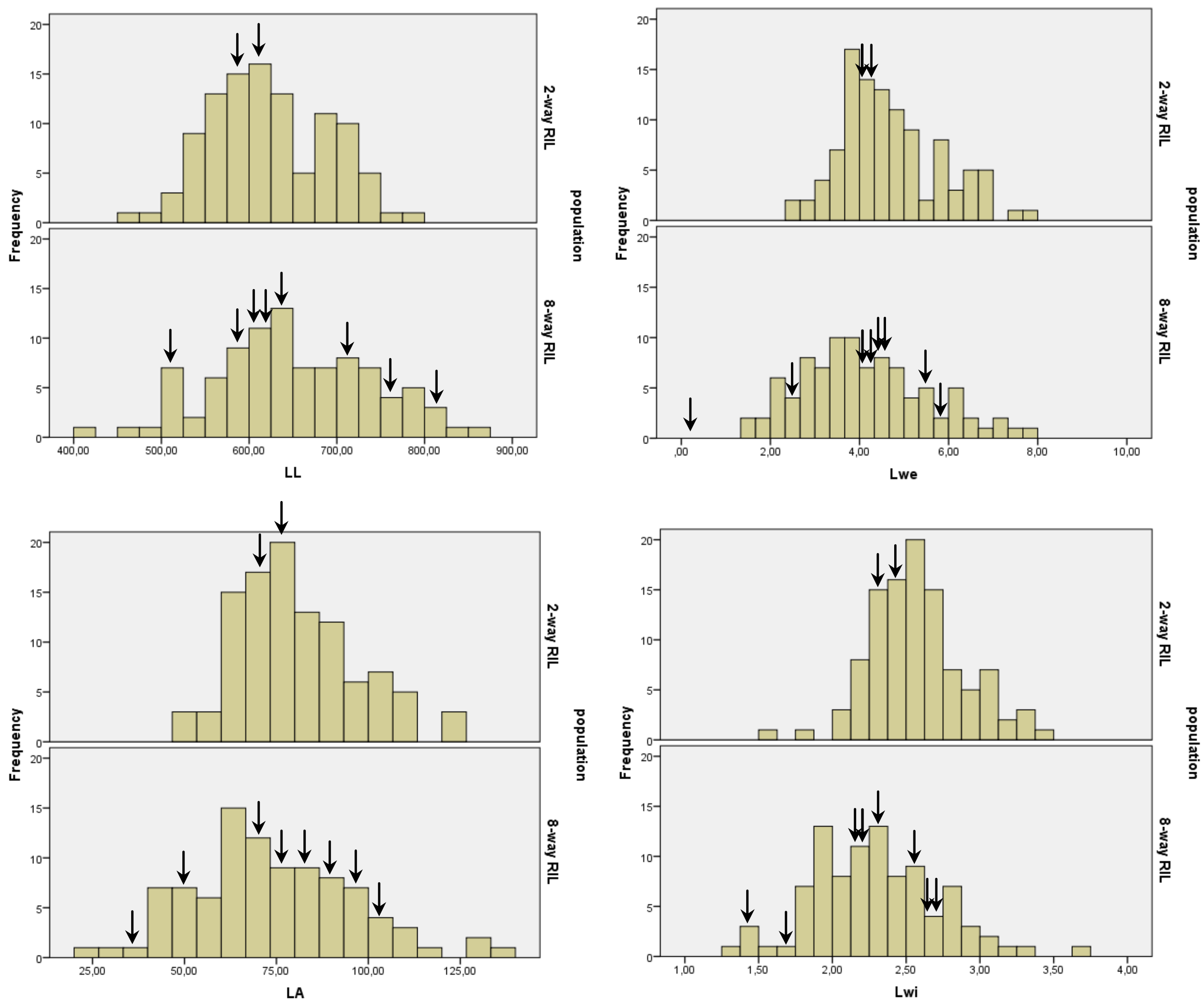


Figure S1 PCA analysis of the phenotype data. Shown is a biplot of the first two principal components of the phenotype data of the bi-parental population (A) and MAGIC population (B). Black dots correspond to the different samples, while the red arrows correspond to the different phenotypes.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8-way RIL
population
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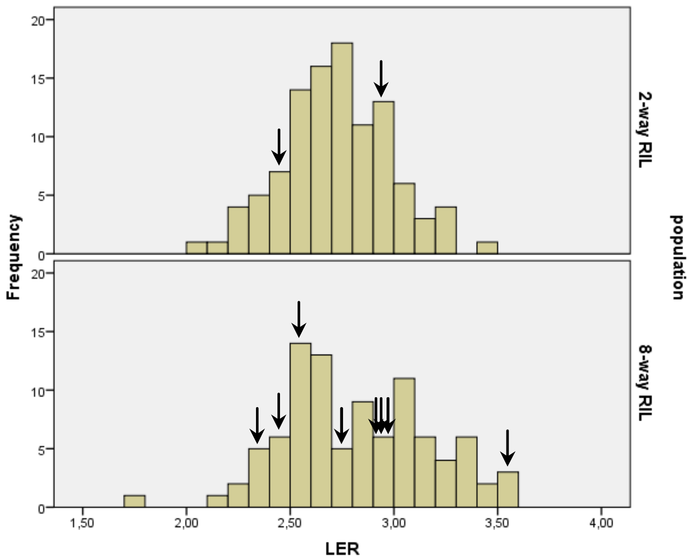
Lwe
LA
Lwi


Frequency
population
2-way RIL
8-way RIL
LER
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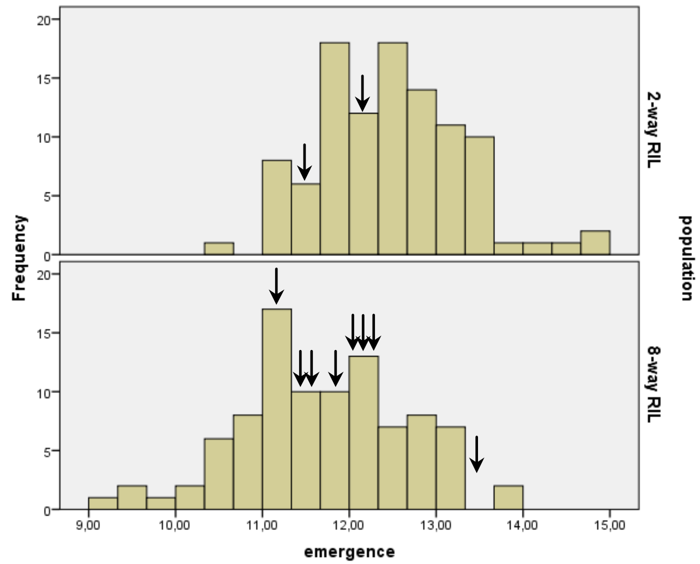
5
10
15
20
1,50
2,00
2,50
3,00
3,50
4,00


Frequency
population
2-way RIL
8-way RIL
emergence
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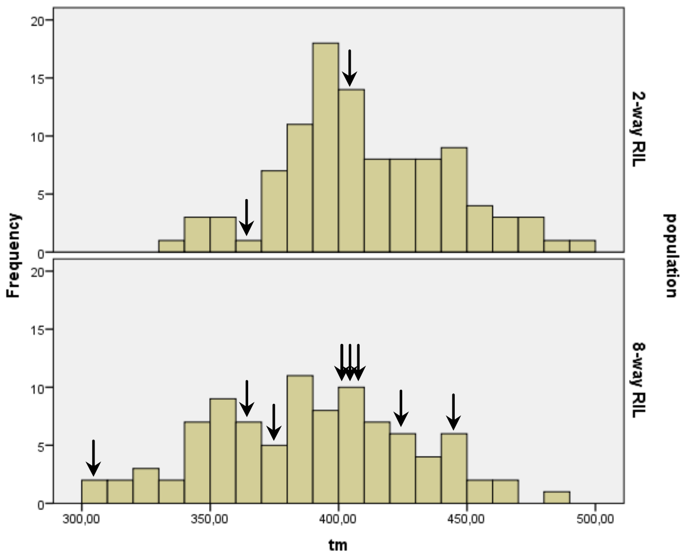
5
10
15
20
9,00
10,00
11,00
12,00
13,00
14,00
15,00


Frequency
population
2-way RIL
8-way RIL
tm
0
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10
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20
300,00
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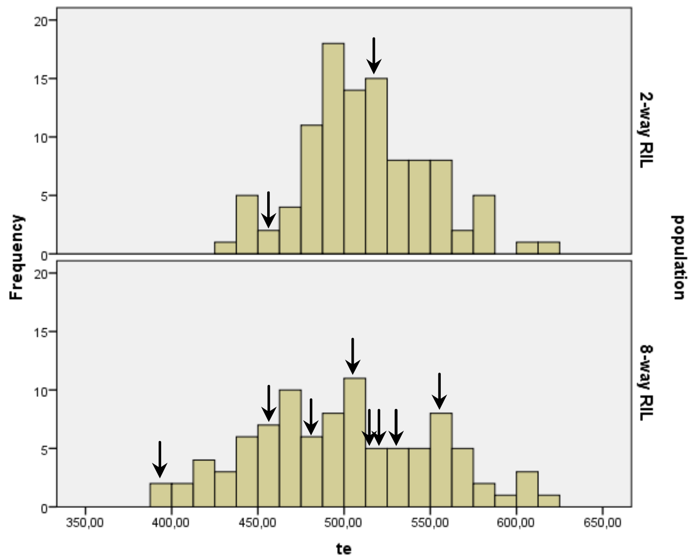
500,00


Frequency
population
2-way RIL
8-way RIL
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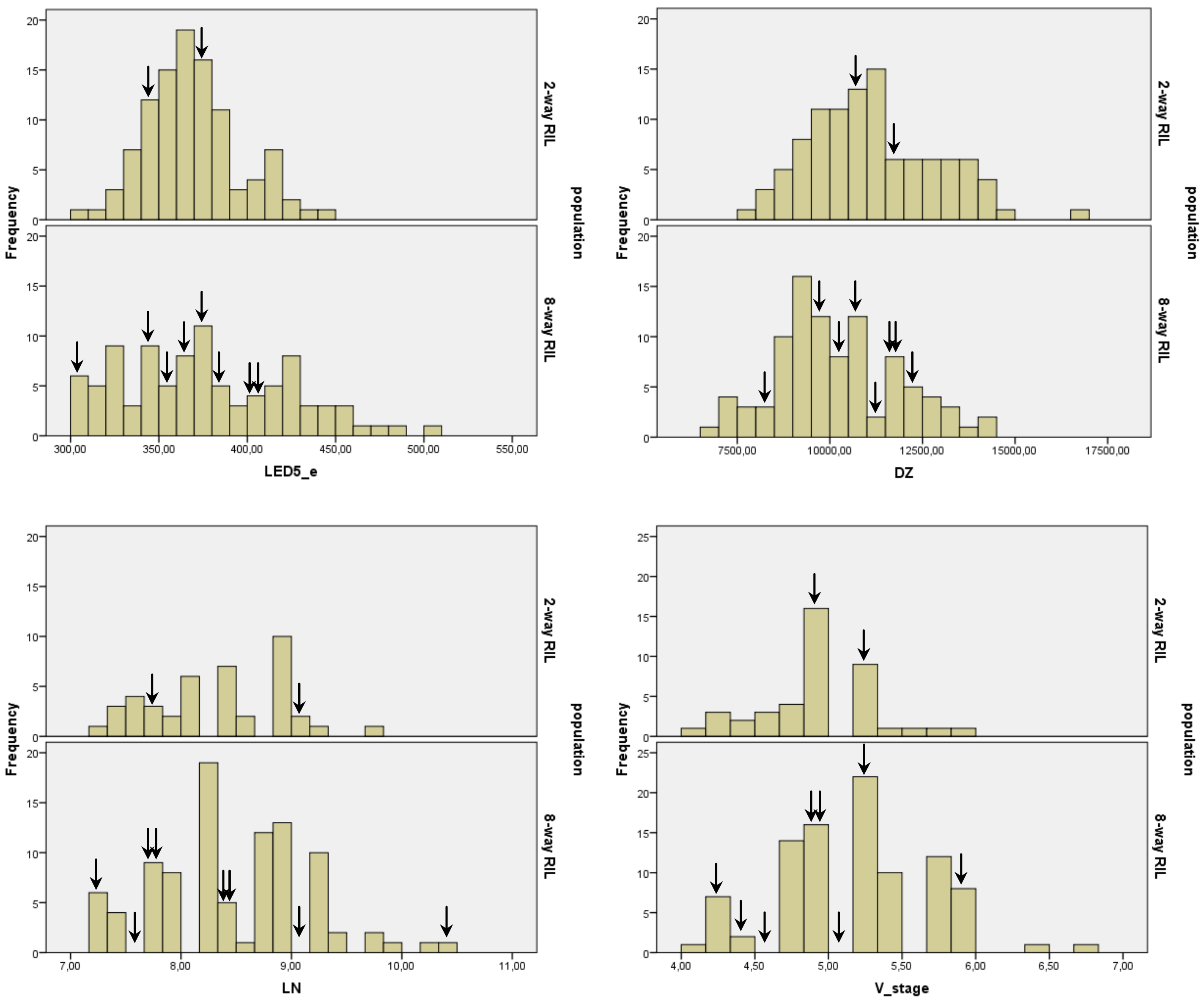
550,00
600,00
650,00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8-way RIL
population
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350,00
400,00
450,00
500,00
550,00
DZ
7500,00
10000,00
12500,00
15000,00
17500,00
LN
7,00
8,00
9,00
10,00
11,00
V_stage
4,00
4,50
5,00
5,50
6,00
6,50
7,00

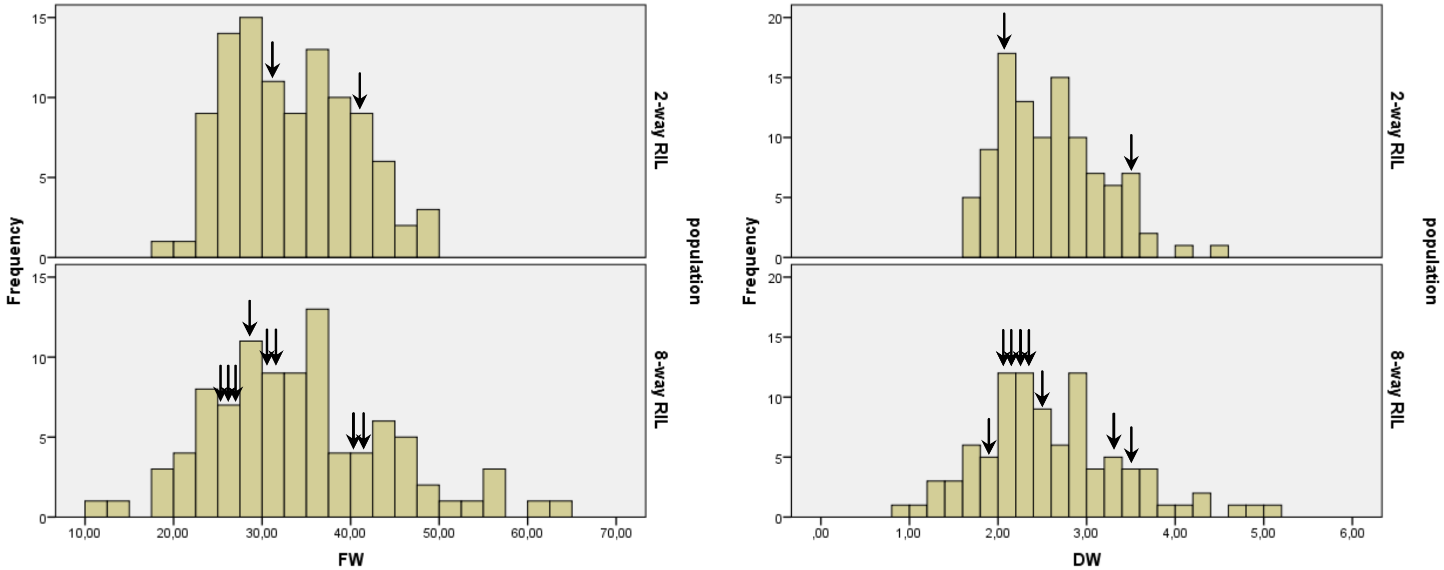

Figure S2 Histograms of the leaf size and seedling related traits in the bi-parental RIL and MAGIC RIL population. The arrows show the value for the respective parental inbred lines.

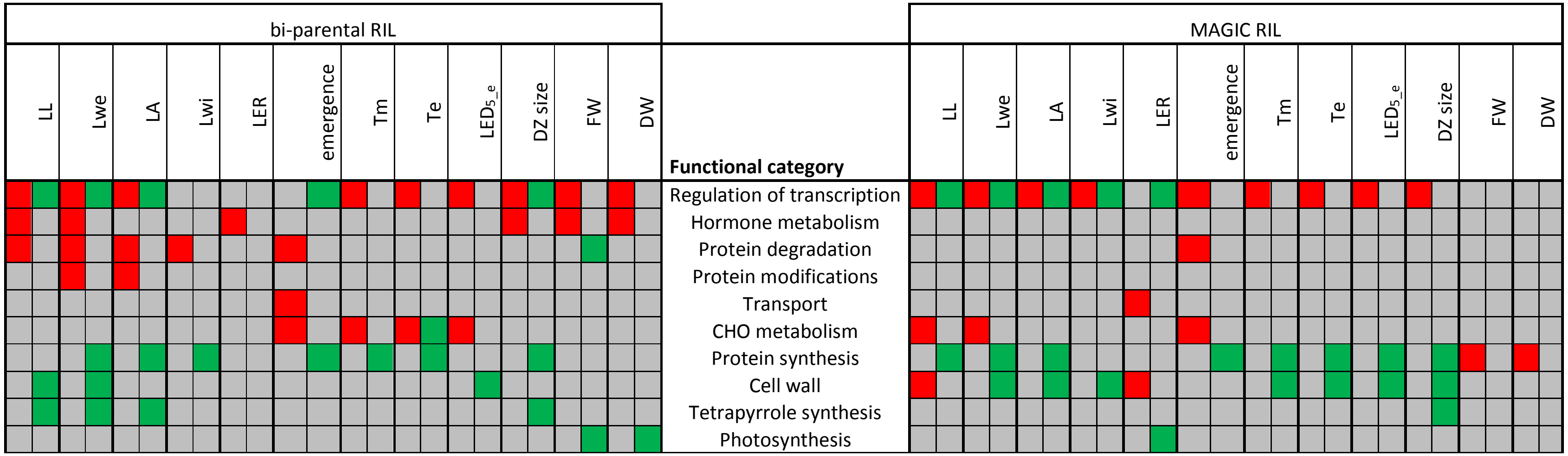

Figure S3 Enrichment of functional categories for correlating and anti-correlating genes in the bi-parental and MAGIC RIL populations.
Red: significantly enriched categories for the 1% transcripts that positively correlate with traits; Green: significantly enriched categories for the 1% transcripts that negatively correlate with traits; Gray: not significantly enriched.

Table S1 Mean, maximum, minimum and percentage difference of the traits within the two populations.

	bi-parental RIL						MAGIC RIL					
	mean +/- SD			max	min	% difference	mean +/- SD			max	min	% difference
final leaf length (mm)	623.0	+/-	63.6	789.0	469.0	41	649.0	+/-	90.6	862.0	409.3	53
final leaf weight (g)	4.69	+/-	1.05	7.82	2.56	67	4.10	+/-	1.42	7.70	1.39	82
final leaf area (mm2)	80.39	+/-	15.09	122.71	46.82	62	74.04	+/-	21.96	139.98	26.42	81
final leaf width (mm)	2.57	+/-	0.31	3.43	1.61	53	2.29	+/-	0.44	3.74	1.26	66
leaf elongation rate (mm/h)	2.73	+/-	0.27	3.46	2.07	40	2.82	+/-	0.35	3.52	1.75	50
emergence of leaf 4(d)	12.44	+/-	0.87	14.80	10.35	30	11.69	+/-	0.95	13.84	9.26	33
te (h)	510.5	+/-	38.4	618.5	435.9	30	500.6	+/-	52.8	620.5	394.0	36
tm (h)	405.8	+/-	33.9	499.3	336.3	33	388.9	+/-	39.2	482.4	301.0	38
LED5-e (h)	369.7	+/-	27.6	443.0	307.4	31	377.1	+/-	47.4	500.8	303.2	39
division zone size (um)	11,082	+/-	1,790	16,800	7,817	53	10,162	+/-	1,662	14,233	6,533	54
number of leaves at harvest	8.4	+/-	0.6	9.8	7.2	27	8.5	+/-	0.7	10.5	7.2	32
V-stage at harvest	5.0	+/-	0.4	6.0	4.0	33	5.2	+/-	0.5	6.7	4.0	40
shoot fresh weight (g)	33.3	+/-	7.5	49.9	19.5	61	34.3	+/-	10.1	62.7	10.3	84
shoot dry weight (g)	2.6	+/-	0.6	4.4	1.7	63	2.6	+/-	0.8	5.1	0.8	84

Measurements of leaf 4 emergence are averages of 18 – 20 plants ± SE; for division zone size of 3 plants ± SE and for all other traits of 6 plants ± SE.

Table S2 Pearson CC for the analyzed traits, grouped as leaf size, shoot related and timing related traits combined for bi-parental and MAGIC RIL populations.

	LER	LL	Lwe	LA	Lwi	DZ size	FW	DW	LN	V-stage	emergence	t_e	t_m	LED_{5-e}
LER	1	0.764**	0.456**	0.436**	0.06	0.362**	0.575**	0.594**	0.194*	0.107	-0.089	-0.109	-0.089	-0.049
LL		1	0.699**	0.734**	0.337**	0.525**	0.309**	0.342**	-0.240**	-0.390**	0.156*	0.374**	0.317**	0.482**
Lwe			1	0.909**	0.762**	0.558**	0.391**	0.367**	-0.282**	-0.484**	0.359**	0.447**	0.443**	0.436**
LA				1	0.842**	0.571**	0.278**	0.312**	-0.340**	-0.564**	0.385**	0.533**	0.500**	0.550**
Lwi					1	0.440**	0.100	0.117	-0.407**	-0.591**	0.481**	0.534**	0.534**	0.468**
DZ size						1	0.218**	0.255**	-0.181*	-0.315**	0.203**	0.243**	0.237**	0.254**
FW							1	0.921**	0.597**	0.469**	-0.447**	-0.502**	-0.508**	-0.370**
DW								1	0.556**	0.404**	-0.443**	-0.472**	-0.486**	-0.330**
LN									1	0.830**	-0.707**	-0.772**	-0.759**	-0.699**
V-stage										1	-0.717**	-0.849**	-0.826**	-0.790**
emergence											1	0.747**	0.809**	0.533**
t_e												1	0.965**	0.905**
t_m													1	0.765**
LED_{5_e}														1

Significant correlations are indicated by **(p<0.01) and * (p<0.05), highly significant positive correlations are indicated in red, highly significant negative correlations are indicated in green.

Transcript	Gene	posC_2-way	negC_2-way
GRMZM2G066496_T01	GRMZM2G066496	Lwe LA Lwi	
GRMZM2G109785_T01	GRMZM2G109785	Tm	
GRMZM2G029566_T01	GRMZM2G029566	FLL Lwe	
GRMZM2G156516_T01	GRMZM2G156516		
GRMZM2G002652_T01	GRMZM2G002652	Tm Te LED	
GRMZM2G154093_T01	GRMZM2G154093		
GRMZM2G096958_T01	GRMZM2G096958	LED	
GRMZM2G008726_T01	GRMZM2G008726		Lwi
GRMZM2G159149_T01	GRMZM2G159149		LER FLL
GRMZM2G181192_T03	GRMZM2G181192	Lwi	
GRMZM2G019926_T02	GRMZM2G019926		
GRMZM2G033491_T01	GRMZM2G033491		
GRMZM2G014813_T01	GRMZM2G014813	Tm Te	
GRMZM2G461569_T01	GRMZM2G461569		
GRMZM2G413652_T02	GRMZM2G413652		
GRMZM2G451314_T01	GRMZM2G451314	LA Lwi DZS	
GRMZM2G104310_T01	GRMZM2G104310		
GRMZM2G036861_T01	GRMZM2G036861		LED FLL Lwe LA DZS
GRMZM2G116087_T02	GRMZM2G116087	Lwi	
GRMZM2G161337_T02	GRMZM2G161337		FLL
GRMZM2G085381_T02	GRMZM2G085381		
GRMZM2G074589_T01	GRMZM2G074589		
AC233893.1_FGT001	AC233893.1_FG001		FLL
GRMZM2G075153_T02	GRMZM2G075153		Tm Te LED
GRMZM2G074270_T03	GRMZM2G074270		Lwi
GRMZM2G133358_T02	GRMZM2G133358	LED	
GRMZM2G300862_T03	GRMZM2G300862	FLL Lwe LA DZS	
GRMZM2G023214_T02	GRMZM2G023214		
GRMZM2G151977_T01	GRMZM2G151977		
GRMZM2G077215_T01	GRMZM2G077215		DW
GRMZM2G171556_T01	GRMZM2G171556	Lwe LA Lwi	
GRMZM2G400604_T01	GRMZM2G400604	Tm Te Lwi emergence	
GRMZM2G033799_T03	GRMZM2G033799		FW DW
GRMZM2G146677_T01	GRMZM2G146677		LED FLL
GRMZM5G836910_T01	GRMZM5G836910		
GRMZM2G094712_T01	GRMZM2G094712		
GRMZM2G017110_T01	GRMZM2G017110	emergence	
GRMZM2G010406_T02	GRMZM2G010406		
GRMZM2G046748_T01	GRMZM2G046748		FLL Lwe LA
AC203754.4_FGT008	AC203754.4_FG008		LER FW
GRMZM2G136250_T01	GRMZM2G136250		
GRMZM2G162175_T04	GRMZM2G162175		
GRMZM2G005887_T03	GRMZM2G005887		
GRMZM2G036708_T01	GRMZM2G036708		LER
GRMZM2G009323_T01	GRMZM2G009323		Te LED FLL
GRMZM2G300801_T01	GRMZM2G300801		Lwe Lwi

GRMZM5G816356_T03	GRMZM5G816356	LER FLL	
GRMZM2G001904_T01	GRMZM2G001904	Lwe	
GRMZM2G169481_T01	GRMZM2G169481	LER FLL	
GRMZM2G173536_T01	GRMZM2G173536		
GRMZM2G003493_T01	GRMZM2G003493		
GRMZM2G001514_T01	GRMZM2G001514		
GRMZM2G148534_T01	GRMZM2G148534		Lwe LA Lwi
GRMZM2G073725_T01	GRMZM2G073725		LED FLL
GRMZM2G087326_T01	GRMZM2G087326		Tm Te LED FLL
GRMZM2G099101_T01	GRMZM2G099101	FLL Lwe LA DZS	
GRMZM2G027794_T01	GRMZM2G027794		LED
GRMZM2G173759_T01	GRMZM2G173759		
GRMZM2G074792_T01	GRMZM2G074792		FLL DZS
GRMZM2G020742_T01	GRMZM2G020742	emergence	
GRMZM2G039454_T02	GRMZM2G039454	LED Lwe LA Lwi	
GRMZM2G111642_T02	GRMZM2G111642	Lwi	
GRMZM2G113137_T01	GRMZM2G113137		
GRMZM2G424832_T01	GRMZM2G424832		
GRMZM2G445905_T03	GRMZM2G445905		LER FLL Lwe
GRMZM2G331566_T02	GRMZM2G331566	LED FLL	
GRMZM2G019783_T01	GRMZM2G019783		
GRMZM2G055585_T01	GRMZM2G055585		FLL
GRMZM2G412207_T02	GRMZM2G412207		Lwe
GRMZM2G135763_T01	GRMZM2G135763	FW DW	Tm Te LED
GRMZM2G137077_T01	GRMZM2G137077	emergence	
GRMZM2G052844_T01	GRMZM2G052844		
GRMZM2G004435_T04	GRMZM2G004435		
GRMZM2G404762_T01	GRMZM2G404762		
GRMZM2G333361_T01	GRMZM2G333361		Lwi
GRMZM2G002023_T02	GRMZM2G002023	FW DW	
GRMZM2G413044_T01	GRMZM2G413044		
GRMZM2G368886_T01	GRMZM2G368886		
GRMZM2G104013_T03	GRMZM2G104013	LER	
GRMZM2G118579_T01	GRMZM2G118579		
GRMZM5G886185_T01	GRMZM5G886185		
GRMZM2G154178_T01	GRMZM2G154178		LER FLL Lwe LA DZS
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GRMZM2G072911_T01	GRMZM2G072911		Tm Te LED
GRMZM2G328500_T01	GRMZM2G328500		FLL

GRMZM5G862540_T01	GRMZM5G862540		FLL
GRMZM2G165357_T01	GRMZM2G165357		FLL
GRMZM2G007404_T03	GRMZM2G007404		Lwe
GRMZM2G347717_T02	GRMZM2G347717		LER
GRMZM2G476685_T01	GRMZM2G476685		
GRMZM2G017081_T02	GRMZM2G017081		DZS
GRMZM5G879536_T02	GRMZM5G879536	Lwe LA	
GRMZM2G122185_T01	GRMZM2G122185		
GRMZM2G050933_T01	GRMZM2G050933		
GRMZM2G310115_T02	GRMZM2G310115		
GRMZM2G101635_T01	GRMZM2G101635		
GRMZM2G117968_T01	GRMZM2G117968		
GRMZM2G049525_T03	GRMZM2G049525	Lwi	
GRMZM2G398275_T01	GRMZM2G398275	DZS	
AC216247.3_FGT005	AC216247.3_FG005		LER
GRMZM2G363408_T02	GRMZM2G363408		
GRMZM2G318527_T01	GRMZM2G318527		
GRMZM2G124371_T01	GRMZM2G124371	Lwe FW DW	
GRMZM2G475360_T01	GRMZM2G475360		emergence
AC217050.4_FGT001	AC217050.4_FG001		
GRMZM2G063060_T01	GRMZM2G063060	Lwi	
GRMZM2G036765_T01	GRMZM2G036765		LER
GRMZM2G003043_T01	GRMZM2G003043	Tm Te LED	
GRMZM2G137574_T01	GRMZM2G137574		
GRMZM2G152616_T01	GRMZM2G152616	LA Lwi DZS emergence	
GRMZM2G008327_T01	GRMZM2G008327		
GRMZM2G337819_T02	GRMZM2G337819	DW	
GRMZM2G451716_T01	GRMZM2G451716		
GRMZM2G150289_T01	GRMZM2G150289	FW DW	
GRMZM2G156956_T02	GRMZM2G156956		
GRMZM2G070115_T01	GRMZM2G070115		DZS
GRMZM5G814700_T02	GRMZM5G814700		LA Lwi
GRMZM2G007659_T02	GRMZM2G007659		LER
GRMZM2G495626_T04	GRMZM2G495626		
GRMZM2G034362_T01	GRMZM2G034362		
GRMZM2G034005_T01	GRMZM2G034005		Tm Te LED
GRMZM2G050885_T02	GRMZM2G050885		LER
GRMZM2G083243_T01	GRMZM2G083243		
GRMZM2G099167_T01	GRMZM2G099167		LED
GRMZM2G173700_T03	GRMZM2G173700		
GRMZM2G315594_T01	GRMZM2G315594		LER FW DW
GRMZM2G114841_T01	GRMZM2G114841		
GRMZM2G126010_T01	GRMZM2G126010	Tm Te emergence	
GRMZM2G152328_T01	GRMZM2G152328		Tm Te
GRMZM2G097426_T01	GRMZM2G097426	LER	
GRMZM2G084149_T01	GRMZM2G084149	emergence	
GRMZM2G075655_T01	GRMZM2G075655		LA Lwi

GRMZM2G081322_T01	GRMZM2G081322		LER FLL
GRMZM2G130678_T01	GRMZM2G130678		
GRMZM2G146207_T01	GRMZM2G146207		
GRMZM2G417658_T01	GRMZM2G417658		DZS
GRMZM2G474531_T01	GRMZM2G474531		
GRMZM2G098212_T01	GRMZM2G098212		Tm Te
GRMZM2G457003_T01	GRMZM2G457003	LER	
GRMZM5G887077_T01	GRMZM5G887077	Tm Te LED emergence	
GRMZM2G132686_T01	GRMZM2G132686	Lwi	
GRMZM2G089351_T02	GRMZM2G089351		
GRMZM2G342386_T01	GRMZM2G342386	Lwi	
GRMZM2G177867_T02	GRMZM2G177867	Lwi	
GRMZM2G099980_T03	GRMZM2G099980	Tm Te	
GRMZM2G092112_T01	GRMZM2G092112	Tm Te LED emergence	
GRMZM2G436981_T01	GRMZM2G436981		LER
GRMZM2G062084_T01	GRMZM2G062084		FLL
GRMZM2G124473_T01	GRMZM2G124473		
GRMZM2G112337_T03	GRMZM2G112337	Tm Te LED Lwi	
GRMZM2G040878_T01	GRMZM2G040878		
GRMZM2G110726_T01	GRMZM2G110726		DW
GRMZM2G092481_T02	GRMZM2G092481		DZS
GRMZM2G176047_T02	GRMZM2G176047	LER FW DW	
GRMZM2G181390_T02	GRMZM2G181390	LED	
GRMZM2G056608_T01	GRMZM2G056608	Lwe	
GRMZM2G325247_T01	GRMZM2G325247	LER FW DW	
GRMZM2G009136_T01	GRMZM2G009136	DZS	
GRMZM5G889760_T01	GRMZM5G889760		
GRMZM2G050800_T01	GRMZM2G050800	DW	
GRMZM2G007514_T01	GRMZM2G007514		DZS
GRMZM5G836827_T01	GRMZM5G836827		FW DW
GRMZM2G163796_T01	GRMZM2G163796		LER DZS
GRMZM2G315072_T01	GRMZM2G315072		LED FLL DZS
GRMZM2G017257_T01	GRMZM2G017257		
GRMZM2G168119_T01	GRMZM2G168119		
GRMZM2G002825_T01	GRMZM2G002825		
GRMZM2G108780_T01	GRMZM2G108780		
GRMZM2G012942_T01	GRMZM2G012942	Lwi	
GRMZM2G167836_T01	GRMZM2G167836		FW
GRMZM2G072690_T02	GRMZM2G072690		Lwi
GRMZM2G053273_T02	GRMZM2G053273	FLL	
GRMZM5G875564_T03	GRMZM5G875564	Tm Te	
GRMZM2G402653_T01	GRMZM2G402653	Lwe LA	
GRMZM2G409265_T02	GRMZM2G409265	Lwe	
GRMZM2G011315_T01	GRMZM2G011315		FW DW
GRMZM2G054210_T01	GRMZM2G054210	emergence	DW
GRMZM2G030144_T02	GRMZM2G030144		
GRMZM2G143029_T01	GRMZM2G143029	LER FLL	

GRMZM2G168654_T01	GRMZM2G168654		
GRMZM2G167651_T02	GRMZM2G167651	FW DW	
GRMZM5G804382_T01	GRMZM5G804382		Tm Te LED
GRMZM5G822591_T01	GRMZM5G822591		Tm Te LED
GRMZM2G009895_T01	GRMZM2G009895		
GRMZM2G145951_T01	GRMZM2G145951	DW	
GRMZM2G378906_T01	GRMZM2G378906		LED FLL
GRMZM2G074530_T01	GRMZM2G074530		
GRMZM2G046590_T01	GRMZM2G046590		FW DW
AC198725.4_FGT007	AC198725.4_FG007		LER
GRMZM2G029077_T01	GRMZM2G029077		FW DW
GRMZM2G700148_T01	GRMZM2G700148		FW
GRMZM2G074173_T01	GRMZM2G074173	Tm Te LED FLL LA	
GRMZM2G086138_T01	GRMZM2G086138	Lwe LA	
GRMZM2G083317_T01	GRMZM2G083317	Tm Te emergence	
GRMZM2G085295_T01	GRMZM2G085295		LER
GRMZM2G438895_T01	GRMZM2G438895		
GRMZM2G091511_T02	GRMZM2G091511	Lwi	
GRMZM2G122038_T01	GRMZM2G122038		LER
GRMZM2G118363_T01	GRMZM2G118363		
GRMZM2G155543_T04	GRMZM2G155543		
GRMZM2G095724_T01	GRMZM2G095724		FW DW
GRMZM2G077844_T03	GRMZM2G077844		
GRMZM2G104538_T03	GRMZM2G104538		
GRMZM2G402319_T01	GRMZM2G402319	DZS	
GRMZM2G438673_T02	GRMZM2G438673		Lwe
GRMZM2G097283_T01	GRMZM2G097283		DZS
GRMZM2G022837_T02	GRMZM2G022837		LA
GRMZM2G071714_T01	GRMZM2G071714		
GRMZM2G081571_T05	GRMZM2G081571		LER
GRMZM2G010596_T02	GRMZM2G010596		Lwe
GRMZM2G072909_T02	GRMZM2G072909	Tm Te LED emergen	FW
GRMZM2G087612_T01	GRMZM2G087612		
GRMZM2G034724_T02	GRMZM2G034724		Lwi
GRMZM2G004959_T01	GRMZM2G004959		
GRMZM2G110289_T01	GRMZM2G110289		Lwi
GRMZM2G006474_T01	GRMZM2G006474	FW DW	
GRMZM5G844703_T01	GRMZM5G844703	LER	
GRMZM2G383540_T01	GRMZM2G383540	DW	
GRMZM2G109039_T01	GRMZM2G109039		
GRMZM2G009070_T01	GRMZM2G009070		Lwe LA DZS emergence
GRMZM2G097106_T01	GRMZM2G097106		emergence
GRMZM2G553379_T08	GRMZM2G553379	LED	
AC196426.3_FGT007	AC196426.3_FG007		DW
GRMZM2G066341_T03	GRMZM2G066341	DZS DW	
GRMZM2G011401_T01	GRMZM2G011401		
GRMZM2G366065_T02	GRMZM2G366065	Te LED	

GRMZM2G316113_T01	GRMZM2G316113	Te Lwi	
GRMZM2G108737_T01	GRMZM2G108737		emergence
GRMZM2G079013_T01	GRMZM2G079013		
GRMZM2G143211_T01	GRMZM2G143211		
GRMZM2G057525_T01	GRMZM2G057525	LA Lwi	
AC218457.2_FGT013	AC218457.2_FG013		
GRMZM2G179106_T02	GRMZM2G179106		
GRMZM2G054537_T01	GRMZM2G054537		Te emergence
GRMZM2G050268_T01	GRMZM2G050268		
GRMZM2G092797_T01	GRMZM2G092797		FW DW
GRMZM2G100116_T01	GRMZM2G100116		
GRMZM2G000812_T01	GRMZM2G000812		DZS
GRMZM2G025480_T01	GRMZM2G025480	FW	LED
GRMZM2G175549_T02	GRMZM2G175549	LER Lwe LA DZS	
GRMZM2G134398_T03	GRMZM2G134398		
GRMZM2G093815_T01	GRMZM2G093815		Lwe
GRMZM2G142740_T01	GRMZM2G142740		
GRMZM2G063188_T02	GRMZM2G063188		Lwi
GRMZM2G361398_T02	GRMZM2G361398		
GRMZM2G018929_T02	GRMZM2G018929	LER	
GRMZM2G061186_T01	GRMZM2G061186	Lwe	
GRMZM2G111247_T01	GRMZM2G111247	Lwe LA Lwi	
GRMZM2G022625_T03	GRMZM2G022625		DZS
GRMZM2G323838_T01	GRMZM2G323838		LER
GRMZM2G058133_T01	GRMZM2G058133		
GRMZM2G132504_T03	GRMZM2G132504		
GRMZM5G894234_T01	GRMZM5G894234	Tm	FW DW
GRMZM2G103599_T01	GRMZM2G103599		LER
GRMZM2G170567_T01	GRMZM2G170567		LER DW
GRMZM2G074320_T01	GRMZM2G074320	FW DW	
GRMZM2G429442_T01	GRMZM2G429442		
GRMZM2G090728_T01	GRMZM2G090728	emergence	
GRMZM5G838579_T01	GRMZM5G838579	Tm Te LED emergen	DW
GRMZM2G061624_T01	GRMZM2G061624	Lwe LA Lwi DZS	
GRMZM2G309063_T01	GRMZM2G309063		
GRMZM2G115453_T01	GRMZM2G115453		
GRMZM2G147266_T01	GRMZM2G147266		Lwe
GRMZM2G016948_T01	GRMZM2G016948		Lwe
GRMZM2G442170_T01	GRMZM2G442170		FLL
GRMZM2G023372_T01	GRMZM2G023372		FW DW
GRMZM2G144547_T01	GRMZM2G144547		
GRMZM2G029519_T01	GRMZM2G029519	Tm Te LED	
GRMZM2G030128_T02	GRMZM2G030128	Tm Te LED Lwi	
GRMZM2G111510_T01	GRMZM2G111510		
GRMZM2G360873_T01	GRMZM2G360873		
GRMZM2G356935_T01	GRMZM2G356935		FW
GRMZM2G133952_T01	GRMZM2G133952	Tm Te LED FLL LA DZS	

GRMZM2G121543_T02	GRMZM2G121543	DZS	
GRMZM2G103897_T02	GRMZM2G103897		LER
GRMZM2G058441_T02	GRMZM2G058441		
GRMZM2G061485_T01	GRMZM2G061485		
GRMZM2G132303_T01	GRMZM2G132303		
GRMZM2G369130_T01	GRMZM2G369130	DW	
GRMZM2G422045_T01	GRMZM2G422045		FLL
GRMZM2G110309_T01	GRMZM2G110309		FLL LA
GRMZM2G063151_T01	GRMZM2G063151		DZS
GRMZM5G833563_T02	GRMZM5G833563	FLL	
GRMZM2G117028_T01	GRMZM2G117028	DZS	
GRMZM2G099253_T01	GRMZM2G099253		emergence
GRMZM2G081519_T01	GRMZM2G081519		emergence
GRMZM2G035168_T01	GRMZM2G035168		
GRMZM2G373175_T01	GRMZM2G373175		LER DZS
GRMZM2G096458_T03	GRMZM2G096458		DW
GRMZM2G130351_T01	GRMZM2G130351		FW DW
GRMZM2G075978_T01	GRMZM2G075978		
GRMZM2G090887_T01	GRMZM2G090887	FW DW	
GRMZM2G146047_T02	GRMZM2G146047		
GRMZM2G085587_T01	GRMZM2G085587	Te	
GRMZM2G116526_T01	GRMZM2G116526		LER
GRMZM2G346278_T01	GRMZM2G346278	Lwi	
GRMZM2G006452_T01	GRMZM2G006452		Tm Te LED emergence
GRMZM2G044128_T01	GRMZM2G044128		Tm Te LED emergence
GRMZM2G175867_T02	GRMZM2G175867		DZS
GRMZM2G121427_T01	GRMZM2G121427		LER DW
GRMZM2G157267_T01	GRMZM2G157267		
GRMZM2G148411_T02	GRMZM2G148411		
GRMZM2G086934_T01	GRMZM2G086934		
GRMZM2G438524_T01	GRMZM2G438524		Lwi
GRMZM2G163444_T01	GRMZM2G163444	FW DW	Tm Te emergence
GRMZM2G470365_T01	GRMZM2G470365	Tm	
GRMZM2G421655_T01	GRMZM2G421655	LER	
GRMZM2G111015_T01	GRMZM2G111015	FW	
GRMZM2G303007_T01	GRMZM2G303007		
GRMZM5G802858_T01	GRMZM5G802858		
GRMZM5G830874_T05	GRMZM5G830874		
GRMZM2G139329_T02	GRMZM2G139329		DW
GRMZM2G086116_T01	GRMZM2G086116		
GRMZM2G071959_T01	GRMZM2G071959		Lwe LA Lwi
GRMZM2G163939_T02	GRMZM2G163939		Lwi
GRMZM2G004878_T01	GRMZM2G004878		Lwi
GRMZM2G151826_T02	GRMZM2G151826		Tm Te Lwi emergence
GRMZM2G069911_T01	GRMZM2G069911	Te LED	
GRMZM2G401308_T02	GRMZM2G401308		
GRMZM2G046055_T01	GRMZM2G046055		

GRMZM2G130079_T01	GRMZM2G130079		
GRMZM2G451254_T01	GRMZM2G451254		Lwe LA Lwi
GRMZM2G112912_T01	GRMZM2G112912		Lwe
GRMZM2G047813_T01	GRMZM2G047813		
GRMZM2G073275_T01	GRMZM2G073275		Lwi emergence
GRMZM2G418258_T01	GRMZM2G418258		
GRMZM2G041381_T01	GRMZM2G041381		emergence
GRMZM2G119071_T01	GRMZM2G119071		Tm Te Lwi emergence
GRMZM2G376957_T01	GRMZM2G376957		Lwi
GRMZM2G046841_T01	GRMZM2G046841		Tm Te LED
AC233865.1_FGT001	AC233865.1_FG001		
GRMZM2G143780_T02	GRMZM2G143780		
GRMZM5G864735_T01	GRMZM5G864735		Lwi
GRMZM2G063896_T01	GRMZM2G063896		
GRMZM2G145758_T02	GRMZM2G145758		Lwe LA Lwi
GRMZM2G061591_T01	GRMZM2G061591		emergence
GRMZM2G451856_T02	GRMZM2G451856	Tm	
GRMZM2G081924_T01	GRMZM2G081924		
GRMZM2G067522_T01	GRMZM2G067522	DW	
GRMZM2G143525_T01	GRMZM2G143525		DW
GRMZM2G345039_T01	GRMZM2G345039	DZS	
GRMZM2G018126_T01	GRMZM2G018126	Lwi emergence	
GRMZM2G126865_T01	GRMZM2G126865		LED FLL LA
GRMZM2G053631_T01	GRMZM2G053631		
GRMZM2G082745_T04	GRMZM2G082745	FLL	
GRMZM2G076537_T02	GRMZM2G076537		Tm Te
GRMZM2G359333_T01	GRMZM2G359333		
GRMZM2G579719_T01	GRMZM2G579719	LER FW DW	
GRMZM2G330229_T01	GRMZM2G330229	DW	
GRMZM2G142984_T02	GRMZM2G142984	Tm Te LED LA emergence	
GRMZM2G098346_T01	GRMZM2G098346		FLL
GRMZM2G125268_T02	GRMZM2G125268		
GRMZM2G058675_T01	GRMZM2G058675		FLL Lwe LA
GRMZM2G130440_T02	GRMZM2G130440	DZS	
GRMZM2G087186_T04	GRMZM2G087186		
GRMZM2G135588_T02	GRMZM2G135588	emergence	
GRMZM5G824405_T01	GRMZM5G824405	Te	
GRMZM2G046804_T03	GRMZM2G046804	Lwi	
GRMZM2G160184_T02	GRMZM2G160184		LER
GRMZM5G891834_T02	GRMZM5G891834	emergence	
GRMZM2G003883_T01	GRMZM2G003883		FLL
GRMZM2G150098_T01	GRMZM2G150098		LED
GRMZM2G030784_T01	GRMZM2G030784		
GRMZM2G435244_T01	GRMZM2G435244	LER	
GRMZM2G370275_T01	GRMZM2G370275		
GRMZM2G177947_T01	GRMZM2G177947	DZS	
GRMZM2G127717_T01	GRMZM2G127717	DZS	

GRMZM2G069676_T03	GRMZM2G069676	Tm emergence	
GRMZM2G032003_T01	GRMZM2G032003	Tm emergence	
GRMZM2G144701_T01	GRMZM2G144701	Lwe FW DW	
GRMZM2G054651_T01	GRMZM2G054651	Te LED	
GRMZM2G130548_T01	GRMZM2G130548	Lwe LA Lwi emergence	
GRMZM2G314955_T01	GRMZM2G314955		
GRMZM2G110929_T02	GRMZM2G110929	FW DW	
GRMZM2G321940_T04	GRMZM2G321940		DW
GRMZM2G102347_T03	GRMZM2G102347	FLL	
GRMZM2G446858_T02	GRMZM2G446858	LER FW DW	
GRMZM2G320802_T01	GRMZM2G320802	FW	Tm Te LED
GRMZM2G168614_T01	GRMZM2G168614		
GRMZM2G142664_T01	GRMZM2G142664		DZS
GRMZM2G025671_T01	GRMZM2G025671		
GRMZM2G112530_T01	GRMZM2G112530		Lwe Lwi
GRMZM2G057037_T01	GRMZM2G057037	emergence	
GRMZM5G813143_T01	GRMZM5G813143	Lwi DZS	
GRMZM2G021243_T01	GRMZM2G021243	FW DW	Tm
GRMZM2G135978_T01	GRMZM2G135978	LER FLL	
GRMZM2G098643_T01	GRMZM2G098643		
GRMZM2G074267_T01	GRMZM2G074267		LED FLL
GRMZM2G175272_T01	GRMZM2G175272	Lwi DZS	
GRMZM2G091540_T02	GRMZM2G091540	FW DW	
GRMZM2G447447_T01	GRMZM2G447447	LER FLL Lwe DZS	
GRMZM2G068465_T02	GRMZM2G068465		LED
GRMZM2G057000_T01	GRMZM2G057000		FLL
GRMZM5G850019_T01	GRMZM5G850019	LER	
GRMZM2G075701_T01	GRMZM2G075701		
GRMZM2G125943_T01	GRMZM2G125943	Lwe LA DZS	
GRMZM2G158252_T01	GRMZM2G158252	LED FLL Lwe LA DZS	
GRMZM2G423456_T01	GRMZM2G423456		
GRMZM2G471529_T01	GRMZM2G471529		
GRMZM2G404443_T01	GRMZM2G404443	LER	
GRMZM2G163975_T01	GRMZM2G163975		
GRMZM2G072238_T02	GRMZM2G072238		Lwe LA Lwi
GRMZM2G089010_T01	GRMZM2G089010	FW DW	
GRMZM2G438202_T01	GRMZM2G438202		
GRMZM2G020150_T01	GRMZM2G020150		
GRMZM2G025870_T01	GRMZM2G025870	LER FLL DZS	
GRMZM2G018006_T01	GRMZM2G018006	FW DW	
GRMZM2G081554_T04	GRMZM2G081554		
GRMZM2G036340_T01	GRMZM2G036340		LA DZS
GRMZM2G008649_T01	GRMZM2G008649	LER	
GRMZM2G068947_T01	GRMZM2G068947	emergence	
GRMZM2G168404_T01	GRMZM2G168404		
GRMZM2G067225_T01	GRMZM2G067225		FLL
GRMZM2G015419_T02	GRMZM2G015419		

GRMZM2G009479_T01	GRMZM2G009479		
GRMZM2G159643_T01	GRMZM2G159643		
GRMZM2G149224_T03	GRMZM2G149224		LER FW DW
GRMZM2G170868_T01	GRMZM2G170868		
GRMZM2G147701_T01	GRMZM2G147701		Lwi
GRMZM2G061419_T01	GRMZM2G061419		FW DW
GRMZM2G142030_T01	GRMZM2G142030	Lwi	
GRMZM2G149617_T01	GRMZM2G149617		LER
GRMZM2G009626_T02	GRMZM2G009626	Tm Te LED	
GRMZM2G129209_T01	GRMZM2G129209		Lwe LA Lwi DZS
AC215690.3_FGT002	AC215690.3_FG002	Lwi	
GRMZM2G091715_T03	GRMZM2G091715	LER FW DW	
GRMZM2G143955_T03	GRMZM2G143955		
GRMZM2G406603_T01	GRMZM2G406603	Lwe	
GRMZM2G472376_T02	GRMZM2G472376		
GRMZM2G062357_T01	GRMZM2G062357	emergence	
GRMZM2G016774_T01	GRMZM2G016774	DW	
GRMZM2G173636_T01	GRMZM2G173636	FW DW	
GRMZM2G049495_T01	GRMZM2G049495	DW	
GRMZM2G174830_T01	GRMZM2G174830		FLL
GRMZM2G155375_T01	GRMZM2G155375		
GRMZM2G024482_T01	GRMZM2G024482	LER	
GRMZM2G445602_T01	GRMZM2G445602		
GRMZM2G062718_T01	GRMZM2G062718		LED FLL
GRMZM2G137694_T01	GRMZM2G137694		
GRMZM2G020740_T01	GRMZM2G020740		
GRMZM2G072205_T01	GRMZM2G072205	DZS	
GRMZM2G003190_T01	GRMZM2G003190		emergence
GRMZM2G090747_T01	GRMZM2G090747	Tm Te FLL Lwe LA Lwi emergence	
GRMZM2G173195_T01	GRMZM2G173195		
GRMZM2G155348_T01	GRMZM2G155348		
AC233887.1_FGT006	AC233887.1_FG006		
GRMZM2G098667_T01	GRMZM2G098667	Lwe	
GRMZM2G142873_T01	GRMZM2G142873		FLL LA
GRMZM2G049190_T01	GRMZM2G049190	FLL	
GRMZM2G052389_T01	GRMZM2G052389		
GRMZM5G864319_T01	GRMZM5G864319		
GRMZM2G002959_T01	GRMZM2G002959	emergence	
GRMZM2G480516_T01	GRMZM2G480516		
GRMZM2G120938_T01	GRMZM2G120938		DZS
GRMZM2G036217_T02	GRMZM2G036217		FLL Lwe LA DZS
GRMZM2G344476_T01	GRMZM2G344476	Tm	
GRMZM2G117357_T01	GRMZM2G117357		
GRMZM2G132903_T01	GRMZM2G132903		FW
GRMZM2G045714_T01	GRMZM2G045714	Lwe emergence	
GRMZM2G176542_T02	GRMZM2G176542	Tm Te emergence	
GRMZM2G331720_T01	GRMZM2G331720		FW DW

GRMZM2G169562_T01	GRMZM2G169562		LER
GRMZM2G023335_T01	GRMZM2G023335	Tm Te emergence	
GRMZM2G318860_T01	GRMZM2G318860		
GRMZM2G054559_T01	GRMZM2G054559		FLL LA
GRMZM2G401664_T01	GRMZM2G401664		Lwe LA
GRMZM2G080521_T01	GRMZM2G080521		
GRMZM2G060194_T01	GRMZM2G060194	DZS	
GRMZM2G081719_T01	GRMZM2G081719		LER Lwe emergence
GRMZM2G108912_T01	GRMZM2G108912		
GRMZM2G010868_T01	GRMZM2G010868		LED FLL Lwe LA
GRMZM2G064590_T01	GRMZM2G064590		LED FLL Lwe LA Lwi DZS
GRMZM2G060886_T01	GRMZM2G060886		
GRMZM2G005886_T02	GRMZM2G005886	Lwi	
GRMZM2G469409_T01	GRMZM2G469409	emergence	FW
GRMZM2G156162_T03	GRMZM2G156162	DZS	
GRMZM2G059445_T02	GRMZM2G059445		LA Lwi DZS
GRMZM2G045970_T01	GRMZM2G045970	FW DW	
GRMZM2G155357_T02	GRMZM2G155357	Lwe	
GRMZM2G079805_T01	GRMZM2G079805		FLL Lwe LA
GRMZM2G033544_T01	GRMZM2G033544		
GRMZM2G076911_T01	GRMZM2G076911	DZS	
GRMZM2G452529_T01	GRMZM2G452529		
GRMZM2G169089_T01	GRMZM2G169089	Tm	
GRMZM2G031568_T01	GRMZM2G031568		
GRMZM2G158043_T03	GRMZM2G158043		
GRMZM5G863596_T02	GRMZM5G863596	DW	
GRMZM2G109268_T01	GRMZM2G109268		
GRMZM2G069486_T01	GRMZM2G069486	Te LED	
GRMZM2G074158_T01	GRMZM2G074158	emergence	
GRMZM2G026969_T01	GRMZM2G026969		
GRMZM2G072091_T01	GRMZM2G072091	FLL LA DZS	
GRMZM2G466780_T01	GRMZM2G466780		DZS
GRMZM2G051677_T02	GRMZM2G051677		Te LED
GRMZM2G104081_T03	GRMZM2G104081		
GRMZM2G051806_T01	GRMZM2G051806		
GRMZM2G477236_T03	GRMZM2G477236		Lwe
GRMZM2G115451_T01	GRMZM2G115451		
GRMZM2G084694_T01	GRMZM2G084694		
GRMZM2G311182_T02	GRMZM2G311182		
GRMZM2G318780_T02	GRMZM2G318780		
GRMZM2G152908_T01	GRMZM2G152908		Te LED FLL
GRMZM2G106213_T01	GRMZM2G106213	Tm Te emergence	
GRMZM2G090905_T01	GRMZM2G090905		
GRMZM2G150796_T01	GRMZM2G150796		
GRMZM2G088753_T01	GRMZM2G088753	emergence	
GRMZM2G141399_T02	GRMZM2G141399	Tm Te	
GRMZM2G008263_T01	GRMZM2G008263	Lwi emergence	

GRMZM2G130043_T01	GRMZM2G130043	emergence	
GRMZM2G055489_T04	GRMZM2G055489	Tm emergence	
GRMZM2G055331_T07	GRMZM2G055331	Tm Te LED emergen	FW
GRMZM2G114484_T01	GRMZM2G114484		FW DW
GRMZM2G050108_T01	GRMZM2G050108		LED
GRMZM2G325575_T01	GRMZM2G325575		emergence
GRMZM2G111872_T01	GRMZM2G111872		
GRMZM2G008202_T02	GRMZM2G008202	FLL DZS	
GRMZM2G059212_T01	GRMZM2G059212	FW	
GRMZM5G804976_T01	GRMZM5G804976	FW	Tm Te
GRMZM2G028307_T01	GRMZM2G028307	LED	
GRMZM2G155242_T01	GRMZM2G155242		
GRMZM2G169320_T01	GRMZM2G169320		
GRMZM2G073912_T01	GRMZM2G073912		
GRMZM2G060952_T01	GRMZM2G060952		
GRMZM2G059314_T03	GRMZM2G059314	Tm Te LED emergence	
GRMZM2G111164_T02	GRMZM2G111164	LER	
GRMZM2G118462_T01	GRMZM2G118462		
GRMZM2G312521_T01	GRMZM2G312521		FLL Lwe LA Lwi emergenc
GRMZM2G174396_T01	GRMZM2G174396		LER
GRMZM2G001304_T01	GRMZM2G001304	FW DW	Tm Te
GRMZM2G068943_T02	GRMZM2G068943		Tm Te LED
GRMZM2G386998_T01	GRMZM2G386998	Tm emergence	
GRMZM2G147724_T01	GRMZM2G147724	LED LA	
GRMZM2G127374_T01	GRMZM2G127374	Tm emergence	
GRMZM2G014193_T01	GRMZM2G014193		
GRMZM2G078656_T01	GRMZM2G078656	FLL Lwe LA Lwi DZS	
GRMZM2G162347_T02	GRMZM2G162347		
GRMZM2G174343_T04	GRMZM2G174343	Tm Te LED FLL	
GRMZM5G806347_T01	GRMZM5G806347	Tm Te	FW DW
GRMZM2G470292_T01	GRMZM2G470292		LER
GRMZM2G037379_T02	GRMZM2G037379		FLL
GRMZM2G149272_T06	GRMZM2G149272		
GRMZM2G148400_T01	GRMZM2G148400		
GRMZM2G083222_T01	GRMZM2G083222	Lwe LA DZS	
GRMZM2G114140_T01	GRMZM2G114140		
GRMZM2G042870_T01	GRMZM2G042870		
GRMZM2G113420_T02	GRMZM2G113420	Lwi	
GRMZM2G155058_T01	GRMZM2G155058		LA Lwi
GRMZM2G104676_T01	GRMZM2G104676		FW DW
GRMZM2G064723_T01	GRMZM2G064723	emergence	
GRMZM2G068489_T01	GRMZM2G068489		
GRMZM2G034471_T01	GRMZM2G034471	LER	
GRMZM2G062151_T01	GRMZM2G062151		
AC209987.4_FGT002	AC209987.4_FG002		
GRMZM2G124972_T01	GRMZM2G124972		
GRMZM2G106408_T01	GRMZM2G106408		

GRMZM2G459563_T01	GRMZM2G459563		LER
GRMZM5G894031_T01	GRMZM5G894031		
GRMZM2G107199_T01	GRMZM2G107199		
GRMZM2G149717_T01	GRMZM2G149717		FW DW
AC149475.2_FGT007	AC149475.2_FG007		Lwi
GRMZM2G062657_T01	GRMZM2G062657		
GRMZM2G174975_T02	GRMZM2G174975		Lwe LA emergence
AC212068.4_FGT005	AC212068.4_FG005		
GRMZM2G369815_T01	GRMZM2G369815		
GRMZM2G101117_T01	GRMZM2G101117	LER	
GRMZM2G335280_T01	GRMZM2G335280		FW
GRMZM2G117030_T01	GRMZM2G117030		LER
GRMZM2G028413_T01	GRMZM2G028413		Lwe LA
GRMZM2G018105_T03	GRMZM2G018105		
GRMZM2G308707_T02	GRMZM2G308707	Te LED	
GRMZM2G126468_T01	GRMZM2G126468	Tm	FW DW
GRMZM2G178106_T01	GRMZM2G178106		LER
GRMZM2G009282_T01	GRMZM2G009282		LER
GRMZM2G164676_T02	GRMZM2G164676		
GRMZM2G172369_T01	GRMZM2G172369		
GRMZM2G376416_T03	GRMZM2G376416	LED FLL LA	
GRMZM2G016890_T01	GRMZM2G016890		LER FLL Lwe LA DZS
GRMZM2G038281_T01	GRMZM2G038281	Lwe	
GRMZM2G127123_T02	GRMZM2G127123		FLL
GRMZM2G116273_T01	GRMZM2G116273	emergence	
GRMZM2G428168_T01	GRMZM2G428168		DW
GRMZM2G363540_T01	GRMZM2G363540		FLL Lwe LA DZS
GRMZM2G115198_T01	GRMZM2G115198		LER
GRMZM2G424857_T01	GRMZM2G424857	LA Lwi	
GRMZM2G164036_T01	GRMZM2G164036		LER FW DW
GRMZM2G050412_T02	GRMZM2G050412		
GRMZM2G005583_T01	GRMZM2G005583		Lwe LA Lwi DZS
GRMZM2G443903_T01	GRMZM2G443903		
GRMZM2G023023_T01	GRMZM2G023023	Te	FW
GRMZM2G053466_T01	GRMZM2G053466		LED FLL Lwe LA Lwi DZS
GRMZM2G178517_T01	GRMZM2G178517		Lwe LA Lwi DZS
GRMZM2G159393_T01	GRMZM2G159393		
GRMZM2G141383_T01	GRMZM2G141383		
GRMZM2G438386_T01	GRMZM2G438386		
GRMZM2G520535_T01	GRMZM2G520535	LER	
GRMZM2G089121_T03	GRMZM2G089121		
GRMZM2G328094_T01	GRMZM2G328094		Lwe
GRMZM2G099642_T01	GRMZM2G099642		Lwe LA
GRMZM2G049693_T01	GRMZM2G049693		
GRMZM2G085967_T02	GRMZM2G085967		
GRMZM2G023840_T01	GRMZM2G023840		Lwe LA Lwi
GRMZM2G320269_T01	GRMZM2G320269		LER FW

GRMZM2G013206_T01	GRMZM2G013206		Lwe LA
GRMZM2G429000_T01	GRMZM2G429000		
GRMZM2G087041_T01	GRMZM2G087041		FW DW
GRMZM2G095206_T01	GRMZM2G095206		FW
GRMZM2G009940_T02	GRMZM2G009940		
GRMZM2G065171_T01	GRMZM2G065171		
GRMZM2G005107_T02	GRMZM2G005107	Tm Te LED	
GRMZM2G135195_T01	GRMZM2G135195		
AC177908.3_FGT002	AC177908.3_FG002		
GRMZM2G023020_T01	GRMZM2G023020	Lwi emergence	
GRMZM2G018869_T01	GRMZM2G018869	FW	
GRMZM2G060061_T03	GRMZM2G060061	FW	Te LED
GRMZM2G143102_T01	GRMZM2G143102		
GRMZM2G038898_T03	GRMZM2G038898	LER	
GRMZM2G022398_T02	GRMZM2G022398		LED FLL LA
GRMZM2G009690_T01	GRMZM2G009690		emergence
GRMZM5G889321_T01	GRMZM5G889321		LED
GRMZM2G005103_T01	GRMZM2G005103	Lwe DZS	
GRMZM2G002199_T01	GRMZM2G002199	LER FLL	
GRMZM2G362952_T01	GRMZM2G362952	DW	
GRMZM2G113794_T01	GRMZM2G113794		
GRMZM2G127416_T01	GRMZM2G127416		LED
GRMZM2G022266_T01	GRMZM2G022266		
GRMZM2G180283_T02	GRMZM2G180283		LER
GRMZM2G373124_T01	GRMZM2G373124		Lwe
GRMZM2G310321_T01	GRMZM2G310321		
GRMZM2G152925_T01	GRMZM2G152925		
GRMZM2G134738_T01	GRMZM2G134738		
GRMZM2G064804_T02	GRMZM2G064804		
GRMZM2G401139_T01	GRMZM2G401139		
AC214350.3_FGT007	AC214350.3_FG007		
GRMZM2G032222_T01	GRMZM2G032222		
GRMZM2G173040_T01	GRMZM2G173040	DZS	
GRMZM2G042078_T01	GRMZM2G042078		
AC194341.4_FGT002	AC194341.4_FG002		
GRMZM2G107114_T01	GRMZM2G107114		
GRMZM2G173277_T01	GRMZM2G173277	LER	
GRMZM2G330213_T01	GRMZM2G330213		
GRMZM2G067992_T01	GRMZM2G067992		FW
GRMZM2G097040_T01	GRMZM2G097040	FW DW	Tm Te
GRMZM2G069061_T01	GRMZM2G069061	DW	
GRMZM2G051613_T01	GRMZM2G051613		
GRMZM2G322328_T01	GRMZM2G322328	Tm Te LED emergen	FW
GRMZM2G036464_T01	GRMZM2G036464		DZS
GRMZM2G015289_T01	GRMZM2G015289	LED FLL	
GRMZM5G878558_T01	GRMZM5G878558		
GRMZM2G129453_T01	GRMZM2G129453		Tm Te LED

GRMZM2G071206_T01	GRMZM2G071206		
GRMZM5G892758_T01	GRMZM5G892758		
GRMZM2G318635_T01	GRMZM2G318635		
GRMZM2G061283_T03	GRMZM2G061283		
GRMZM2G060742_T01	GRMZM2G060742	Te LED	
GRMZM2G099052_T02	GRMZM2G099052		
GRMZM2G179351_T01	GRMZM2G179351		
GRMZM2G057451_T02	GRMZM2G057451		FLL LA
GRMZM2G100955_T01	GRMZM2G100955	FW DW	
GRMZM2G386643_T02	GRMZM2G386643	Lwi	
GRMZM5G800598_T01	GRMZM5G800598		
GRMZM2G161302_T01	GRMZM2G161302		
GRMZM2G151651_T02	GRMZM2G151651		
GRMZM2G472171_T01	GRMZM2G472171		
GRMZM2G158839_T01	GRMZM2G158839		emergence
GRMZM2G399320_T01	GRMZM2G399320		LER
GRMZM2G008607_T01	GRMZM2G008607		
AC206223.3_FGT001	AC206223.3_FG001	Lwi	
GRMZM5G850640_T01	GRMZM5G850640		LER
GRMZM2G154316_T01	GRMZM2G154316	LED	
GRMZM2G048117_T01	GRMZM2G048117		
GRMZM2G102944_T02	GRMZM2G102944	LER	
GRMZM2G039505_T01	GRMZM2G039505		
GRMZM2G164018_T02	GRMZM2G164018		LER DZS
GRMZM2G457534_T01	GRMZM2G457534	emergence	FW DW
GRMZM2G094698_T01	GRMZM2G094698	Lwe LA	
GRMZM2G165631_T01	GRMZM2G165631	Lwi	
GRMZM2G441565_T01	GRMZM2G441565		
GRMZM2G121074_T01	GRMZM2G121074		
GRMZM2G060943_T01	GRMZM2G060943		
GRMZM2G378073_T01	GRMZM2G378073	LA Lwi	
GRMZM2G114513_T02	GRMZM2G114513	Tm Te DZS emergence	
GRMZM2G023220_T02	GRMZM2G023220		FLL Lwe LA DZS
GRMZM5G863385_T01	GRMZM5G863385	Tm Te LED emergence	
GRMZM2G366150_T03	GRMZM2G366150		
GRMZM5G833477_T02	GRMZM5G833477		
GRMZM2G141499_T01	GRMZM2G141499		
GRMZM2G430710_T01	GRMZM2G430710	FW DW	
GRMZM2G146143_T01	GRMZM2G146143		
GRMZM2G092284_T01	GRMZM2G092284		
GRMZM2G037150_T01	GRMZM2G037150		
GRMZM2G028905_T01	GRMZM2G028905	Lwe	
GRMZM2G172726_T01	GRMZM2G172726	Tm Te emergence	
GRMZM2G068028_T01	GRMZM2G068028		LER
GRMZM2G119749_T04	GRMZM2G119749	Tm emergence	
GRMZM2G077279_T01	GRMZM2G077279	LER Lwe	
GRMZM5G854301_T02	GRMZM5G854301		

GRMZM2G025227_T02	GRMZM2G025227	FW DW	
GRMZM2G465444_T01	GRMZM2G465444	FW DW	Tm Te LED emergence
AC199526.5_FGT003	AC199526.5_FG003		Lwi emergence
GRMZM2G416677_T01	GRMZM2G416677		
GRMZM2G138475_T03	GRMZM2G138475	FW DW	
GRMZM2G020034_T01	GRMZM2G020034	Tm Te LED	
GRMZM2G439203_T01	GRMZM2G439203	FW DW	
GRMZM2G388911_T01	GRMZM2G388911		
GRMZM2G421791_T01	GRMZM2G421791		DZS
GRMZM2G151909_T01	GRMZM2G151909		Lwi
GRMZM2G130356_T01	GRMZM2G130356	Te LED	
GRMZM2G072210_T01	GRMZM2G072210		
GRMZM2G016184_T02	GRMZM2G016184	LED FLL Lwe LA DZS	
GRMZM2G052178_T01	GRMZM2G052178		
GRMZM2G178014_T02	GRMZM2G178014		
GRMZM2G167741_T01	GRMZM2G167741		Tm Te emergence
GRMZM5G882351_T01	GRMZM5G882351		
GRMZM2G158153_T03	GRMZM2G158153		Tm emergence
GRMZM5G895188_T01	GRMZM5G895188	Lwe	
GRMZM2G110345_T01	GRMZM2G110345	FW	
GRMZM2G084491_T01	GRMZM2G084491		
AC194970.5_FGT004	AC194970.5_FG004	LER FLL	
GRMZM2G172512_T02	GRMZM2G172512	LER FLL Lwe DZS	
GRMZM2G076524_T02	GRMZM2G076524		
GRMZM2G057402_T03	GRMZM2G057402		
GRMZM5G824137_T01	GRMZM5G824137		
GRMZM2G406101_T05	GRMZM2G406101	DW	
GRMZM2G099528_T01	GRMZM2G099528		DW
GRMZM2G152548_T01	GRMZM2G152548		
GRMZM2G074572_T01	GRMZM2G074572		FW DW
GRMZM2G466394_T01	GRMZM2G466394	LER DZS	
GRMZM2G034503_T02	GRMZM2G034503	FLL	
GRMZM2G021885_T01	GRMZM2G021885	Lwe FW DW	
GRMZM2G150791_T01	GRMZM2G150791		
GRMZM2G056867_T01	GRMZM2G056867		
GRMZM2G145666_T01	GRMZM2G145666		Lwi
GRMZM2G031850_T01	GRMZM2G031850	Lwi	
GRMZM2G021074_T01	GRMZM2G021074		
GRMZM5G817559_T01	GRMZM5G817559	LER	
GRMZM2G370915_T01	GRMZM2G370915	Lwi	
GRMZM2G011373_T01	GRMZM2G011373		Lwe LA Lwi
GRMZM2G149073_T01	GRMZM2G149073	Tm Te LED	
GRMZM2G061472_T01	GRMZM2G061472		
GRMZM2G329040_T01	GRMZM2G329040		
GRMZM2G123776_T01	GRMZM2G123776		LER
GRMZM2G123920_T01	GRMZM2G123920		
GRMZM2G116670_T01	GRMZM2G116670		FLL

GRMZM2G013176_T01	GRMZM2G013176		emergence
GRMZM2G099109_T01	GRMZM2G099109	Tm Te LED	
GRMZM2G464891_T01	GRMZM2G464891		FW
GRMZM2G426802_T01	GRMZM2G426802		
GRMZM2G077669_T01	GRMZM2G077669		LED FLL
GRMZM2G034243_T01	GRMZM2G034243		DZS
GRMZM2G007453_T04	GRMZM2G007453		
GRMZM2G051894_T01	GRMZM2G051894		DZS
GRMZM2G128737_T01	GRMZM2G128737		
GRMZM2G053079_T01	GRMZM2G053079	Tm Te LED emergence	
GRMZM2G148270_T01	GRMZM2G148270		
GRMZM2G044581_T01	GRMZM2G044581		Tm Te
AC196156.3_FGT003	AC196156.3_FG003	LER	
GRMZM2G068575_T02	GRMZM2G068575		LER
GRMZM2G395853_T01	GRMZM2G395853		DW
GRMZM2G360615_T01	GRMZM2G360615	Lwe LA	
GRMZM2G048843_T01	GRMZM2G048843		
GRMZM2G117755_T01	GRMZM2G117755	Lwi	
GRMZM2G031824_T01	GRMZM2G031824	LER	
GRMZM2G125455_T01	GRMZM2G125455		LA Lwi
GRMZM2G039254_T01	GRMZM2G039254		
GRMZM2G477743_T01	GRMZM2G477743	LER FLL Lwe LA	
GRMZM2G353885_T01	GRMZM2G353885		LER
GRMZM2G428765_T01	GRMZM2G428765		
GRMZM2G438456_T01	GRMZM2G438456	FW DW	
GRMZM2G398825_T01	GRMZM2G398825		FW DW
GRMZM2G060467_T01	GRMZM2G060467	Lwi	
GRMZM2G131024_T01	GRMZM2G131024		
GRMZM2G389645_T01	GRMZM2G389645		
GRMZM2G152877_T01	GRMZM2G152877	emergence	
GRMZM2G007288_T01	GRMZM2G007288		emergence
GRMZM5G860761_T01	GRMZM5G860761		
GRMZM2G166430_T01	GRMZM2G166430		
GRMZM2G127780_T02	GRMZM2G127780	DZS	
GRMZM2G149115_T01	GRMZM2G149115		
GRMZM2G032163_T01	GRMZM2G032163	Tm Te emergence	
GRMZM2G377553_T01	GRMZM2G377553	FLL LA	
GRMZM2G096491_T01	GRMZM2G096491		
GRMZM2G023071_T01	GRMZM2G023071		
GRMZM5G817651_T02	GRMZM5G817651		FW DW
GRMZM2G034697_T01	GRMZM2G034697		Lwi
GRMZM5G887647_T01	GRMZM5G887647		LED
GRMZM2G063369_T02	GRMZM2G063369		
GRMZM2G155086_T01	GRMZM2G155086		
GRMZM2G113205_T01	GRMZM2G113205		FLL Lwe LA
GRMZM2G074102_T01	GRMZM2G074102	DZS	
GRMZM2G134844_T01	GRMZM2G134844		Tm Te LED

GRMZM2G118433_T01	GRMZM2G118433		LER
GRMZM2G091245_T01	GRMZM2G091245		DW
GRMZM2G318849_T05	GRMZM2G318849	Lwe LA Lwi	
GRMZM2G045435_T02	GRMZM2G045435	DW	
GRMZM2G156568_T01	GRMZM2G156568		
GRMZM2G050684_T01	GRMZM2G050684	emergence	DW
GRMZM2G133652_T01	GRMZM2G133652	Lwi	
GRMZM2G075844_T02	GRMZM2G075844		
GRMZM2G065950_T02	GRMZM2G065950		
AC217840.3_FGT001	AC217840.3_FG001		
GRMZM2G084547_T02	GRMZM2G084547	DW	
GRMZM2G147500_T06	GRMZM2G147500		FLL Lwe LA
GRMZM2G108686_T01	GRMZM2G108686	LER	
GRMZM2G062024_T01	GRMZM2G062024		DW
GRMZM2G110258_T01	GRMZM2G110258		DW
GRMZM2G158097_T01	GRMZM2G158097		
GRMZM5G862488_T01	GRMZM5G862488	Tm Te LED	
GRMZM2G040945_T01	GRMZM2G040945		
GRMZM2G041842_T01	GRMZM2G041842	FW	
GRMZM2G115372_T01	GRMZM2G115372		FLL
GRMZM2G075651_T01	GRMZM2G075651		
GRMZM5G832994_T01	GRMZM5G832994		
GRMZM2G428964_T01	GRMZM2G428964		Tm emergence
GRMZM5G801031_T02	GRMZM5G801031		
GRMZM2G424595_T01	GRMZM2G424595		DW
GRMZM2G069976_T01	GRMZM2G069976		
GRMZM2G012964_T01	GRMZM2G012964		Te emergence
GRMZM2G042623_T01	GRMZM2G042623	FW DW	Tm Te LED emergence
GRMZM2G177518_T01	GRMZM2G177518		DZS
GRMZM2G006329_T01	GRMZM2G006329	FLL	
GRMZM2G306781_T01	GRMZM2G306781		LA Lwi
GRMZM2G011777_T02	GRMZM2G011777	FW DW	
GRMZM2G135782_T01	GRMZM2G135782		
GRMZM2G115504_T01	GRMZM2G115504		
GRMZM2G123503_T01	GRMZM2G123503		
GRMZM2G024109_T01	GRMZM2G024109		LA Lwi
GRMZM2G168412_T02	GRMZM2G168412		emergence
GRMZM2G014452_T01	GRMZM2G014452	FLL	
GRMZM2G003682_T01	GRMZM2G003682		LER Lwe LA
GRMZM5G832740_T01	GRMZM5G832740	Tm Te LED	
GRMZM2G102714_T02	GRMZM2G102714		
GRMZM5G804783_T02	GRMZM5G804783	Lwi	
GRMZM2G062425_T01	GRMZM2G062425		
GRMZM2G459861_T01	GRMZM2G459861		LED
GRMZM2G005281_T02	GRMZM2G005281		LER
GRMZM2G061043_T01	GRMZM2G061043	FW DW	Tm Te emergence
GRMZM2G168257_T03	GRMZM2G168257		

GRMZM2G129243_T01	GRMZM2G129243		
GRMZM2G066222_T02	GRMZM2G066222	DW	
GRMZM2G106164_T01	GRMZM2G106164		Lwe LA Lwi DZS
GRMZM2G472770_T02	GRMZM2G472770	FW	Tm Te LED
GRMZM2G044460_T01	GRMZM2G044460	FLL LA	
GRMZM2G479249_T01	GRMZM2G479249		
GRMZM2G145024_T02	GRMZM2G145024	Te LED FLL	
GRMZM2G406043_T01	GRMZM2G406043		LER FW DW
GRMZM2G457621_T01	GRMZM2G457621		Lwe Lwi
GRMZM2G087924_T02	GRMZM2G087924		
GRMZM5G831313_T02	GRMZM5G831313		FW
GRMZM2G052471_T03	GRMZM2G052471	Lwe	
GRMZM2G123807_T02	GRMZM2G123807		Te
GRMZM2G017741_T01	GRMZM2G017741		
GRMZM2G135320_T01	GRMZM2G135320		Lwi
GRMZM2G025250_T01	GRMZM2G025250		DW
GRMZM2G024145_T01	GRMZM2G024145	emergence	
GRMZM2G325804_T02	GRMZM2G325804		DZS
GRMZM2G082207_T04	GRMZM2G082207	DW	
GRMZM2G142437_T02	GRMZM2G142437	Tm	
GRMZM2G077420_T01	GRMZM2G077420	LER	
GRMZM2G007146_T01	GRMZM2G007146	Lwe LA DZS	
GRMZM2G077299_T01	GRMZM2G077299	LER Lwe	
GRMZM2G331374_T01	GRMZM2G331374	FW DW	Tm Te
GRMZM2G152768_T01	GRMZM2G152768	Lwi	
GRMZM2G001334_T03	GRMZM2G001334	Tm Te	DW
GRMZM2G071448_T01	GRMZM2G071448		LA DZS
GRMZM2G420469_T02	GRMZM2G420469		LA DZS
GRMZM2G402092_T01	GRMZM2G402092		DZS
GRMZM2G125352_T01	GRMZM2G125352		
GRMZM2G173321_T01	GRMZM2G173321	FW	
GRMZM2G035118_T01	GRMZM2G035118		
GRMZM2G148594_T01	GRMZM2G148594		
GRMZM2G148633_T01	GRMZM2G148633	LED	
GRMZM2G164400_T01	GRMZM2G164400		
GRMZM2G169671_T01	GRMZM2G169671	DZS	
GRMZM2G015295_T01	GRMZM2G015295		Tm Te LED FLL
GRMZM2G160463_T01	GRMZM2G160463		
GRMZM2G341216_T01	GRMZM2G341216		
GRMZM2G098545_T01	GRMZM2G098545	LED	
GRMZM2G059252_T01	GRMZM2G059252		FLL Lwe LA
GRMZM5G822842_T01	GRMZM5G822842	FW	
GRMZM2G015854_T01	GRMZM2G015854	LER	
GRMZM2G135256_T03	GRMZM2G135256		
GRMZM2G049185_T01	GRMZM2G049185		
GRMZM5G862959_T02	GRMZM5G862959	LA Lwi	
GRMZM2G027797_T02	GRMZM2G027797	LER	

AC197717.3_FGT002	AC197717.3_FG002		
GRMZM2G166145_T01	GRMZM2G166145		
GRMZM2G451366_T01	GRMZM2G451366		LED FLL Lwe LA DZS
GRMZM5G843474_T01	GRMZM5G843474		FW
GRMZM2G342327_T02	GRMZM2G342327	DW	
GRMZM2G133684_T02	GRMZM2G133684	FLL	
GRMZM2G107111_T01	GRMZM2G107111	Tm Te LED emergence	
GRMZM2G405804_T01	GRMZM2G405804		
GRMZM2G423831_T01	GRMZM2G423831		Lwe
GRMZM2G063679_T01	GRMZM2G063679		
GRMZM2G101460_T01	GRMZM2G101460	DZS	
GRMZM2G173030_T01	GRMZM2G173030	FW DW	Tm Te
GRMZM2G039592_T01	GRMZM2G039592		
GRMZM2G116434_T01	GRMZM2G116434	DZS	
GRMZM2G071599_T02	GRMZM2G071599		
GRMZM2G014720_T01	GRMZM2G014720		
GRMZM2G076617_T01	GRMZM2G076617		
GRMZM2G096370_T01	GRMZM2G096370		FW DW
GRMZM2G067514_T01	GRMZM2G067514	LER	
GRMZM2G130010_T01	GRMZM2G130010	DW	
GRMZM2G177026_T02	GRMZM2G177026	LED	
GRMZM2G051403_T01	GRMZM2G051403		Lwe LA Lwi DZS
AC197705.4_FGT011	AC197705.4_FG011		DW
GRMZM2G075150_T01	GRMZM2G075150		
GRMZM2G055970_T02	GRMZM2G055970		
GRMZM2G035042_T01	GRMZM2G035042		FW DW
GRMZM2G042099_T01	GRMZM2G042099	DW	
GRMZM2G164113_T01	GRMZM2G164113		
GRMZM2G056606_T01	GRMZM2G056606	LER	
GRMZM2G403797_T01	GRMZM2G403797		DZS
GRMZM2G095082_T01	GRMZM2G095082		
GRMZM2G162616_T01	GRMZM2G162616		Te LED
GRMZM2G060079_T05	GRMZM2G060079		LED
GRMZM2G339848_T01	GRMZM2G339848	FLL	
GRMZM2G358618_T01	GRMZM2G358618	Tm Te	
GRMZM2G005346_T01	GRMZM2G005346	Lwe DZS	
GRMZM2G094871_T01	GRMZM2G094871		
GRMZM2G359018_T01	GRMZM2G359018		
GRMZM2G107665_T01	GRMZM2G107665		Lwi
GRMZM2G014313_T02	GRMZM2G014313		FLL
GRMZM2G025659_T02	GRMZM2G025659		
GRMZM2G170975_T01	GRMZM2G170975	LED FLL LA DZS	
GRMZM2G314692_T04	GRMZM2G314692	emergence	
GRMZM2G579432_T02	GRMZM2G579432		
GRMZM5G820460_T04	GRMZM5G820460	emergence	
GRMZM2G571844_T01	GRMZM2G571844		Tm Te LED emergence
GRMZM2G057973_T02	GRMZM2G057973		emergence

GRMZM5G835530_T01	GRMZM5G835530	Lwi	
GRMZM2G462803_T01	GRMZM2G462803		
GRMZM2G095219_T01	GRMZM2G095219		
GRMZM2G081642_T03	GRMZM2G081642		
GRMZM2G473310_T01	GRMZM2G473310		LER
GRMZM2G021439_T01	GRMZM2G021439		
GRMZM2G128078_T01	GRMZM2G128078		
GRMZM2G456023_T02	GRMZM2G456023		LER FLL DZS
GRMZM2G068328_T01	GRMZM2G068328	LER FLL LA	
GRMZM5G803610_T04	GRMZM5G803610		FW
GRMZM2G064547_T01	GRMZM2G064547		Lwi
GRMZM2G107609_T01	GRMZM2G107609	Tm Te LED FLL LA emergence	
GRMZM2G132403_T01	GRMZM2G132403		
GRMZM2G052893_T01	GRMZM2G052893		DW
GRMZM2G079109_T01	GRMZM2G079109	LED	
GRMZM2G046900_T04	GRMZM2G046900	LER	
GRMZM2G098239_T03	GRMZM2G098239		Lwe
GRMZM2G399952_T01	GRMZM2G399952		FW DW
GRMZM2G123843_T02	GRMZM2G123843		
GRMZM2G313460_T02	GRMZM2G313460		
GRMZM2G161087_T02	GRMZM2G161087	Tm	
GRMZM2G150648_T01	GRMZM2G150648		Tm Te emergence
GRMZM2G026311_T03	GRMZM2G026311		
GRMZM2G023073_T01	GRMZM2G023073		Tm Te emergence
GRMZM2G110381_T01	GRMZM2G110381	DZS	
GRMZM5G873015_T01	GRMZM5G873015		Tm Te LED emergence
GRMZM2G131623_T02	GRMZM2G131623	LER FLL Lwe	
GRMZM2G117388_T03	GRMZM2G117388	Te emergence	FW DW
GRMZM2G169548_T01	GRMZM2G169548		FW
GRMZM2G131708_T01	GRMZM2G131708		DZS
GRMZM2G118104_T01	GRMZM2G118104	LA Lwi	
GRMZM2G104179_T01	GRMZM2G104179		
GRMZM2G075851_T01	GRMZM2G075851		
GRMZM2G167243_T01	GRMZM2G167243		
GRMZM5G891783_T01	GRMZM5G891783		FW DW
GRMZM2G111521_T02	GRMZM2G111521		
GRMZM2G020976_T01	GRMZM2G020976		
GRMZM2G097995_T02	GRMZM2G097995	FLL Lwe LA	
AC212684.3_FGT012	AC212684.3_FG012	FW	
GRMZM2G034985_T03	GRMZM2G034985		
GRMZM2G091756_T01	GRMZM2G091756		DW
GRMZM2G412150_T01	GRMZM2G412150		LER
GRMZM2G063192_T01	GRMZM2G063192	DW	emergence
GRMZM2G063503_T01	GRMZM2G063503		
GRMZM2G117189_T01	GRMZM2G117189		
GRMZM2G080355_T01	GRMZM2G080355		DZS
GRMZM2G115621_T01	GRMZM2G115621		

GRMZM2G163242_T01	GRMZM2G163242		
GRMZM2G123709_T01	GRMZM2G123709	FLL Lwe LA Lwi DZS	
GRMZM2G362306_T01	GRMZM2G362306	FW DW	Tm emergence
GRMZM2G133895_T01	GRMZM2G133895		
AC233979.1_FGT010	AC233979.1_FG010		
GRMZM2G165290_T01	GRMZM2G165290		Tm Te
GRMZM2G022061_T02	GRMZM2G022061		
GRMZM2G042208_T02	GRMZM2G042208	LER	
GRMZM2G011520_T01	GRMZM2G011520		
GRMZM2G145958_T02	GRMZM2G145958		
GRMZM5G835772_T02	GRMZM5G835772	LER	
GRMZM5G816791_T01	GRMZM5G816791	FW DW	Tm
GRMZM2G023833_T01	GRMZM2G023833		
GRMZM2G070442_T01	GRMZM2G070442	FLL DZS	
GRMZM2G020409_T01	GRMZM2G020409		LA Lwi
GRMZM2G024119_T07	GRMZM2G024119	LER	
GRMZM2G045135_T02	GRMZM2G045135		
GRMZM2G019901_T01	GRMZM2G019901		DZS
GRMZM2G154532_T05	GRMZM2G154532	Tm Te Lwi emergence	
GRMZM2G416388_T04	GRMZM2G416388	Te LED	
GRMZM2G118743_T01	GRMZM2G118743	Tm Te LED	
GRMZM2G181018_T03	GRMZM2G181018	LA DZS	
GRMZM2G119339_T01	GRMZM2G119339	Lwe	
GRMZM2G305851_T01	GRMZM2G305851		Lwi DZS emergence
GRMZM2G140095_T01	GRMZM2G140095	Lwi	
GRMZM2G131820_T01	GRMZM2G131820		emergence
GRMZM2G178616_T01	GRMZM2G178616		
GRMZM2G120271_T01	GRMZM2G120271		
GRMZM2G115817_T01	GRMZM2G115817		
GRMZM2G053767_T03	GRMZM2G053767		DW
GRMZM2G178005_T01	GRMZM2G178005		
GRMZM2G067277_T01	GRMZM2G067277	LA Lwi DZS	
GRMZM2G465257_T01	GRMZM2G465257	Lwe LA	
GRMZM2G504906_T01	GRMZM2G504906	LER FW DW	
GRMZM2G407347_T02	GRMZM2G407347		
GRMZM2G163307_T01	GRMZM2G163307	FLL LA DZS	
GRMZM2G176910_T01	GRMZM2G176910	LED	
GRMZM2G142456_T01	GRMZM2G142456		LER
GRMZM2G133444_T01	GRMZM2G133444	Tm Te FLL Lwe LA	
GRMZM2G032314_T02	GRMZM2G032314		
GRMZM2G310944_T01	GRMZM2G310944	FW	Tm Te LED emergence
GRMZM5G817551_T02	GRMZM5G817551		
GRMZM2G093291_T01	GRMZM2G093291		Lwi
GRMZM2G180246_T02	GRMZM2G180246		
GRMZM2G148167_T01	GRMZM2G148167		DZS
GRMZM2G044354_T01	GRMZM2G044354	LA Lwi DZS	
GRMZM2G005955_T02	GRMZM2G005955		LER

GRMZM5G872373_T03	GRMZM5G872373		
GRMZM2G026558_T01	GRMZM2G026558		
GRMZM2G098712_T01	GRMZM2G098712	FW	
GRMZM2G378040_T01	GRMZM2G378040	Tm Te LED	
GRMZM2G015869_T01	GRMZM2G015869	Lwi	
GRMZM2G356034_T01	GRMZM2G356034	FLL Lwe LA	
GRMZM2G156422_T01	GRMZM2G156422		Tm Te LED
GRMZM2G083950_T01	GRMZM2G083950		
GRMZM2G075257_T01	GRMZM2G075257	LER DZS	
GRMZM2G330945_T01	GRMZM2G330945		Lwi emergence
GRMZM2G021107_T03	GRMZM2G021107		
GRMZM2G021549_T01	GRMZM2G021549	LER Lwe FW DW	
GRMZM2G017047_T02	GRMZM2G017047		
GRMZM2G351417_T01	GRMZM2G351417	Tm Te emergence	
GRMZM2G368678_T01	GRMZM2G368678		LER
GRMZM2G085469_T01	GRMZM2G085469	FLL LA	
GRMZM2G180612_T02	GRMZM2G180612		
GRMZM2G062848_T03	GRMZM2G062848	emergence	
GRMZM2G058970_T01	GRMZM2G058970		LER
GRMZM2G064501_T01	GRMZM2G064501		
GRMZM2G030858_T01	GRMZM2G030858	LER FW DW	
GRMZM2G130432_T02	GRMZM2G130432		
GRMZM2G167966_T01	GRMZM2G167966		
GRMZM2G043903_T01	GRMZM2G043903		
GRMZM2G394962_T01	GRMZM2G394962		
GRMZM2G139160_T02	GRMZM2G139160	LER	
GRMZM2G393935_T01	GRMZM2G393935	LER	
AC225185.3_FGT004	AC225185.3_FG004		
GRMZM2G028730_T02	GRMZM2G028730		
GRMZM2G096909_T01	GRMZM2G096909		
GRMZM2G018417_T02	GRMZM2G018417	LER FLL	
GRMZM2G352132_T01	GRMZM2G352132		LED FLL Lwe LA DZS
GRMZM2G128865_T01	GRMZM2G128865		LER FW DW
GRMZM2G010196_T01	GRMZM2G010196		DZS
GRMZM2G076630_T01	GRMZM2G076630	Tm Te	DW
GRMZM2G071491_T02	GRMZM2G071491	Lwi	
GRMZM2G070659_T04	GRMZM2G070659		
GRMZM2G134439_T01	GRMZM2G134439		
GRMZM2G057690_T01	GRMZM2G057690		Tm
GRMZM2G486244_T01	GRMZM2G486244	LER	
GRMZM2G074906_T03	GRMZM2G074906		
GRMZM2G700014_T02	GRMZM2G700014		
GRMZM2G160013_T02	GRMZM2G160013		
GRMZM2G022632_T01	GRMZM2G022632	DZS	
GRMZM2G489651_T01	GRMZM2G489651		
GRMZM2G048202_T01	GRMZM2G048202		
GRMZM2G089222_T01	GRMZM2G089222		LER FW DW

GRMZM2G473162_T01	GRMZM2G473162	
GRMZM2G019225_T01	GRMZM2G019225	Lwe LA Lwi DZS
GRMZM2G157580_T02	GRMZM2G157580	Tm Te LED FLL LA DZS
GRMZM2G156415_T06	GRMZM2G156415	LER FLL Lwe LA DZS
GRMZM5G877929_T01	GRMZM5G877929	DZS
GRMZM5G819438_T01	GRMZM5G819438	DZS
GRMZM5G893764_T06	GRMZM5G893764	FLL
GRMZM2G165209_T01	GRMZM2G165209	FLL
GRMZM2G126484_T02	GRMZM2G126484	Lwe LA Lwi DZS
GRMZM2G406977_T01	GRMZM2G406977	Te LED FLL LA
GRMZM5G806818_T01	GRMZM5G806818	LED
GRMZM2G453424_T02	GRMZM2G453424	LED FLL Lwe LA DZS
GRMZM2G025074_T01	GRMZM2G025074	Tm Te LED DZS emergence
AC148167.6_FGT001	AC148167.6_FG001	LED FLL Lwe LA
GRMZM2G420571_T01	GRMZM2G420571	FLL Lwe LA DZS
GRMZM2G319760_T01	GRMZM2G319760	Tm Te
GRMZM2G121047_T01	GRMZM2G121047	FW DW
GRMZM2G020450_T01	GRMZM2G020450	LED
AC211401.4_FGT003	AC211401.4_FG003	Te LED
GRMZM2G128491_T01	GRMZM2G128491	emergence
GRMZM2G111912_T05	GRMZM2G111912	
GRMZM2G113532_T01	GRMZM2G113532	DZS
GRMZM2G457347_T01	GRMZM2G457347	Lwi
GRMZM2G086946_T01	GRMZM2G086946	Lwi DZS
GRMZM2G062476_T01	GRMZM2G062476	Tm Te LED LA emergence
GRMZM2G139858_T02	GRMZM2G139858	Tm Te emergence
GRMZM2G037193_T01	GRMZM2G037193	LED FLL
GRMZM5G843174_T02	GRMZM5G843174	Te LED
GRMZM2G094988_T02	GRMZM2G094988	LER
GRMZM5G892709_T01	GRMZM5G892709	LED FLL LA
GRMZM2G046861_T01	GRMZM2G046861	
GRMZM5G803874_T04	GRMZM5G803874	
AC192451.3_FGT001	AC192451.3_FG001	
GRMZM2G075023_T02	GRMZM2G075023	Tm Te
GRMZM2G057305_T02	GRMZM2G057305	FLL
GRMZM2G004057_T02	GRMZM2G004057	
GRMZM2G061492_T01	GRMZM2G061492	Lwe LA Lwi
GRMZM2G024641_T01	GRMZM2G024641	
GRMZM2G428905_T01	GRMZM2G428905	
GRMZM2G118022_T01	GRMZM2G118022	
GRMZM2G087651_T01	GRMZM2G087651	LER
GRMZM2G008242_T01	GRMZM2G008242	LED LA
GRMZM2G061554_T01	GRMZM2G061554	
GRMZM2G000713_T01	GRMZM2G000713	DZS emergence
GRMZM5G864178_T01	GRMZM5G864178	LER
GRMZM5G858880_T01	GRMZM5G858880	Te LED
GRMZM5G898141_T01	GRMZM5G898141	

GRMZM2G043183_T03	GRMZM2G043183	Tm Te	
GRMZM2G080349_T01	GRMZM2G080349	DZS emergence	
GRMZM5G806441_T01	GRMZM5G806441	DW	
GRMZM2G058484_T01	GRMZM2G058484	LED FLL	
GRMZM2G037094_T01	GRMZM2G037094	DW	
GRMZM2G341269_T02	GRMZM2G341269	Tm Te LED	LER FW DW
GRMZM2G022820_T01	GRMZM2G022820	FW DW	
GRMZM2G018955_T01	GRMZM2G018955	LED	
GRMZM2G027272_T01	GRMZM2G027272	LED	
GRMZM5G819302_T01	GRMZM5G819302	LER FLL	
GRMZM2G122863_T01	GRMZM2G122863	LED Lwe LA DZS	
GRMZM2G055538_T02	GRMZM2G055538		
GRMZM2G463318_T01	GRMZM2G463318	DZS	
GRMZM2G042006_T03	GRMZM2G042006	LER	
GRMZM2G124288_T02	GRMZM2G124288	Lwi	
GRMZM5G856681_T01	GRMZM5G856681	Tm Te	
GRMZM2G127656_T03	GRMZM2G127656	DW	
GRMZM2G091583_T02	GRMZM2G091583	LER FLL	
GRMZM5G823855_T02	GRMZM5G823855	LER	
GRMZM2G012200_T01	GRMZM2G012200		
GRMZM2G041235_T01	GRMZM2G041235		
GRMZM2G065800_T01	GRMZM2G065800		
GRMZM2G323353_T01	GRMZM2G323353	Lwe LA Lwi FW	
AC213353.3_FGT004	AC213353.3_FG004	Lwi	
GRMZM2G072898_T03	GRMZM2G072898	LER FW DW	
GRMZM2G403218_T02	GRMZM2G403218	Lwi	
GRMZM2G073942_T03	GRMZM2G073942	LER FLL	
GRMZM2G173858_T01	GRMZM2G173858	LER	
GRMZM2G008490_T01	GRMZM2G008490		
GRMZM2G135019_T01	GRMZM2G135019	LA DZS emergence	
GRMZM5G820727_T07	GRMZM5G820727	FW DW	
GRMZM2G011559_T02	GRMZM2G011559		
GRMZM2G003861_T01	GRMZM2G003861	Tm Te LED	
GRMZM2G037496_T01	GRMZM2G037496		
GRMZM2G161377_T01	GRMZM2G161377	Lwe	
GRMZM2G356404_T01	GRMZM2G356404	FLL	
GRMZM2G140582_T01	GRMZM2G140582	emergence	
GRMZM2G148998_T01	GRMZM2G148998	FLL	
GRMZM2G048274_T01	GRMZM2G048274		
GRMZM2G430745_T01	GRMZM2G430745	FW	
GRMZM2G042323_T01	GRMZM2G042323		
GRMZM2G180218_T01	GRMZM2G180218	LER DW	
GRMZM2G090152_T01	GRMZM2G090152		
GRMZM2G117410_T02	GRMZM2G117410	DW	
GRMZM2G138425_T01	GRMZM2G138425		
GRMZM2G038532_T01	GRMZM2G038532	emergence	
GRMZM2G169220_T01	GRMZM2G169220		

GRMZM5G832166_T02	GRMZM5G832166	LER FLL
GRMZM2G440831_T01	GRMZM2G440831	
GRMZM2G038882_T01	GRMZM2G038882	FW
GRMZM2G105801_T01	GRMZM2G105801	
GRMZM2G132077_T01	GRMZM2G132077	
GRMZM2G039074_T01	GRMZM2G039074	
GRMZM2G305409_T01	GRMZM2G305409	FW DW
GRMZM2G080725_T03	GRMZM2G080725	
GRMZM2G111923_T01	GRMZM2G111923	Tm Te
GRMZM2G003754_T01	GRMZM2G003754	
GRMZM2G178537_T01	GRMZM2G178537	
GRMZM5G894436_T01	GRMZM5G894436	LER
GRMZM2G091168_T02	GRMZM2G091168	FLL Lwe LA Lwi
GRMZM2G166759_T01	GRMZM2G166759	
GRMZM2G138585_T01	GRMZM2G138585	
GRMZM2G134340_T01	GRMZM2G134340	LER
GRMZM2G168393_T01	GRMZM2G168393	LED
GRMZM2G448692_T01	GRMZM2G448692	
GRMZM2G119252_T02	GRMZM2G119252	FLL
GRMZM2G141941_T01	GRMZM2G141941	FLL Lwe DZS
GRMZM2G040965_T01	GRMZM2G040965	FLL
GRMZM2G065012_T01	GRMZM2G065012	
GRMZM2G098056_T01	GRMZM2G098056	
GRMZM2G139175_T01	GRMZM2G139175	LER
GRMZM2G039826_T01	GRMZM2G039826	FW
GRMZM2G134430_T01	GRMZM2G134430	
GRMZM2G332225_T01	GRMZM2G332225	FLL LA
GRMZM2G014187_T02	GRMZM2G014187	
GRMZM2G105579_T01	GRMZM2G105579	
GRMZM2G329885_T03	GRMZM2G329885	DW
GRMZM5G892094_T01	GRMZM5G892094	LER
GRMZM2G154442_T02	GRMZM2G154442	
GRMZM2G066575_T01	GRMZM2G066575	
GRMZM2G100475_T01	GRMZM2G100475	LER
AC225176.2_FGT003	AC225176.2_FG003	LED
GRMZM2G102069_T01	GRMZM2G102069	
GRMZM2G462537_T03	GRMZM2G462537	
GRMZM2G352248_T02	GRMZM2G352248	
GRMZM2G151997_T01	GRMZM2G151997	
GRMZM5G828362_T01	GRMZM5G828362	FLL
GRMZM2G127548_T01	GRMZM2G127548	LED FLL Lwe LA
GRMZM5G890163_T01	GRMZM5G890163	LER
GRMZM2G393436_T01	GRMZM2G393436	Lwi
GRMZM2G040493_T01	GRMZM2G040493	emergence
GRMZM2G462883_T01	GRMZM2G462883	DZS
GRMZM2G093535_T01	GRMZM2G093535	FW
GRMZM2G117776_T01	GRMZM2G117776	FW

GRMZM2G053627_T01	GRMZM2G053627		
GRMZM2G175474_T02	GRMZM2G175474		
GRMZM2G009014_T01	GRMZM2G009014	LER	
GRMZM2G303530_T01	GRMZM2G303530		
GRMZM2G149105_T03	GRMZM2G149105		
AC199571.3_FGT003	AC199571.3_FG003		LER
GRMZM5G874736_T02	GRMZM5G874736		LER
GRMZM2G027183_T02	GRMZM2G027183	Lwi	
GRMZM2G005278_T01	GRMZM2G005278	FLL	
GRMZM2G178319_T01	GRMZM2G178319		
GRMZM2G377369_T01	GRMZM2G377369		
GRMZM2G009901_T01	GRMZM2G009901		
GRMZM2G138012_T01	GRMZM2G138012		LER
GRMZM2G020940_T01	GRMZM2G020940		
GRMZM2G161019_T01	GRMZM2G161019		
GRMZM2G372930_T01	GRMZM2G372930		LER
AC211327.4_FGT005	AC211327.4_FG005		
GRMZM2G043493_T04	GRMZM2G043493		
GRMZM2G001660_T01	GRMZM2G001660		
GRMZM2G367234_T02	GRMZM2G367234	FW DW	Te
GRMZM2G320799_T01	GRMZM2G320799		
GRMZM2G375015_T01	GRMZM2G375015		
GRMZM2G017536_T01	GRMZM2G017536	Lwi	
GRMZM2G147221_T02	GRMZM2G147221		
GRMZM2G115329_T01	GRMZM2G115329		
GRMZM2G093035_T01	GRMZM2G093035		
GRMZM2G064050_T01	GRMZM2G064050	FLL	
GRMZM2G061728_T01	GRMZM2G061728	Lwe	
GRMZM2G099136_T01	GRMZM2G099136		
GRMZM2G417402_T01	GRMZM2G417402		
GRMZM2G081363_T01	GRMZM2G081363		Tm emergence
GRMZM2G054805_T04	GRMZM2G054805		
GRMZM2G063657_T03	GRMZM2G063657		
GRMZM2G064960_T01	GRMZM2G064960		
GRMZM2G169372_T01	GRMZM2G169372		FLL LA
GRMZM2G442195_T01	GRMZM2G442195		FLL
GRMZM2G125320_T01	GRMZM2G125320		
GRMZM2G048013_T02	GRMZM2G048013	FW DW	Tm Te
GRMZM2G114893_T01	GRMZM2G114893		
GRMZM2G328612_T01	GRMZM2G328612		
GRMZM2G052268_T01	GRMZM2G052268		
GRMZM2G305864_T01	GRMZM2G305864		
GRMZM2G377694_T01	GRMZM2G377694	FLL	
GRMZM5G869788_T01	GRMZM5G869788		
GRMZM2G026802_T02	GRMZM2G026802	DZS	
GRMZM2G124530_T01	GRMZM2G124530		
GRMZM2G173137_T01	GRMZM2G173137		LER FW

GRMZM2G058528_T02	GRMZM2G058528	DZS
GRMZM2G461186_T01	GRMZM2G461186	emergence
GRMZM2G377663_T01	GRMZM2G377663	
GRMZM2G155532_T01	GRMZM2G155532	LER FLL Lwe
GRMZM2G396674_T01	GRMZM2G396674	
GRMZM5G812923_T02	GRMZM5G812923	
GRMZM2G015818_T01	GRMZM2G015818	Lwi
GRMZM2G098721_T01	GRMZM2G098721	
GRMZM2G011218_T01	GRMZM2G011218	
GRMZM2G132653_T02	GRMZM2G132653	Tm Te
GRMZM2G701082_T06	GRMZM2G701082	Lwi
GRMZM2G139296_T02	GRMZM2G139296	
GRMZM2G114572_T01	GRMZM2G114572	
GRMZM2G035779_T01	GRMZM2G035779	
GRMZM2G003090_T03	GRMZM2G003090	
GRMZM2G447218_T01	GRMZM2G447218	
GRMZM2G331652_T01	GRMZM2G331652	
GRMZM2G430871_T01	GRMZM2G430871	
GRMZM2G171452_T01	GRMZM2G171452	
GRMZM2G042664_T02	GRMZM2G042664	Lwe LA Lwi DZS
GRMZM5G857936_T01	GRMZM5G857936	
AC196059.3_FGT003	AC196059.3_FG003	Lwe LA Lwi
GRMZM2G331766_T01	GRMZM2G331766	DZS
GRMZM2G342105_T02	GRMZM2G342105	
AC210013.4_FGT016	AC210013.4_FG016	
GRMZM2G103864_T01	GRMZM2G103864	
GRMZM2G345055_T01	GRMZM2G345055	
GRMZM2G153488_T03	GRMZM2G153488	Tm Te LED
GRMZM2G097884_T01	GRMZM2G097884	Lwi
GRMZM2G420432_T01	GRMZM2G420432	
GRMZM5G824534_T01	GRMZM5G824534	DZS
GRMZM2G017229_T01	GRMZM2G017229	
GRMZM5G884972_T02	GRMZM5G884972	
GRMZM2G011213_T01	GRMZM2G011213	
GRMZM2G121683_T01	GRMZM2G121683	FLL
GRMZM2G165755_T01	GRMZM2G165755	
GRMZM2G082544_T01	GRMZM2G082544	Lwi
GRMZM2G083886_T01	GRMZM2G083886	
GRMZM2G110988_T01	GRMZM2G110988	Lwi
GRMZM2G068071_T01	GRMZM2G068071	DW
GRMZM2G009544_T01	GRMZM2G009544	Lwi
GRMZM2G410757_T01	GRMZM2G410757	
GRMZM2G322129_T01	GRMZM2G322129	LED
GRMZM2G028007_T01	GRMZM2G028007	
GRMZM2G325633_T01	GRMZM2G325633	DW
GRMZM2G144742_T07	GRMZM2G144742	Lwe Lwi
GRMZM2G079436_T01	GRMZM2G079436	FLL LA

GRMZM2G162369_T02	GRMZM2G162369		LA Lwi DZS
GRMZM2G046402_T01	GRMZM2G046402	FW DW	Tm Te
GRMZM2G180150_T01	GRMZM2G180150		LER
GRMZM5G837022_T01	GRMZM5G837022		emergence
GRMZM2G333678_T01	GRMZM2G333678		
GRMZM2G303091_T01	GRMZM2G303091		
GRMZM2G055657_T01	GRMZM2G055657		Te LED emergence
GRMZM2G009091_T02	GRMZM2G009091		Tm Lwi emergence
GRMZM2G149808_T01	GRMZM2G149808		LER
GRMZM2G017249_T01	GRMZM2G017249		
GRMZM2G010439_T01	GRMZM2G010439		FLL Lwe LA
GRMZM2G421463_T01	GRMZM2G421463		FLL Lwe LA
AC217962.3_FGT005	AC217962.3_FG005		LER
GRMZM2G173416_T03	GRMZM2G173416		FW
GRMZM2G144146_T01	GRMZM2G144146		
GRMZM2G130239_T01	GRMZM2G130239		
GRMZM2G144726_T01	GRMZM2G144726		FW
GRMZM2G302664_T01	GRMZM2G302664		FLL Lwe LA Lwi
GRMZM2G090792_T02	GRMZM2G090792		Lwe
GRMZM2G142620_T01	GRMZM2G142620		LER
GRMZM2G055000_T01	GRMZM2G055000		DZS
AC208579.3_FGT001	AC208579.3_FG001		DZS
GRMZM2G053588_T01	GRMZM2G053588		LER
GRMZM2G144645_T01	GRMZM2G144645		emergence
GRMZM2G157007_T01	GRMZM2G157007		Lwi DZS
GRMZM2G155002_T01	GRMZM2G155002		Lwi
AC177850.2_FGT005	AC177850.2_FG005		
GRMZM2G069455_T01	GRMZM2G069455	FW DW	Tm Te
GRMZM2G005419_T01	GRMZM2G005419		FLL Lwe LA DZS
GRMZM2G366142_T01	GRMZM2G366142		FLL Lwe LA DZS
GRMZM2G464782_T03	GRMZM2G464782		Lwi
GRMZM2G312165_T01	GRMZM2G312165		LER
GRMZM2G055404_T01	GRMZM2G055404		Lwi DZS
GRMZM5G815851_T02	GRMZM5G815851		Lwi
GRMZM2G050270_T01	GRMZM2G050270		LED
GRMZM2G014441_T01	GRMZM2G014441		LA
GRMZM2G317487_T01	GRMZM2G317487		LER
GRMZM2G032110_T03	GRMZM2G032110		Tm Te LED emergence
GRMZM2G161514_T01	GRMZM2G161514		FW DW
GRMZM5G880306_T01	GRMZM5G880306		emergence
GRMZM2G053600_T01	GRMZM2G053600		Lwi
GRMZM2G084445_T01	GRMZM2G084445		LA DZS
GRMZM2G162154_T01	GRMZM2G162154		LER FW DW
GRMZM2G589470_T01	GRMZM2G589470		Tm Te
AC233952.1_FGT006	AC233952.1_FG006		FW DW
GRMZM2G125853_T04	GRMZM2G125853		Lwi
GRMZM2G105542_T01	GRMZM2G105542		

GRMZM2G459104_T01	GRMZM2G459104		LER FW DW
GRMZM2G447406_T01	GRMZM2G447406	DW	Tm Te emergence
GRMZM5G835704_T01	GRMZM5G835704		Lwi
GRMZM2G046092_T02	GRMZM2G046092		LER
GRMZM2G038152_T03	GRMZM2G038152		Lwe LA
GRMZM2G114778_T01	GRMZM2G114778		Lwi
GRMZM2G073180_T01	GRMZM2G073180		emergence
GRMZM2G306741_T01	GRMZM2G306741		
GRMZM2G462080_T01	GRMZM2G462080		DW
GRMZM2G108410_T01	GRMZM2G108410		LER
GRMZM2G144071_T01	GRMZM2G144071	FW DW	Tm Te LED
GRMZM2G114584_T03	GRMZM2G114584		Tm Te LED emergence
GRMZM5G886913_T02	GRMZM5G886913		
GRMZM5G897944_T01	GRMZM5G897944		LED FLL LA
GRMZM2G043489_T01	GRMZM2G043489		FLL LA DZS
GRMZM2G050561_T01	GRMZM2G050561		
GRMZM5G839530_T01	GRMZM5G839530		Lwi
GRMZM5G864784_T01	GRMZM5G864784		LA Lwi
GRMZM2G157252_T02	GRMZM2G157252		Lwe LA Lwi
GRMZM2G094083_T02	GRMZM2G094083		LA Lwi
GRMZM2G030165_T04	GRMZM2G030165		
GRMZM5G868917_T01	GRMZM5G868917		Lwi
GRMZM2G419024_T01	GRMZM2G419024		LER
GRMZM2G011079_T02	GRMZM2G011079		Te LED
GRMZM2G149060_T01	GRMZM2G149060		LER
GRMZM2G422190_T01	GRMZM2G422190		Lwe LA Lwi
GRMZM2G510387_T01	GRMZM2G510387		
GRMZM5G854138_T01	GRMZM5G854138		LER FLL Lwe LA DZS
GRMZM2G051512_T01	GRMZM2G051512		FW DW
GRMZM2G125823_T01	GRMZM2G125823		FLL
GRMZM2G350319_T02	GRMZM2G350319		
GRMZM2G115825_T01	GRMZM2G115825		
GRMZM2G170760_T01	GRMZM2G170760		
GRMZM2G050821_T01	GRMZM2G050821		
GRMZM2G015784_T04	GRMZM2G015784		
GRMZM2G008058_T01	GRMZM2G008058		
GRMZM2G113596_T05	GRMZM2G113596		
GRMZM2G055619_T01	GRMZM2G055619		
GRMZM2G152457_T01	GRMZM2G152457		
GRMZM2G003331_T01	GRMZM2G003331		Tm Te LED
GRMZM2G137724_T01	GRMZM2G137724	Lwi	
GRMZM2G085960_T01	GRMZM2G085960	Te LED	
GRMZM2G323679_T01	GRMZM2G323679		
GRMZM2G150014_T02	GRMZM2G150014		
GRMZM2G013152_T01	GRMZM2G013152		
GRMZM2G079944_T01	GRMZM2G079944	DZS	
GRMZM2G143165_T01	GRMZM2G143165		Te LED

GRMZM2G061928_T01	GRMZM2G061928		
GRMZM2G135132_T01	GRMZM2G135132	Lwi	
GRMZM2G170101_T03	GRMZM2G170101		
GRMZM2G180863_T02	GRMZM2G180863		FLL
GRMZM2G368902_T01	GRMZM2G368902		Lwe
GRMZM2G339699_T01	GRMZM2G339699		emergence
GRMZM2G061990_T01	GRMZM2G061990		Te LED
GRMZM2G122999_T03	GRMZM2G122999	Tm Te	
AC234185.1_FGT004	AC234185.1_FG004		FLL Lwe
GRMZM5G855337_T01	GRMZM5G855337		LED
GRMZM2G058760_T01	GRMZM2G058760		
GRMZM5G891282_T01	GRMZM5G891282		Tm Te LED
GRMZM2G104070_T01	GRMZM2G104070		Lwe LA Lwi
GRMZM5G828312_T02	GRMZM5G828312	FW DW	Tm Te
GRMZM2G440208_T01	GRMZM2G440208		
GRMZM2G136072_T01	GRMZM2G136072		Lwe LA
GRMZM2G153984_T01	GRMZM2G153984	Lwi	
GRMZM2G074946_T01	GRMZM2G074946	emergence	
GRMZM2G179521_T01	GRMZM2G179521		LER DW
GRMZM2G396553_T01	GRMZM2G396553		
GRMZM2G060369_T02	GRMZM2G060369		Tm emergence
GRMZM2G461159_T01	GRMZM2G461159	FW DW	Tm Te emergence
GRMZM5G837626_T01	GRMZM5G837626	FW DW	Tm Te LED
GRMZM2G029027_T02	GRMZM2G029027		FW DW
GRMZM2G378717_T01	GRMZM2G378717		DW
GRMZM2G032049_T01	GRMZM2G032049		FW DW
GRMZM2G048012_T01	GRMZM2G048012		FW DW
GRMZM5G821551_T02	GRMZM5G821551		Tm Te LED FLL LA emerge
GRMZM5G858471_T01	GRMZM5G858471		LER FW
GRMZM2G118062_T01	GRMZM2G118062		FW
GRMZM2G166713_T01	GRMZM2G166713	Tm Te LED Lwe LA Lwi DZS emergence	
GRMZM2G143450_T01	GRMZM2G143450		LER
GRMZM2G315806_T01	GRMZM2G315806		DW
GRMZM2G158261_T03	GRMZM2G158261	Te LED	
GRMZM5G871297_T01	GRMZM5G871297		Lwi
GRMZM2G100976_T01	GRMZM2G100976		DZS
GRMZM2G102838_T01	GRMZM2G102838		Lwe Lwi
GRMZM2G096343_T01	GRMZM2G096343	FLL Lwe LA Lwi DZS emergence	
GRMZM2G082330_T02	GRMZM2G082330	LER	
GRMZM2G125516_T01	GRMZM2G125516		
GRMZM2G150251_T01	GRMZM2G150251		
GRMZM2G178958_T01	GRMZM2G178958		Te LED
GRMZM2G452896_T01	GRMZM2G452896		Lwi
GRMZM2G071268_T01	GRMZM2G071268	Tm	FW
GRMZM2G021110_T01	GRMZM2G021110		
GRMZM2G041885_T01	GRMZM2G041885		emergence
GRMZM2G119411_T01	GRMZM2G119411		LA

GRMZM2G053236_T01	GRMZM2G053236		LED
GRMZM2G111756_T01	GRMZM2G111756		Tm Te LED Lwi
GRMZM2G090070_T01	GRMZM2G090070		LER
GRMZM2G477200_T01	GRMZM2G477200	emergence	DW
GRMZM2G017789_T04	GRMZM2G017789		
GRMZM2G072973_T01	GRMZM2G072973		FW
GRMZM2G130605_T01	GRMZM2G130605		FW
GRMZM2G083820_T01	GRMZM2G083820		Tm Te emergence
GRMZM2G159307_T01	GRMZM2G159307		
GRMZM2G066615_T01	GRMZM2G066615		Lwi
GRMZM2G095254_T01	GRMZM2G095254		Tm Te LED Lwe LA Lwi
GRMZM2G065757_T01	GRMZM2G065757	Lwe LA Lwi DZS emergence	
GRMZM2G077233_T01	GRMZM2G077233	Tm Te LED emergence	
GRMZM2G057724_T01	GRMZM2G057724		
GRMZM2G125544_T01	GRMZM2G125544	Lwe LA Lwi	
GRMZM2G102933_T01	GRMZM2G102933	Tm Te	FW
GRMZM2G419694_T05	GRMZM2G419694		
GRMZM2G005304_T01	GRMZM2G005304		LER FW DW
GRMZM2G006377_T01	GRMZM2G006377		
GRMZM2G122139_T01	GRMZM2G122139		DZS
GRMZM2G156648_T01	GRMZM2G156648	FLL Lwe LA DZS	
GRMZM2G024657_T01	GRMZM2G024657		
GRMZM2G098298_T01	GRMZM2G098298	Lwi emergence	
GRMZM2G073465_T02	GRMZM2G073465		LED
GRMZM2G110408_T02	GRMZM2G110408		FW DW
GRMZM2G087598_T01	GRMZM2G087598		FW DW
GRMZM2G133249_T01	GRMZM2G133249	Tm	FW
GRMZM2G115981_T01	GRMZM2G115981	Tm Te	FW DW
AC200210.1_FGT006	AC200210.1_FG006		LER
GRMZM5G852779_T02	GRMZM5G852779	LER	
GRMZM2G030072_T01	GRMZM2G030072		
GRMZM2G079352_T01	GRMZM2G079352	Tm Te	
GRMZM2G475349_T01	GRMZM2G475349		FW
GRMZM2G020146_T01	GRMZM2G020146		
GRMZM2G347743_T02	GRMZM2G347743	emergence	
GRMZM2G172230_T01	GRMZM2G172230		
GRMZM5G819807_T01	GRMZM5G819807		
GRMZM2G161696_T01	GRMZM2G161696		LA
GRMZM2G379540_T02	GRMZM2G379540		
GRMZM2G331833_T01	GRMZM2G331833	FW	
GRMZM2G075676_T07	GRMZM2G075676		
GRMZM2G373849_T01	GRMZM2G373849		LER
GRMZM2G399207_T01	GRMZM2G399207		FW DW
GRMZM2G056373_T01	GRMZM2G056373		FW DW
GRMZM2G414915_T01	GRMZM2G414915		LED FLL Lwe LA DZS
GRMZM2G107686_T01	GRMZM2G107686		
GRMZM2G145242_T02	GRMZM2G145242		LED FLL LA DZS

GRMZM2G430039_T01	GRMZM2G430039		
GRMZM2G177276_T01	GRMZM2G177276		FW DW
GRMZM2G106222_T02	GRMZM2G106222		DZS
GRMZM2G164418_T01	GRMZM2G164418		
GRMZM2G070881_T01	GRMZM2G070881	Tm Te emergence	
GRMZM2G157316_T01	GRMZM2G157316	FW DW	Tm Te LED
GRMZM2G092447_T01	GRMZM2G092447		
GRMZM2G147671_T01	GRMZM2G147671		
GRMZM5G824938_T04	GRMZM5G824938	Tm Te	
GRMZM2G429237_T01	GRMZM2G429237	FLL	
GRMZM5G800842_T01	GRMZM5G800842	LER FW DW	Tm Te
GRMZM2G116919_T02	GRMZM2G116919	LED	
GRMZM2G022859_T01	GRMZM2G022859	Lwi	
GRMZM2G018447_T01	GRMZM2G018447	DW	
GRMZM2G027546_T01	GRMZM2G027546	Lwe LA	
GRMZM2G053764_T01	GRMZM2G053764	FLL	
GRMZM2G007300_T02	GRMZM2G007300		
GRMZM2G093855_T01	GRMZM2G093855	Lwi	
GRMZM2G000601_T03	GRMZM2G000601		
GRMZM2G007276_T03	GRMZM2G007276	Te LED	
GRMZM2G148130_T02	GRMZM2G148130	FLL	
GRMZM2G123519_T01	GRMZM2G123519	LED	
GRMZM2G150867_T03	GRMZM2G150867	DZS	
GRMZM2G122003_T01	GRMZM2G122003		
GRMZM2G161545_T01	GRMZM2G161545	Lwi	
GRMZM2G132759_T02	GRMZM2G132759		
GRMZM2G102421_T01	GRMZM2G102421		
GRMZM2G328988_T01	GRMZM2G328988		
GRMZM2G072462_T01	GRMZM2G072462	emergence	
GRMZM2G024690_T01	GRMZM2G024690		
GRMZM2G305582_T03	GRMZM2G305582	DW	
GRMZM2G341271_T03	GRMZM2G341271		LER
GRMZM2G157246_T01	GRMZM2G157246		
GRMZM2G103245_T01	GRMZM2G103245	LA Lwi	
GRMZM2G181519_T01	GRMZM2G181519	Lwe LA	
GRMZM2G057436_T01	GRMZM2G057436	Lwe	
GRMZM2G041561_T01	GRMZM2G041561	FLL Lwe LA Lwi DZS	
GRMZM2G141379_T01	GRMZM2G141379	LER	
GRMZM2G395842_T02	GRMZM2G395842	Lwi	
GRMZM2G362883_T02	GRMZM2G362883		
GRMZM2G040207_T01	GRMZM2G040207	DW	
GRMZM2G118957_T02	GRMZM2G118957		
GRMZM2G125867_T02	GRMZM2G125867		
GRMZM2G145104_T01	GRMZM2G145104	emergence	
GRMZM2G084819_T02	GRMZM2G084819		
GRMZM2G120816_T01	GRMZM2G120816	Lwi	
GRMZM2G306079_T01	GRMZM2G306079	LER FLL Lwe LA DZS	

GRMZM2G402341_T01	GRMZM2G402341		
GRMZM2G081965_T01	GRMZM2G081965	FW DW	
GRMZM2G056270_T02	GRMZM2G056270	LER FLL Lwe LA	
GRMZM2G158191_T01	GRMZM2G158191	LER	
GRMZM2G066171_T01	GRMZM2G066171	Lwe LA Lwi	
GRMZM2G108084_T01	GRMZM2G108084	FLL Lwe LA Lwi DZS emergence	
GRMZM2G071613_T02	GRMZM2G071613	Lwe	
GRMZM2G449083_T01	GRMZM2G449083	Tm Te Lwi DZS emergence	
GRMZM2G131591_T01	GRMZM2G131591	FLL	
GRMZM2G169449_T01	GRMZM2G169449		
GRMZM2G135866_T01	GRMZM2G135866	LER FLL Lwe LA DZS	
GRMZM2G376085_T01	GRMZM2G376085		
GRMZM2G025255_T01	GRMZM2G025255	LER FLL	
GRMZM2G001114_T01	GRMZM2G001114		
GRMZM2G135629_T02	GRMZM2G135629		
AC233910.1_FGT004	AC233910.1_FG004	FW DW	
GRMZM2G174926_T01	GRMZM2G174926		LER
GRMZM5G864001_T01	GRMZM5G864001	FLL DZS	
GRMZM2G164426_T01	GRMZM2G164426		
GRMZM2G000753_T01	GRMZM2G000753		
GRMZM2G002280_T01	GRMZM2G002280		
GRMZM2G035785_T01	GRMZM2G035785		
GRMZM2G704093_T01	GRMZM2G704093		LER DW
GRMZM2G005486_T01	GRMZM2G005486		
GRMZM2G147402_T01	GRMZM2G147402	Lwe	
GRMZM2G041959_T03	GRMZM2G041959		DZS
GRMZM2G047777_T01	GRMZM2G047777		
GRMZM2G382632_T01	GRMZM2G382632	LED	
GRMZM2G016878_T05	GRMZM2G016878		
GRMZM2G109140_T05	GRMZM2G109140		Lwe LA Lwi
GRMZM2G144615_T02	GRMZM2G144615	Lwe	
GRMZM2G022298_T01	GRMZM2G022298		Tm Te emergence
GRMZM2G165007_T01	GRMZM2G165007		FLL LA DZS
GRMZM2G034748_T01	GRMZM2G034748	Lwi	
GRMZM2G156490_T01	GRMZM2G156490	Lwe	
GRMZM2G133021_T01	GRMZM2G133021		
GRMZM2G142043_T03	GRMZM2G142043	emergence	
GRMZM2G120408_T01	GRMZM2G120408	FLL	
GRMZM2G003663_T01	GRMZM2G003663		
GRMZM2G166147_T01	GRMZM2G166147		
GRMZM2G151496_T01	GRMZM2G151496		DZS
GRMZM2G071705_T01	GRMZM2G071705		emergence
GRMZM2G092101_T01	GRMZM2G092101		
GRMZM2G046816_T03	GRMZM2G046816		Tm Te LED
GRMZM2G087105_T02	GRMZM2G087105		
GRMZM2G035341_T03	GRMZM2G035341	FW DW	
GRMZM2G117544_T02	GRMZM2G117544		

AC149475.2_FGT003	AC149475.2_FG003		
AC149828.2_FGT002	AC149828.2_FG002		
GRMZM2G008623_T02	GRMZM2G008623	Lwi	
GRMZM2G028346_T01	GRMZM2G028346		
GRMZM2G032505_T03	GRMZM2G032505		DW
GRMZM2G057158_T01	GRMZM2G057158	emergence	
GRMZM2G047727_T01	GRMZM2G047727		
GRMZM2G409726_T01	GRMZM2G409726		
GRMZM2G082390_T01	GRMZM2G082390	FLL Lwe DZS	
GRMZM2G116314_T01	GRMZM2G116314	Lwe	
GRMZM2G016323_T01	GRMZM2G016323	FW DW	
GRMZM2G426486_T01	GRMZM2G426486		FW DW
AC215201.3_FGT005	AC215201.3_FG005		FW
GRMZM2G148796_T01	GRMZM2G148796		LED
GRMZM2G002440_T01	GRMZM2G002440		
GRMZM2G035708_T05	GRMZM2G035708		
GRMZM2G044684_T01	GRMZM2G044684		
GRMZM2G044720_T02	GRMZM2G044720	emergence	
GRMZM2G111477_T01	GRMZM2G111477		
GRMZM2G458208_T01	GRMZM2G458208		FW DW
AC203985.4_FGT005	AC203985.4_FG005		
GRMZM2G176630_T01	GRMZM2G176630	FW	
GRMZM2G149935_T01	GRMZM2G149935		LED
GRMZM2G179504_T01	GRMZM2G179504	LER FLL Lwe LA DZS	
GRMZM2G130449_T01	GRMZM2G130449		Tm Te
GRMZM2G013079_T01	GRMZM2G013079	Lwe LA Lwi	
GRMZM2G103939_T01	GRMZM2G103939	Lwe LA Lwi emergence	
GRMZM2G334409_T01	GRMZM2G334409	FW DW	
GRMZM2G146553_T03	GRMZM2G146553	Tm Te LED	
GRMZM2G054634_T01	GRMZM2G054634	LER FLL LA	
GRMZM2G099598_T01	GRMZM2G099598		
GRMZM2G146000_T02	GRMZM2G146000	DZS	
GRMZM2G131853_T01	GRMZM2G131853		
GRMZM2G006429_T02	GRMZM2G006429	Lwe LA DZS	
GRMZM2G147811_T02	GRMZM2G147811		
GRMZM2G093720_T01	GRMZM2G093720		
GRMZM2G035063_T01	GRMZM2G035063		
GRMZM2G071196_T02	GRMZM2G071196		Lwi
GRMZM2G390345_T02	GRMZM2G390345		
GRMZM2G456059_T01	GRMZM2G456059		
GRMZM2G052650_T01	GRMZM2G052650		Lwe LA Lwi DZS
GRMZM2G052206_T03	GRMZM2G052206	FW DW	
GRMZM5G873277_T01	GRMZM5G873277		Tm emergence
GRMZM2G084347_T01	GRMZM2G084347		
GRMZM2G333433_T01	GRMZM2G333433	FW DW	Tm Te LED
GRMZM2G130018_T01	GRMZM2G130018	Lwe LA Lwi	
GRMZM2G451672_T02	GRMZM2G451672	FW DW	

GRMZM2G115755_T01	GRMZM2G115755	Lwi	
GRMZM2G173734_T01	GRMZM2G173734		LER
GRMZM2G035809_T03	GRMZM2G035809	Te LED FLL Lwe LA DZS	
GRMZM2G162167_T01	GRMZM2G162167		
GRMZM2G052434_T01	GRMZM2G052434		
GRMZM2G459854_T01	GRMZM2G459854		
GRMZM2G053722_T01	GRMZM2G053722		
GRMZM2G047376_T01	GRMZM2G047376	DW	
GRMZM2G116151_T03	GRMZM2G116151		
GRMZM2G026043_T01	GRMZM2G026043	Lwe LA Lwi	
GRMZM2G098078_T01	GRMZM2G098078	Tm	
GRMZM5G857992_T02	GRMZM5G857992		
GRMZM2G026065_T01	GRMZM2G026065	Lwi	
GRMZM2G305321_T01	GRMZM2G305321		LER
GRMZM2G003640_T01	GRMZM2G003640	DZS	
GRMZM2G029632_T02	GRMZM2G029632	LER	
GRMZM2G032351_T01	GRMZM2G032351		LER FW DW
GRMZM2G312970_T01	GRMZM2G312970	LER FW DW	
GRMZM2G093880_T03	GRMZM2G093880	FLL LA	
GRMZM2G105415_T01	GRMZM2G105415		
GRMZM2G058560_T01	GRMZM2G058560		Tm Te emergence
GRMZM2G080497_T03	GRMZM2G080497		emergence
GRMZM2G066867_T01	GRMZM2G066867		
GRMZM2G479665_T01	GRMZM2G479665		
GRMZM2G057907_T01	GRMZM2G057907		DZS
GRMZM2G150608_T01	GRMZM2G150608	Lwe	
GRMZM2G016671_T01	GRMZM2G016671	FLL Lwe LA DZS	
GRMZM2G013465_T01	GRMZM2G013465	Lwe	
GRMZM2G442404_T03	GRMZM2G442404		
GRMZM2G108318_T02	GRMZM2G108318		Tm Te LED emergence
GRMZM2G374779_T01	GRMZM2G374779	Tm Te LED LA Lwi DZS emergence	
GRMZM5G891266_T01	GRMZM5G891266	Lwe LA DZS	
GRMZM2G135091_T01	GRMZM2G135091	Lwe LA Lwi	
GRMZM5G852329_T02	GRMZM5G852329	Tm Te Lwi emergence	
GRMZM2G130927_T01	GRMZM2G130927		
GRMZM2G026767_T01	GRMZM2G026767		
GRMZM2G056732_T03	GRMZM2G056732		
GRMZM2G112240_T01	GRMZM2G112240		
GRMZM2G472643_T01	GRMZM2G472643	LER	
GRMZM2G036902_T01	GRMZM2G036902	LER	
GRMZM2G110908_T01	GRMZM2G110908		
AC194264.3_FGT006	AC194264.3_FG006		LER
GRMZM2G118403_T01	GRMZM2G118403		
GRMZM2G053199_T02	GRMZM2G053199		LER
GRMZM2G075002_T01	GRMZM2G075002		LER
GRMZM2G082076_T01	GRMZM2G082076	FW DW	Tm Te
GRMZM2G392477_T01	GRMZM2G392477		

GRMZM2G067910_T01	GRMZM2G067910		Tm Te LED
GRMZM2G121790_T01	GRMZM2G121790		
GRMZM2G159992_T01	GRMZM2G159992		
GRMZM2G055957_T01	GRMZM2G055957		LER
GRMZM2G018059_T02	GRMZM2G018059	Lwe	
GRMZM2G010953_T01	GRMZM2G010953	FW DW	
GRMZM2G144042_T01	GRMZM2G144042	LED FLL	
GRMZM2G004572_T01	GRMZM2G004572	Lwe LA	
GRMZM2G157115_T01	GRMZM2G157115		
GRMZM2G102163_T01	GRMZM2G102163		emergence
GRMZM2G117465_T01	GRMZM2G117465	LER	
GRMZM2G076423_T01	GRMZM2G076423		
GRMZM2G159756_T01	GRMZM2G159756	LER FLL Lwe LA DZS FW DW	
GRMZM2G378872_T01	GRMZM2G378872		
GRMZM2G037308_T01	GRMZM2G037308	DZS emergence	
GRMZM2G093987_T01	GRMZM2G093987	FW DW	Tm Te LED emergence
GRMZM2G151193_T01	GRMZM2G151193		
GRMZM2G057535_T01	GRMZM2G057535		FLL Lwe LA
GRMZM2G028313_T02	GRMZM2G028313		
GRMZM2G095534_T02	GRMZM2G095534		
GRMZM2G021896_T01	GRMZM2G021896		FW
GRMZM2G158062_T01	GRMZM2G158062	FW DW	Tm Te
GRMZM2G066815_T01	GRMZM2G066815		
GRMZM2G119691_T01	GRMZM2G119691		
GRMZM2G143330_T01	GRMZM2G143330		
GRMZM2G084062_T01	GRMZM2G084062		FLL
GRMZM5G821988_T01	GRMZM5G821988	FW	
GRMZM2G102779_T01	GRMZM2G102779		Tm Te LED
GRMZM2G146994_T03	GRMZM2G146994		
GRMZM2G369939_T01	GRMZM2G369939		
GRMZM2G404377_T01	GRMZM2G404377		FW DW
GRMZM2G018229_T01	GRMZM2G018229		
GRMZM2G070723_T01	GRMZM2G070723		
GRMZM2G446960_T01	GRMZM2G446960		
GRMZM2G139900_T01	GRMZM2G139900		
GRMZM2G158034_T01	GRMZM2G158034		Tm Te emergence
GRMZM2G100462_T01	GRMZM2G100462		
GRMZM2G111172_T01	GRMZM2G111172		Lwi emergence
GRMZM2G353103_T01	GRMZM2G353103		
GRMZM2G067303_T03	GRMZM2G067303		
GRMZM2G134109_T02	GRMZM2G134109		
GRMZM2G140609_T01	GRMZM2G140609		
GRMZM2G163561_T01	GRMZM2G163561		
GRMZM2G139349_T01	GRMZM2G139349		Tm emergence
GRMZM2G129015_T01	GRMZM2G129015		
GRMZM5G805526_T01	GRMZM5G805526		
GRMZM2G458974_T01	GRMZM2G458974		

GRMZM2G030228_T02	GRMZM2G030228		Tm emergence
GRMZM2G336875_T01	GRMZM2G336875	DW	Tm Te LED
GRMZM2G108348_T02	GRMZM2G108348		
GRMZM5G832108_T01	GRMZM5G832108		
GRMZM2G023748_T01	GRMZM2G023748		
GRMZM2G001816_T01	GRMZM2G001816		
GRMZM2G014444_T01	GRMZM2G014444		
GRMZM2G121075_T01	GRMZM2G121075		Tm Te Lwe LA Lwi emerg
GRMZM2G145280_T01	GRMZM2G145280		
GRMZM2G090422_T01	GRMZM2G090422		
GRMZM2G180724_T01	GRMZM2G180724		
GRMZM2G024354_T01	GRMZM2G024354		emergence
GRMZM2G126594_T01	GRMZM2G126594		
GRMZM2G104025_T02	GRMZM2G104025		
GRMZM2G322413_T02	GRMZM2G322413		emergence
GRMZM2G113720_T02	GRMZM2G113720		Tm emergence
GRMZM2G126928_T01	GRMZM2G126928		
AC230013.2_FGT007	AC230013.2_FG007		
GRMZM2G116135_T01	GRMZM2G116135		Tm Te FLL LA emergence
GRMZM2G026216_T01	GRMZM2G026216		Tm emergence
GRMZM2G089421_T01	GRMZM2G089421		
GRMZM2G149257_T01	GRMZM2G149257		emergence
GRMZM2G124411_T04	GRMZM2G124411		
GRMZM2G110328_T04	GRMZM2G110328		
GRMZM2G366077_T01	GRMZM2G366077		emergence
GRMZM2G326066_T01	GRMZM2G326066		
GRMZM2G016250_T01	GRMZM2G016250		
GRMZM2G088060_T01	GRMZM2G088060		
GRMZM2G068496_T02	GRMZM2G068496		
GRMZM2G050460_T01	GRMZM2G050460		
GRMZM2G074085_T01	GRMZM2G074085		
GRMZM2G047971_T01	GRMZM2G047971		
GRMZM2G166963_T01	GRMZM2G166963		
GRMZM2G172342_T02	GRMZM2G172342		
GRMZM5G850966_T03	GRMZM5G850966	FW DW	Tm Te emergence
GRMZM2G077991_T03	GRMZM2G077991		emergence
GRMZM2G016928_T04	GRMZM2G016928		
AC190609.3_FGT002	AC190609.3_FG002		
GRMZM2G411764_T01	GRMZM2G411764		emergence
GRMZM2G068952_T01	GRMZM2G068952		Tm Te LED
GRMZM2G007695_T01	GRMZM2G007695		DZS emergence
GRMZM2G100403_T02	GRMZM2G100403		Tm Te emergence
GRMZM2G009412_T03	GRMZM2G009412		
GRMZM2G090738_T01	GRMZM2G090738	DZS	
GRMZM2G024647_T01	GRMZM2G024647		
GRMZM2G003384_T01	GRMZM2G003384		Lwi emergence
GRMZM2G080608_T01	GRMZM2G080608		Lwi

GRMZM2G008748_T01	GRMZM2G008748		
GRMZM2G094051_T05	GRMZM2G094051		
GRMZM2G100225_T02	GRMZM2G100225		Lwi
GRMZM2G135654_T02	GRMZM2G135654		
GRMZM2G077851_T02	GRMZM2G077851		emergence
GRMZM2G072729_T02	GRMZM2G072729		
GRMZM2G084739_T02	GRMZM2G084739		
GRMZM2G066460_T01	GRMZM2G066460		
GRMZM2G179976_T01	GRMZM2G179976		Lwe LA Lwi
GRMZM2G105712_T05	GRMZM2G105712		
GRMZM2G102891_T01	GRMZM2G102891		emergence
GRMZM2G075630_T01	GRMZM2G075630		
GRMZM2G010257_T01	GRMZM2G010257		
GRMZM2G119809_T01	GRMZM2G119809		Tm Te emergence
GRMZM2G054896_T01	GRMZM2G054896		Lwe
GRMZM2G047513_T01	GRMZM2G047513		DZS emergence
GRMZM2G347956_T01	GRMZM2G347956		
GRMZM2G118005_T01	GRMZM2G118005		Lwi
AC234157.1_FGT002	AC234157.1_FG002		DZS
GRMZM2G122290_T01	GRMZM2G122290		
GRMZM2G005973_T01	GRMZM2G005973		
GRMZM2G030203_T01	GRMZM2G030203		
GRMZM2G311914_T01	GRMZM2G311914		DW
GRMZM2G360021_T01	GRMZM2G360021		LA Lwi DZS
GRMZM5G826801_T01	GRMZM5G826801		DZS
GRMZM2G018403_T01	GRMZM2G018403		DZS
GRMZM2G085675_T01	GRMZM2G085675		
GRMZM2G163769_T01	GRMZM2G163769		
GRMZM2G109165_T03	GRMZM2G109165		DZS
GRMZM2G042492_T01	GRMZM2G042492		DZS
GRMZM2G119471_T01	GRMZM2G119471		FLL Lwe LA DZS
GRMZM2G546254_T01	GRMZM2G546254		
GRMZM5G806771_T01	GRMZM5G806771		Lwe LA Lwi DZS emergen
GRMZM2G096424_T01	GRMZM2G096424		LED
GRMZM2G026868_T01	GRMZM2G026868	DW	
GRMZM2G058923_T01	GRMZM2G058923		Tm
GRMZM2G082707_T01	GRMZM2G082707		
GRMZM2G423169_T02	GRMZM2G423169		
GRMZM2G084868_T03	GRMZM2G084868		
GRMZM5G888696_T02	GRMZM5G888696		LED
GRMZM2G090086_T01	GRMZM2G090086		LER
GRMZM2G025123_T01	GRMZM2G025123	Tm Te	
GRMZM5G861756_T01	GRMZM5G861756	LER FLL LA	
GRMZM5G866861_T01	GRMZM5G866861		
GRMZM2G007441_T01	GRMZM2G007441		Lwe LA Lwi DZS
GRMZM2G053019_T01	GRMZM2G053019		DZS
GRMZM2G107798_T01	GRMZM2G107798		emergence

GRMZM2G100579_T01	GRMZM2G100579		
GRMZM2G100402_T01	GRMZM2G100402		
GRMZM2G058432_T01	GRMZM2G058432		
GRMZM2G156848_T01	GRMZM2G156848		
GRMZM2G100511_T01	GRMZM2G100511		FLL
GRMZM2G174696_T01	GRMZM2G174696		
GRMZM2G075003_T01	GRMZM2G075003		
GRMZM2G120876_T01	GRMZM2G120876		
GRMZM2G344924_T01	GRMZM2G344924	Te LED	
GRMZM2G068010_T01	GRMZM2G068010		Tm
GRMZM2G052435_T01	GRMZM2G052435		
GRMZM2G008497_T01	GRMZM2G008497		
GRMZM2G451443_T01	GRMZM2G451443		FW DW
GRMZM5G881950_T01	GRMZM5G881950		LED
GRMZM2G139407_T01	GRMZM2G139407		Tm Te FLL Lwe LA emerg
GRMZM2G003814_T01	GRMZM2G003814		Lwi emergence
GRMZM2G476810_T01	GRMZM2G476810		LER
GRMZM2G069174_T02	GRMZM2G069174		Lwe LA
GRMZM2G089676_T01	GRMZM2G089676		
GRMZM2G138419_T01	GRMZM2G138419		Tm Te LED
GRMZM2G088088_T01	GRMZM2G088088		
GRMZM2G166537_T01	GRMZM2G166537		Lwi emergence
GRMZM2G396292_T01	GRMZM2G396292	emergence	
GRMZM2G038953_T01	GRMZM2G038953	Lwi emergence	
GRMZM2G135756_T01	GRMZM2G135756	FW DW	
GRMZM2G053319_T01	GRMZM2G053319	LER	
GRMZM2G058407_T01	GRMZM2G058407		
GRMZM2G063775_T01	GRMZM2G063775	emergence	FW DW
GRMZM2G141735_T01	GRMZM2G141735		
GRMZM2G095810_T01	GRMZM2G095810		
GRMZM2G101571_T01	GRMZM2G101571	Lwi	
GRMZM2G165949_T01	GRMZM2G165949		FW
GRMZM2G057853_T01	GRMZM2G057853		
GRMZM2G014872_T01	GRMZM2G014872		LED FLL
GRMZM2G152921_T01	GRMZM2G152921		
GRMZM2G035985_T01	GRMZM2G035985		DZS
GRMZM2G044681_T01	GRMZM2G044681		
GRMZM2G070693_T02	GRMZM2G070693	Lwi	
GRMZM2G091503_T04	GRMZM2G091503		
GRMZM2G045971_T01	GRMZM2G045971		Tm Te
GRMZM2G386228_T01	GRMZM2G386228		Lwi
GRMZM2G007188_T02	GRMZM2G007188	FLL	
GRMZM2G307088_T01	GRMZM2G307088	emergence	
GRMZM2G067080_T01	GRMZM2G067080		
GRMZM2G364285_T01	GRMZM2G364285		LER FW DW
GRMZM2G389362_T01	GRMZM2G389362	emergence	
GRMZM2G178972_T01	GRMZM2G178972		Lwe

GRMZM2G062554_T01	GRMZM2G062554	Tm Te Lwi emergence	
GRMZM2G136563_T01	GRMZM2G136563		FW DW
GRMZM2G110023_T01	GRMZM2G110023		DZS
GRMZM2G348921_T01	GRMZM2G348921	FW	
GRMZM2G089365_T01	GRMZM2G089365	DZS emergence	
GRMZM2G046284_T02	GRMZM2G046284		FLL
GRMZM5G845611_T01	GRMZM5G845611		Lwe
GRMZM2G035268_T01	GRMZM2G035268	Tm	FW DW
GRMZM2G083016_T01	GRMZM2G083016		LED FLL
GRMZM2G047028_T01	GRMZM2G047028		DW
GRMZM2G033208_T01	GRMZM2G033208		Tm Te LED
GRMZM2G110714_T01	GRMZM2G110714		
GRMZM2G069542_T01	GRMZM2G069542		FLL
GRMZM2G431314_T01	GRMZM2G431314	Lwi	
GRMZM2G009223_T01	GRMZM2G009223		
GRMZM5G862663_T01	GRMZM5G862663		DZS
GRMZM2G048907_T01	GRMZM2G048907		Lwi
GRMZM2G167766_T01	GRMZM2G167766		Lwe LA Lwi FW
GRMZM5G851051_T01	GRMZM5G851051		LA DZS
GRMZM2G053458_T02	GRMZM2G053458		
GRMZM2G359127_T01	GRMZM2G359127		
GRMZM2G084279_T01	GRMZM2G084279		FW DW
GRMZM2G071450_T01	GRMZM2G071450		
GRMZM2G019807_T01	GRMZM2G019807		FW DW
GRMZM2G103101_T01	GRMZM2G103101		Lwi
GRMZM2G072280_T01	GRMZM2G072280		FW DW
GRMZM2G013342_T01	GRMZM2G013342		
GRMZM2G085646_T01	GRMZM2G085646		DZS
GRMZM2G094224_T01	GRMZM2G094224		DW
GRMZM2G402936_T01	GRMZM2G402936		Lwi
GRMZM2G005984_T01	GRMZM2G005984		LER LA FW
GRMZM2G113349_T01	GRMZM2G113349		
GRMZM2G000256_T01	GRMZM2G000256		FW
GRMZM2G436710_T01	GRMZM2G436710		
GRMZM2G078143_T01	GRMZM2G078143		Tm Te LED
GRMZM2G039238_T02	GRMZM2G039238	FW	Tm Te LED emergence
GRMZM2G134708_T01	GRMZM2G134708	Tm Te LED emergence	
GRMZM2G024448_T01	GRMZM2G024448	LED	
GRMZM2G084881_T01	GRMZM2G084881		LER
GRMZM5G826194_T02	GRMZM5G826194		DW
GRMZM2G329144_T01	GRMZM2G329144		FW DW
GRMZM2G067373_T01	GRMZM2G067373	Lwi	
GRMZM2G014832_T01	GRMZM2G014832		
GRMZM5G819523_T01	GRMZM5G819523		
GRMZM2G150295_T02	GRMZM2G150295	DW	
GRMZM2G470756_T01	GRMZM2G470756		emergence
GRMZM2G165270_T01	GRMZM2G165270	LED	

GRMZM2G061830_T01	GRMZM2G061830		
GRMZM2G145449_T03	GRMZM2G145449		
GRMZM2G139680_T01	GRMZM2G139680		Lwe LA Lwi
GRMZM5G864335_T01	GRMZM5G864335		Lwe LA Lwi
GRMZM2G389173_T01	GRMZM2G389173		
GRMZM2G163421_T01	GRMZM2G163421		LED FLL Lwe LA DZS
GRMZM2G091481_T02	GRMZM2G091481		Tm Te LED FLL
GRMZM2G093436_T01	GRMZM2G093436		DZS
GRMZM2G112659_T01	GRMZM2G112659		
GRMZM2G164948_T02	GRMZM2G164948		Tm emergence
GRMZM2G136522_T02	GRMZM2G136522		
GRMZM2G024073_T01	GRMZM2G024073		
GRMZM2G419836_T01	GRMZM2G419836		
GRMZM2G139803_T01	GRMZM2G139803		
GRMZM2G072553_T01	GRMZM2G072553	DZS	
GRMZM2G128171_T01	GRMZM2G128171		
GRMZM2G092535_T01	GRMZM2G092535		
GRMZM5G884325_T01	GRMZM5G884325		
GRMZM2G001191_T01	GRMZM2G001191	Tm Lwi emergence	
GRMZM2G166985_T01	GRMZM2G166985		
GRMZM2G171410_T05	GRMZM2G171410		
GRMZM2G022041_T01	GRMZM2G022041		emergence
GRMZM2G082322_T01	GRMZM2G082322		emergence
GRMZM2G453879_T01	GRMZM2G453879		DW
GRMZM2G346639_T01	GRMZM2G346639		LER FW DW
GRMZM2G040762_T01	GRMZM2G040762		
GRMZM2G413853_T01	GRMZM2G413853	Tm Te LED	
GRMZM2G001631_T01	GRMZM2G001631	LER	
GRMZM5G814985_T01	GRMZM5G814985	LER Lwe	
GRMZM2G121404_T01	GRMZM2G121404		LER
GRMZM5G802566_T06	GRMZM5G802566		FW
GRMZM2G123362_T01	GRMZM2G123362		
GRMZM2G083620_T02	GRMZM2G083620		emergence
GRMZM2G124301_T01	GRMZM2G124301	LER	
GRMZM2G064868_T03	GRMZM2G064868		
AC198169.4_FGT004	AC198169.4_FG004	Tm Te emergence	
GRMZM2G121776_T01	GRMZM2G121776		
GRMZM2G403636_T01	GRMZM2G403636		Te LED
GRMZM2G480809_T01	GRMZM2G480809		Tm Te LED
GRMZM2G415491_T01	GRMZM2G415491		DZS
GRMZM2G034811_T03	GRMZM2G034811		LA
GRMZM2G331811_T01	GRMZM2G331811	Tm Te LED FLL emergence	
GRMZM2G107896_T01	GRMZM2G107896		Lwi
GRMZM2G170699_T01	GRMZM2G170699		Lwe
GRMZM2G021223_T04	GRMZM2G021223	LER	
GRMZM2G036991_T02	GRMZM2G036991		
GRMZM2G053239_T01	GRMZM2G053239	DZS	

GRMZM2G065298_T01	GRMZM2G065298		FW DW
GRMZM5G829928_T02	GRMZM5G829928		FLL Lwe LA Lwi DZS emer
GRMZM5G897926_T02	GRMZM5G897926		DW
GRMZM2G047316_T01	GRMZM2G047316		
GRMZM2G158918_T01	GRMZM2G158918	Lwe	
GRMZM2G063864_T03	GRMZM2G063864	Tm Te LED	FW
GRMZM2G107807_T01	GRMZM2G107807	LA DZS	
GRMZM2G146688_T01	GRMZM2G146688		
GRMZM2G052720_T01	GRMZM2G052720		
GRMZM2G160730_T02	GRMZM2G160730		Lwi emergence
GRMZM2G700665_T01	GRMZM2G700665		Tm Te emergence
GRMZM2G078274_T03	GRMZM2G078274		
GRMZM2G475882_T02	GRMZM2G475882		
GRMZM2G137413_T01	GRMZM2G137413	Lwi	
GRMZM2G702026_T01	GRMZM2G702026		LED FLL Lwe LA DZS
GRMZM2G030710_T01	GRMZM2G030710	FW DW	
GRMZM2G352159_T02	GRMZM2G352159	Tm Te emergence	
GRMZM2G338259_T01	GRMZM2G338259		
GRMZM2G006042_T02	GRMZM2G006042		
GRMZM2G116557_T04	GRMZM2G116557		
GRMZM2G317900_T01	GRMZM2G317900		
GRMZM2G475263_T01	GRMZM2G475263		FLL
GRMZM2G007791_T01	GRMZM2G007791		
GRMZM2G039455_T01	GRMZM2G039455		
AC209206.3_FGT011	AC209206.3_FG011		
GRMZM2G105250_T01	GRMZM2G105250	LER FLL DZS	
GRMZM2G089743_T02	GRMZM2G089743	Tm Te LED emergen	FW
GRMZM2G141818_T02	GRMZM2G141818		
GRMZM2G589579_T01	GRMZM2G589579	Tm Te LED DZS	
GRMZM2G048335_T01	GRMZM2G048335		FW DW
AC199001.3_FGT005	AC199001.3_FG005		FW
GRMZM2G099797_T01	GRMZM2G099797	Lwe	
GRMZM2G129954_T01	GRMZM2G129954	FW	
GRMZM2G060485_T01	GRMZM2G060485		
GRMZM2G156019_T01	GRMZM2G156019		
GRMZM2G044902_T01	GRMZM2G044902		
GRMZM5G800734_T02	GRMZM5G800734		
GRMZM2G359924_T01	GRMZM2G359924	FLL LA DZS	
GRMZM2G479834_T01	GRMZM2G479834		
GRMZM2G059544_T01	GRMZM2G059544	DZS	
GRMZM2G000158_T04	GRMZM2G000158	LER	
GRMZM2G031615_T02	GRMZM2G031615		
GRMZM2G167794_T01	GRMZM2G167794		FLL Lwe LA emergence
GRMZM2G174610_T02	GRMZM2G174610	LED	
GRMZM2G109879_T02	GRMZM2G109879	LED	
GRMZM2G088427_T01	GRMZM2G088427	LER	
GRMZM2G001048_T01	GRMZM2G001048		

GRMZM2G098063_T01	GRMZM2G098063		LER DZS
GRMZM2G019956_T01	GRMZM2G019956		FLL
GRMZM2G173534_T01	GRMZM2G173534		
GRMZM2G033356_T01	GRMZM2G033356		FLL Lwe LA DZS
GRMZM2G158281_T02	GRMZM2G158281	DZS FW DW	
GRMZM2G378653_T01	GRMZM2G378653		LA Lwi DZS
GRMZM2G074438_T01	GRMZM2G074438		Tm Te LED FLL
GRMZM2G417164_T01	GRMZM2G417164		
GRMZM2G087161_T01	GRMZM2G087161	DZS	
GRMZM2G095899_T01	GRMZM2G095899		
GRMZM2G128807_T02	GRMZM2G128807	LA	
GRMZM2G317450_T02	GRMZM2G317450		
GRMZM2G159456_T01	GRMZM2G159456		LED FLL Lwe LA
GRMZM2G137426_T01	GRMZM2G137426		emergence
GRMZM2G044044_T01	GRMZM2G044044		
GRMZM2G022499_T01	GRMZM2G022499		
GRMZM2G180847_T01	GRMZM2G180847	LER	
AC232238.2_FGT004	AC232238.2_FG004	LER FLL	
GRMZM2G060216_T02	GRMZM2G060216	DZS	
GRMZM2G074373_T01	GRMZM2G074373		emergence
GRMZM2G024851_T01	GRMZM2G024851		
GRMZM2G011932_T01	GRMZM2G011932	LED	
GRMZM2G149150_T01	GRMZM2G149150		
GRMZM2G092609_T01	GRMZM2G092609		
GRMZM2G000842_T04	GRMZM2G000842	LER FLL DZS	
GRMZM2G146020_T01	GRMZM2G146020	Lwe	
GRMZM2G448607_T01	GRMZM2G448607		Tm emergence
GRMZM2G052102_T01	GRMZM2G052102		FLL Lwe LA
GRMZM2G095598_T01	GRMZM2G095598		
GRMZM2G114137_T01	GRMZM2G114137		
GRMZM2G134545_T01	GRMZM2G134545		
GRMZM2G179069_T01	GRMZM2G179069		
GRMZM2G108865_T01	GRMZM2G108865		
GRMZM2G135381_T01	GRMZM2G135381		Lwe DZS
GRMZM2G039586_T01	GRMZM2G039586		Lwi
GRMZM2G101058_T01	GRMZM2G101058		FLL Lwe LA DZS
GRMZM2G150011_T01	GRMZM2G150011		
GRMZM2G129428_T01	GRMZM2G129428	Tm Te emergence	
GRMZM2G075956_T02	GRMZM2G075956	emergence	
GRMZM2G068710_T07	GRMZM2G068710		FLL Lwe LA DZS
GRMZM2G156099_T02	GRMZM2G156099		
GRMZM2G121151_T01	GRMZM2G121151		FLL Lwe LA
GRMZM2G176495_T01	GRMZM2G176495		
GRMZM2G175661_T01	GRMZM2G175661	LA Lwi	
GRMZM2G161728_T01	GRMZM2G161728	Lwe	
GRMZM2G090595_T01	GRMZM2G090595		
GRMZM2G377165_T01	GRMZM2G377165	Lwi	

GRMZM2G136494_T01	GRMZM2G136494		
GRMZM2G028046_T01	GRMZM2G028046	LED	
GRMZM2G011357_T01	GRMZM2G011357		
GRMZM2G120563_T01	GRMZM2G120563		LER FW DW
GRMZM2G178894_T01	GRMZM2G178894		DZS
GRMZM5G845366_T01	GRMZM5G845366	FW DW	
GRMZM2G407287_T01	GRMZM2G407287		Tm Te LED emergence
AC197545.3_FGT002	AC197545.3_FG002		LER
GRMZM2G037630_T01	GRMZM2G037630	LER	
GRMZM2G096016_T01	GRMZM2G096016		FLL Lwe LA DZS
GRMZM2G440949_T01	GRMZM2G440949		
GRMZM2G105317_T01	GRMZM2G105317		
GRMZM2G154946_T01	GRMZM2G154946		
GRMZM2G574858_T01	GRMZM2G574858		
GRMZM2G070264_T01	GRMZM2G070264	FW DW	
GRMZM2G381386_T02	GRMZM2G381386		
GRMZM2G108166_T01	GRMZM2G108166	Tm Te LED emergence	
GRMZM2G148249_T01	GRMZM2G148249	FW DW	
GRMZM2G439281_T01	GRMZM2G439281		FW DW
GRMZM2G138125_T01	GRMZM2G138125		
GRMZM2G303105_T01	GRMZM2G303105	Tm	
GRMZM5G836167_T01	GRMZM5G836167	FW	
GRMZM2G015277_T01	GRMZM2G015277		LER
GRMZM2G067436_T01	GRMZM2G067436	LER FW DW	Tm Te LED emergence
GRMZM2G065599_T01	GRMZM2G065599	Lwe LA DZS	
GRMZM2G137366_T02	GRMZM2G137366		
GRMZM2G361659_T01	GRMZM2G361659		LER FLL
GRMZM2G462623_T01	GRMZM2G462623	LER FLL Lwe LA DZS	
GRMZM2G006752_T02	GRMZM2G006752		
GRMZM2G003558_T01	GRMZM2G003558		
GRMZM2G123308_T02	GRMZM2G123308		LED
GRMZM2G030458_T01	GRMZM2G030458		
GRMZM2G092409_T01	GRMZM2G092409	FW DW	Tm Te
GRMZM2G099862_T04	GRMZM2G099862	FLL DZS	
GRMZM2G006453_T01	GRMZM2G006453		
GRMZM2G119359_T01	GRMZM2G119359	FLL	
GRMZM2G010075_T01	GRMZM2G010075		
GRMZM2G098784_T01	GRMZM2G098784		FLL
GRMZM2G097456_T01	GRMZM2G097456		Lwe LA Lwi DZS emergen
GRMZM2G368909_T01	GRMZM2G368909	LED	
GRMZM2G118063_T02	GRMZM2G118063		emergence
GRMZM2G062318_T01	GRMZM2G062318		
GRMZM2G130442_T01	GRMZM2G130442		emergence
GRMZM2G002548_T01	GRMZM2G002548	FW DW	
GRMZM2G469551_T01	GRMZM2G469551		
GRMZM2G178102_T01	GRMZM2G178102		
GRMZM2G109987_T01	GRMZM2G109987		

GRMZM2G003509_T01	GRMZM2G003509		
GRMZM2G042250_T02	GRMZM2G042250		
GRMZM2G033138_T02	GRMZM2G033138		
GRMZM2G161435_T02	GRMZM2G161435		
GRMZM2G011588_T03	GRMZM2G011588		
GRMZM2G370332_T01	GRMZM2G370332	DW	
GRMZM2G076272_T02	GRMZM2G076272		
GRMZM2G122076_T01	GRMZM2G122076		Lwi
GRMZM2G097349_T01	GRMZM2G097349		Lwe LA
GRMZM2G134260_T01	GRMZM2G134260		Lwi
GRMZM2G119703_T02	GRMZM2G119703		
GRMZM2G135849_T01	GRMZM2G135849	LER	
GRMZM2G042231_T01	GRMZM2G042231	FW	
GRMZM2G105348_T01	GRMZM2G105348	Te LED FLL	
GRMZM2G044301_T01	GRMZM2G044301	Tm Te	
GRMZM2G180086_T01	GRMZM2G180086		
GRMZM2G329159_T01	GRMZM2G329159		
GRMZM2G055782_T01	GRMZM2G055782		FLL Lwe LA
GRMZM2G370777_T03	GRMZM2G370777		
GRMZM2G046885_T01	GRMZM2G046885		
GRMZM2G171365_T02	GRMZM2G171365	Lwi emergence	
GRMZM2G032706_T01	GRMZM2G032706	FLL Lwe LA DZS	
GRMZM2G026223_T07	GRMZM2G026223	Tm Te LED	
GRMZM2G005155_T03	GRMZM2G005155		
GRMZM2G385338_T01	GRMZM2G385338	FW	
GRMZM2G025095_T05	GRMZM2G025095	FLL	
GRMZM5G843991_T01	GRMZM5G843991	LER FW DW	
GRMZM2G171781_T01	GRMZM2G171781		LER
GRMZM2G428555_T02	GRMZM2G428555	FLL	
GRMZM2G085427_T02	GRMZM2G085427	Tm Te	
GRMZM2G159155_T01	GRMZM2G159155	Tm Te	LER FW DW
GRMZM2G042548_T01	GRMZM2G042548	DW	
GRMZM2G040924_T01	GRMZM2G040924		
GRMZM2G104551_T01	GRMZM2G104551		
GRMZM2G470307_T01	GRMZM2G470307	Lwi	
GRMZM2G531738_T01	GRMZM2G531738		
GRMZM2G139688_T01	GRMZM2G139688		Lwe LA
GRMZM2G059167_T02	GRMZM2G059167	LA Lwi	
GRMZM2G424651_T01	GRMZM2G424651	Lwe LA	
GRMZM2G423833_T01	GRMZM2G423833	DW	
GRMZM2G073836_T01	GRMZM2G073836		
GRMZM2G073826_T01	GRMZM2G073826		
GRMZM2G111045_T01	GRMZM2G111045		Lwi
GRMZM2G001223_T04	GRMZM2G001223		
GRMZM2G017520_T01	GRMZM2G017520		Lwe LA
GRMZM2G362949_T01	GRMZM2G362949		Lwe DZS
GRMZM2G136887_T02	GRMZM2G136887	LER	

GRMZM5G813892_T01	GRMZM5G813892		
GRMZM2G163291_T01	GRMZM2G163291	Tm Te LED	
GRMZM2G112764_T01	GRMZM2G112764		
GRMZM2G089132_T01	GRMZM2G089132	FLL	
GRMZM2G031001_T01	GRMZM2G031001		
GRMZM2G340305_T01	GRMZM2G340305		DW
GRMZM2G113950_T01	GRMZM2G113950		Tm Te LED FLL LA DZS
GRMZM2G053298_T01	GRMZM2G053298	Lwe LA	
GRMZM2G048582_T01	GRMZM2G048582		
GRMZM2G066528_T01	GRMZM2G066528		emergence
GRMZM2G062885_T01	GRMZM2G062885		Lwe LA Lwi DZS
GRMZM2G443814_T01	GRMZM2G443814	FW DW	
GRMZM2G377887_T01	GRMZM2G377887	FW	
GRMZM2G012216_T02	GRMZM2G012216	Tm Te LED	FW
GRMZM2G357660_T01	GRMZM2G357660		
GRMZM2G155662_T01	GRMZM2G155662	DW	Te LED emergence
GRMZM2G043484_T01	GRMZM2G043484		
GRMZM2G005732_T02	GRMZM2G005732		
GRMZM2G033962_T01	GRMZM2G033962		
GRMZM2G095727_T01	GRMZM2G095727		
GRMZM2G146472_T03	GRMZM2G146472		
GRMZM5G868767_T02	GRMZM5G868767		
GRMZM2G046065_T01	GRMZM2G046065		
GRMZM2G110233_T01	GRMZM2G110233		
GRMZM2G475583_T01	GRMZM2G475583	FW	
GRMZM2G065669_T01	GRMZM2G065669		Te LED
GRMZM2G015090_T01	GRMZM2G015090	Tm Te LED emergence	
GRMZM2G440951_T01	GRMZM2G440951		emergence
GRMZM2G016546_T01	GRMZM2G016546		
GRMZM2G578572_T01	GRMZM2G578572	Tm Te	FW DW
GRMZM2G113640_T03	GRMZM2G113640	LER DW	
GRMZM2G063603_T01	GRMZM2G063603	LA	
AC197122.3_FGT003	AC197122.3_FG003	Tm	
GRMZM2G072117_T01	GRMZM2G072117		emergence
GRMZM2G408096_T01	GRMZM2G408096	Lwe LA Lwi DZS	
GRMZM2G427408_T01	GRMZM2G427408	FLL Lwe LA DZS	
GRMZM2G100898_T01	GRMZM2G100898	FW DW	
GRMZM2G153212_T01	GRMZM2G153212	LA Lwi	
GRMZM2G009019_T03	GRMZM2G009019		
GRMZM2G110304_T01	GRMZM2G110304	Tm Te LED	FW
GRMZM2G015881_T02	GRMZM2G015881		
GRMZM2G455664_T01	GRMZM2G455664		FW
GRMZM5G840852_T01	GRMZM5G840852		Lwe
GRMZM2G108712_T01	GRMZM2G108712		
GRMZM2G140156_T01	GRMZM2G140156		
GRMZM2G317738_T01	GRMZM2G317738		
GRMZM2G109354_T01	GRMZM2G109354		

GRMZM2G414805_T01	GRMZM2G414805	LED FLL DZS	
GRMZM2G067624_T01	GRMZM2G067624	Lwe LA	
GRMZM2G081127_T01	GRMZM2G081127	FLL Lwe LA	
GRMZM2G147619_T05	GRMZM2G147619		
GRMZM2G042442_T01	GRMZM2G042442	Te LED LA DZS	
GRMZM2G318803_T01	GRMZM2G318803	LED	
GRMZM2G077258_T01	GRMZM2G077258		LA Lwi DZS
GRMZM2G164277_T01	GRMZM2G164277		
GRMZM2G170412_T01	GRMZM2G170412		LER
GRMZM2G372928_T01	GRMZM2G372928		LER
GRMZM2G149587_T02	GRMZM2G149587	LER	
GRMZM2G336909_T01	GRMZM2G336909	Tm Te LED	
GRMZM2G092131_T01	GRMZM2G092131	FLL	
GRMZM2G305124_T01	GRMZM2G305124		
GRMZM2G473138_T01	GRMZM2G473138		
GRMZM2G409224_T03	GRMZM2G409224	LED FLL Lwe LA	
GRMZM2G302195_T01	GRMZM2G302195		Tm Te
GRMZM2G004996_T02	GRMZM2G004996	Lwe	
GRMZM2G069005_T01	GRMZM2G069005		
AC205574.3_FGT006	AC205574.3_FG006		
GRMZM2G093895_T01	GRMZM2G093895		
GRMZM2G089361_T01	GRMZM2G089361		
GRMZM2G465091_T01	GRMZM2G465091		Lwe Lwi
GRMZM2G063203_T01	GRMZM2G063203		DZS
GRMZM2G169580_T01	GRMZM2G169580		
GRMZM5G850092_T01	GRMZM5G850092		
GRMZM2G379179_T01	GRMZM2G379179		
GRMZM2G392168_T01	GRMZM2G392168		
GRMZM5G803565_T01	GRMZM5G803565	FW DW	LED
GRMZM2G314660_T02	GRMZM2G314660		LED FLL DZS
GRMZM2G034526_T01	GRMZM2G034526		Tm Te LED emergence
GRMZM2G461793_T01	GRMZM2G461793		
GRMZM2G126197_T01	GRMZM2G126197		FW DW
GRMZM2G060554_T01	GRMZM2G060554	Lwe LA DZS	
GRMZM2G467907_T01	GRMZM2G467907		LER FLL Lwe LA Lwi DZS
GRMZM5G836222_T01	GRMZM5G836222	LED	
GRMZM2G007190_T01	GRMZM2G007190		
GRMZM2G090559_T01	GRMZM2G090559	Tm	LER FW DW
GRMZM2G017923_T01	GRMZM2G017923	Lwe LA Lwi DZS	
GRMZM2G077079_T01	GRMZM2G077079		DW
GRMZM2G032847_T05	GRMZM2G032847		
GRMZM5G871463_T02	GRMZM5G871463		
GRMZM2G101518_T01	GRMZM2G101518		
GRMZM2G142557_T01	GRMZM2G142557	Lwi	
GRMZM2G020187_T01	GRMZM2G020187	emergence	
GRMZM2G097775_T02	GRMZM2G097775	FW	Tm Te LED emergence
GRMZM2G126956_T01	GRMZM2G126956	LED FLL	

GRMZM2G001265_T01	GRMZM2G001265	Lwi emergence	
GRMZM2G161146_T01	GRMZM2G161146	Lwe LA	
GRMZM2G099337_T01	GRMZM2G099337		
GRMZM2G703918_T01	GRMZM2G703918	LER	
GRMZM2G159041_T01	GRMZM2G159041	Lwe	
GRMZM2G466560_T01	GRMZM2G466560	FW	
GRMZM2G041799_T01	GRMZM2G041799	FW DW	
GRMZM2G178910_T01	GRMZM2G178910		
GRMZM2G004259_T01	GRMZM2G004259		
GRMZM2G044832_T01	GRMZM2G044832		Tm Te Lwi emergence
GRMZM2G142168_T01	GRMZM2G142168		Tm Te
GRMZM2G350800_T01	GRMZM2G350800		FW DW
GRMZM2G048450_T01	GRMZM2G048450		
GRMZM2G398506_T02	GRMZM2G398506	DW	
GRMZM2G130854_T01	GRMZM2G130854		
GRMZM2G019744_T01	GRMZM2G019744		
GRMZM2G052671_T01	GRMZM2G052671	LER	
GRMZM2G166999_T01	GRMZM2G166999	DZS	
GRMZM2G441031_T01	GRMZM2G441031		
GRMZM2G068330_T01	GRMZM2G068330		Lwi emergence
GRMZM2G161315_T01	GRMZM2G161315		
GRMZM2G069365_T01	GRMZM2G069365		
GRMZM2G438438_T01	GRMZM2G438438		
GRMZM5G821755_T01	GRMZM5G821755		
GRMZM2G125531_T01	GRMZM2G125531	emergence	
GRMZM2G133926_T01	GRMZM2G133926		emergence
GRMZM2G083783_T01	GRMZM2G083783		
GRMZM2G042195_T02	GRMZM2G042195		emergence
GRMZM2G068715_T01	GRMZM2G068715		
GRMZM2G019919_T02	GRMZM2G019919	Te	
AC198353.5_FGT004	AC198353.5_FG004	LER	
GRMZM2G069816_T01	GRMZM2G069816		
GRMZM5G803433_T01	GRMZM5G803433		
GRMZM5G874478_T01	GRMZM5G874478		
GRMZM2G143870_T02	GRMZM2G143870		DZS
GRMZM2G177001_T02	GRMZM2G177001		
GRMZM2G464401_T01	GRMZM2G464401		Tm Te LED emergence
GRMZM2G120373_T01	GRMZM2G120373	Lwe LA Lwi	
GRMZM2G011129_T01	GRMZM2G011129		DZS
GRMZM2G056350_T01	GRMZM2G056350		Lwi
GRMZM2G022313_T02	GRMZM2G022313		FLL
GRMZM2G003897_T01	GRMZM2G003897		
GRMZM2G131957_T01	GRMZM2G131957		Tm Te
GRMZM2G104353_T01	GRMZM2G104353		
GRMZM5G832248_T03	GRMZM5G832248		
GRMZM2G325679_T01	GRMZM2G325679	FW	
GRMZM5G832138_T01	GRMZM5G832138	FW	

GRMZM2G051247_T01	GRMZM2G051247	Lwi	
GRMZM2G142597_T02	GRMZM2G142597		
GRMZM2G006071_T01	GRMZM2G006071		
GRMZM2G008611_T02	GRMZM2G008611		
GRMZM2G043997_T02	GRMZM2G043997		emergence
GRMZM2G014400_T01	GRMZM2G014400		
GRMZM2G162954_T01	GRMZM2G162954		
GRMZM2G144890_T01	GRMZM2G144890		LED FLL Lwe LA DZS
GRMZM2G055276_T02	GRMZM2G055276		Tm Te emergence
GRMZM2G166355_T01	GRMZM2G166355		FW DW
GRMZM2G111907_T01	GRMZM2G111907	FW DW	Tm Te emergence
GRMZM2G582965_T01	GRMZM2G582965		
GRMZM2G045668_T01	GRMZM2G045668	Lwi	
GRMZM2G064390_T01	GRMZM2G064390	LA DZS	
GRMZM2G143392_T01	GRMZM2G143392		
GRMZM2G034260_T01	GRMZM2G034260	FLL	
GRMZM2G007681_T02	GRMZM2G007681	Tm Te Lwe	
GRMZM2G115564_T02	GRMZM2G115564		
GRMZM2G151706_T01	GRMZM2G151706		Tm emergence
GRMZM2G002828_T02	GRMZM2G002828	FLL	
GRMZM2G054225_T01	GRMZM2G054225	Lwe	
GRMZM2G427031_T01	GRMZM2G427031		
GRMZM2G028132_T01	GRMZM2G028132		LER
GRMZM2G385050_T01	GRMZM2G385050		
GRMZM2G179346_T01	GRMZM2G179346		
GRMZM2G102664_T01	GRMZM2G102664		LER
GRMZM2G043456_T01	GRMZM2G043456	FW	Tm Te LED emergence
GRMZM2G158147_T01	GRMZM2G158147		Tm Te LED
GRMZM2G152175_T01	GRMZM2G152175	LED FLL	
GRMZM2G314707_T01	GRMZM2G314707	LER	
GRMZM2G088601_T03	GRMZM2G088601		
GRMZM2G147721_T01	GRMZM2G147721	emergence	
GRMZM5G859195_T02	GRMZM5G859195		DW
AC194970.5_FGT001	AC194970.5_FG001		Lwi
GRMZM2G005909_T01	GRMZM2G005909		Lwi
GRMZM2G319445_T01	GRMZM2G319445		
GRMZM2G038153_T01	GRMZM2G038153		LER
GRMZM2G113476_T03	GRMZM2G113476		
GRMZM2G009785_T04	GRMZM2G009785	Tm Te	
GRMZM2G085924_T01	GRMZM2G085924	emergence	LER FW DW
GRMZM2G082007_T01	GRMZM2G082007		DW
GRMZM2G089698_T01	GRMZM2G089698	Lwi	
GRMZM2G074604_T01	GRMZM2G074604		
GRMZM2G447271_T01	GRMZM2G447271		
GRMZM5G840002_T01	GRMZM5G840002		Lwi
GRMZM2G083526_T02	GRMZM2G083526		
GRMZM2G078641_T02	GRMZM2G078641	Lwi	

GRMZM5G866082_T03	GRMZM5G866082	DZS	
GRMZM2G091155_T02	GRMZM2G091155		
GRMZM2G311220_T01	GRMZM2G311220		
GRMZM2G120975_T01	GRMZM2G120975		LER DW
GRMZM2G106945_T01	GRMZM2G106945		
GRMZM2G352695_T01	GRMZM2G352695		
GRMZM2G006977_T01	GRMZM2G006977		LER
GRMZM2G012326_T01	GRMZM2G012326	FW DW	
GRMZM2G314396_T01	GRMZM2G314396		
GRMZM2G109843_T02	GRMZM2G109843		emergence
GRMZM2G025387_T02	GRMZM2G025387		FW
AC202073.4_FGT001	AC202073.4_FG001		LER DW
GRMZM2G035557_T01	GRMZM2G035557		LER
GRMZM2G048561_T01	GRMZM2G048561		LED
GRMZM5G880028_T01	GRMZM5G880028		FW
GRMZM2G113613_T01	GRMZM2G113613		
GRMZM2G433557_T01	GRMZM2G433557	FLL	
GRMZM2G028813_T02	GRMZM2G028813		
GRMZM2G039187_T01	GRMZM2G039187		
GRMZM2G012584_T01	GRMZM2G012584		FLL
GRMZM2G022180_T01	GRMZM2G022180		FLL
GRMZM2G001221_T01	GRMZM2G001221	LER FLL LA	
GRMZM2G018030_T01	GRMZM2G018030	FLL	
GRMZM2G038988_T01	GRMZM2G038988	DZS	
GRMZM2G015324_T03	GRMZM2G015324	LED	
GRMZM2G115280_T01	GRMZM2G115280		DW
GRMZM2G155111_T01	GRMZM2G155111		
AC207628.4_FGT011	AC207628.4_FG011		LER
GRMZM2G155954_T01	GRMZM2G155954		LER LED FLL Lwe LA
GRMZM2G006714_T01	GRMZM2G006714		LED
GRMZM2G348909_T01	GRMZM2G348909		DZS
GRMZM2G362398_T01	GRMZM2G362398		LER
GRMZM2G365185_T01	GRMZM2G365185		
GRMZM2G106960_T01	GRMZM2G106960	Lwi	
GRMZM2G319109_T01	GRMZM2G319109		FW DW
AC213884.3_FGT001	AC213884.3_FG001		
GRMZM2G111411_T02	GRMZM2G111411		
GRMZM2G038032_T01	GRMZM2G038032		emergence
GRMZM2G016858_T01	GRMZM2G016858		
GRMZM2G429113_T01	GRMZM2G429113		
GRMZM2G158887_T01	GRMZM2G158887	DW	
AC185415.3_FGT005	AC185415.3_FG005		
GRMZM2G144868_T01	GRMZM2G144868	LED	
GRMZM2G095868_T03	GRMZM2G095868		
GRMZM2G094951_T01	GRMZM2G094951		LER FW DW
GRMZM2G071071_T01	GRMZM2G071071		
GRMZM2G052823_T01	GRMZM2G052823		

GRMZM2G369652_T02	GRMZM2G369652	emergence	
GRMZM2G102946_T01	GRMZM2G102946	DZS	
GRMZM2G122666_T01	GRMZM2G122666	emergence	
GRMZM2G086636_T01	GRMZM2G086636		
GRMZM2G038356_T01	GRMZM2G038356		
GRMZM2G323936_T02	GRMZM2G323936		
GRMZM2G173878_T01	GRMZM2G173878		
GRMZM2G158679_T02	GRMZM2G158679		
GRMZM5G869993_T03	GRMZM5G869993	DW	
GRMZM2G335738_T01	GRMZM2G335738		FW DW
GRMZM2G027021_T02	GRMZM2G027021	LED	
GRMZM2G034410_T01	GRMZM2G034410	Te LED LA	
GRMZM2G416142_T02	GRMZM2G416142	LA Lwi	
GRMZM2G031370_T01	GRMZM2G031370		
GRMZM2G086069_T02	GRMZM2G086069	FW	
GRMZM2G122935_T03	GRMZM2G122935		
GRMZM5G809265_T01	GRMZM5G809265	DZS	
GRMZM2G128771_T01	GRMZM2G128771		LER
GRMZM2G082853_T01	GRMZM2G082853		Te LED
GRMZM2G005592_T01	GRMZM2G005592		
GRMZM2G057459_T01	GRMZM2G057459		
GRMZM2G107196_T03	GRMZM2G107196	LER	
GRMZM2G181028_T01	GRMZM2G181028		
GRMZM2G157727_T02	GRMZM2G157727	LED	
GRMZM5G812926_T01	GRMZM5G812926		LER FLL
GRMZM2G079904_T01	GRMZM2G079904	FW	
GRMZM2G154149_T01	GRMZM2G154149	FW DW	
GRMZM2G114055_T01	GRMZM2G114055	DZS	
GRMZM2G172506_T01	GRMZM2G172506		FLL DZS
GRMZM2G104920_T03	GRMZM2G104920		
GRMZM2G158662_T01	GRMZM2G158662		
GRMZM2G040115_T01	GRMZM2G040115		Lwi DZS
GRMZM2G180490_T01	GRMZM2G180490		FLL
GRMZM2G416184_T01	GRMZM2G416184	Lwe FW DW	
GRMZM2G067053_T01	GRMZM2G067053		
GRMZM2G043250_T01	GRMZM2G043250	Lwi	
GRMZM2G155980_T01	GRMZM2G155980		
GRMZM2G135087_T01	GRMZM2G135087		
GRMZM2G095382_T01	GRMZM2G095382		
GRMZM2G079196_T01	GRMZM2G079196	emergence	
GRMZM2G103721_T01	GRMZM2G103721		
GRMZM2G121223_T02	GRMZM2G121223	LED	
GRMZM2G062914_T03	GRMZM2G062914		
GRMZM2G167856_T01	GRMZM2G167856	Lwi	
GRMZM2G053987_T03	GRMZM2G053987		
GRMZM2G171080_T01	GRMZM2G171080	Lwi	
GRMZM2G167957_T01	GRMZM2G167957	Tm Te LED	

GRMZM2G092595_T01	GRMZM2G092595	LER Lwe FW	
GRMZM2G066876_T01	GRMZM2G066876		DZS
GRMZM2G399484_T01	GRMZM2G399484	FW	Tm Te
GRMZM2G059179_T01	GRMZM2G059179		
GRMZM2G139882_T01	GRMZM2G139882	LED	
GRMZM2G076943_T01	GRMZM2G076943	LED FLL	
GRMZM5G856011_T01	GRMZM5G856011	LED FLL DZS	
GRMZM2G054221_T01	GRMZM2G054221	DW	
GRMZM2G013767_T01	GRMZM2G013767		
GRMZM5G867798_T01	GRMZM5G867798		FW
GRMZM2G368632_T01	GRMZM2G368632		FW
GRMZM2G487328_T02	GRMZM2G487328		
AC217401.3_FGT003	AC217401.3_FG003		DW
GRMZM2G162781_T01	GRMZM2G162781		LER
GRMZM2G016480_T01	GRMZM2G016480	LER	
AC214817.3_FGT004	AC214817.3_FG004		
GRMZM2G066274_T02	GRMZM2G066274		Tm Te LED FLL Lwe LA
GRMZM2G023110_T01	GRMZM2G023110	FW DW	
GRMZM2G394321_T01	GRMZM2G394321		Lwi
GRMZM2G020986_T01	GRMZM2G020986	Tm Te	FW DW
GRMZM5G860810_T03	GRMZM5G860810		
GRMZM2G172330_T01	GRMZM2G172330	Tm emergence	
GRMZM2G043584_T01	GRMZM2G043584		
GRMZM2G011806_T01	GRMZM2G011806	LA	
GRMZM2G136353_T01	GRMZM2G136353	LER	
GRMZM2G059214_T01	GRMZM2G059214	Lwe Lwi	
GRMZM2G166524_T02	GRMZM2G166524		Lwe LA Lwi DZS
GRMZM2G432642_T02	GRMZM2G432642		
GRMZM2G119850_T01	GRMZM2G119850	FW DW	
GRMZM2G306771_T01	GRMZM2G306771		
GRMZM2G461278_T03	GRMZM2G461278	FW DW	
GRMZM2G147857_T01	GRMZM2G147857		
GRMZM2G463227_T01	GRMZM2G463227	LER	
GRMZM2G159105_T01	GRMZM2G159105		
GRMZM2G091632_T02	GRMZM2G091632	Tm Te LED Lwe LA Lwi emergence	
GRMZM2G463904_T01	GRMZM2G463904		
GRMZM2G354621_T02	GRMZM2G354621	FLL LA	
GRMZM2G145752_T02	GRMZM2G145752		
GRMZM2G381059_T03	GRMZM2G381059		emergence
GRMZM2G168985_T01	GRMZM2G168985		
GRMZM2G125259_T01	GRMZM2G125259		LA Lwi
GRMZM2G036872_T01	GRMZM2G036872		
GRMZM2G042084_T01	GRMZM2G042084	LER FLL	
AC203841.3_FGT009	AC203841.3_FG009		
GRMZM2G052821_T01	GRMZM2G052821		Tm Te LED
GRMZM2G040511_T01	GRMZM2G040511		FW DW
GRMZM2G018189_T01	GRMZM2G018189	FW DW	Tm Te LED emergence

GRMZM2G389768_T01	GRMZM2G389768		Tm Te LED FLL Lwe LA Lw
GRMZM2G456835_T01	GRMZM2G456835		
GRMZM2G163059_T01	GRMZM2G163059		
GRMZM2G021194_T01	GRMZM2G021194		DW
GRMZM2G077036_T01	GRMZM2G077036		
GRMZM2G040876_T01	GRMZM2G040876		LED FLL
GRMZM2G044096_T01	GRMZM2G044096		LED FLL
GRMZM5G840013_T03	GRMZM5G840013		
GRMZM2G076841_T01	GRMZM2G076841		
GRMZM2G067764_T01	GRMZM2G067764		
GRMZM2G056039_T01	GRMZM2G056039		
GRMZM2G070863_T01	GRMZM2G070863		FW DW
GRMZM2G167868_T01	GRMZM2G167868		FW
GRMZM2G002220_T01	GRMZM2G002220		DW
GRMZM5G856084_T01	GRMZM5G856084		
GRMZM2G147123_T01	GRMZM2G147123	LA Lwi	
GRMZM2G367023_T01	GRMZM2G367023		LER
GRMZM2G037146_T01	GRMZM2G037146		
GRMZM2G125617_T01	GRMZM2G125617		FW DW
GRMZM2G031637_T01	GRMZM2G031637		
GRMZM2G364069_T01	GRMZM2G364069	DZS	
GRMZM2G158093_T01	GRMZM2G158093	Tm Te	FW DW
GRMZM2G043147_T01	GRMZM2G043147	Tm Te LED	
GRMZM2G141931_T01	GRMZM2G141931		FLL
GRMZM2G399073_T02	GRMZM2G399073		LED FLL
GRMZM2G111475_T01	GRMZM2G111475		FW
GRMZM2G117836_T01	GRMZM2G117836	FW DW	
GRMZM2G341404_T01	GRMZM2G341404		LER FLL LA
GRMZM2G351775_T01	GRMZM2G351775	DZS	
GRMZM2G429169_T01	GRMZM2G429169		
GRMZM2G068316_T01	GRMZM2G068316		Lwe LA Lwi
GRMZM2G138511_T01	GRMZM2G138511		
GRMZM2G016886_T01	GRMZM2G016886	FW	
GRMZM2G063162_T01	GRMZM2G063162	Te LED FLL	
GRMZM2G064537_T01	GRMZM2G064537	LED	
GRMZM2G132971_T01	GRMZM2G132971	LA	
AC233850.1_FGT009	AC233850.1_FG009		
GRMZM2G017411_T01	GRMZM2G017411	Tm	
GRMZM2G013128_T01	GRMZM2G013128		emergence
GRMZM2G042133_T01	GRMZM2G042133		LER
GRMZM2G371721_T01	GRMZM2G371721	LER FW DW	Tm Te
GRMZM2G406268_T03	GRMZM2G406268		FW DW
GRMZM2G472266_T01	GRMZM2G472266		FLL Lwe LA
GRMZM2G049373_T01	GRMZM2G049373		FLL DZS
GRMZM2G449274_T01	GRMZM2G449274		Tm Te LED Lwi
GRMZM2G006468_T05	GRMZM2G006468		
GRMZM2G119258_T01	GRMZM2G119258	Lwe LA Lwi	

GRMZM2G064096_T01	GRMZM2G064096		DZS
GRMZM2G047677_T01	GRMZM2G047677	Lwe LA	
GRMZM2G144224_T01	GRMZM2G144224		Tm Te LED
GRMZM2G099981_T02	GRMZM2G099981		
GRMZM2G136178_T02	GRMZM2G136178	Tm Te DZS emergence	
AC217665.3_FGT005	AC217665.3_FG005	Lwe LA Lwi DZS	
GRMZM2G163860_T01	GRMZM2G163860	Tm Te emergence	
GRMZM2G170805_T01	GRMZM2G170805	LER FLL	
GRMZM2G471142_T01	GRMZM2G471142	Tm Te LED FLL Lwe LA DZS emergence	
GRMZM2G031308_T02	GRMZM2G031308	emergence	
AC184130.4_FGT012	AC184130.4_FG012	LED	
GRMZM2G017426_T01	GRMZM2G017426		
GRMZM2G167049_T01	GRMZM2G167049	Tm Te LA Lwi emergence	
GRMZM2G032447_T01	GRMZM2G032447	LER FLL Lwe	
GRMZM2G410963_T01	GRMZM2G410963		
GRMZM2G112210_T01	GRMZM2G112210	LED FLL DZS	
GRMZM2G103135_T01	GRMZM2G103135	Tm Te LED	
GRMZM2G333659_T01	GRMZM2G333659		
GRMZM2G524711_T02	GRMZM2G524711	LER	
GRMZM2G455909_T01	GRMZM2G455909		
GRMZM2G077937_T01	GRMZM2G077937	Lwe	
GRMZM2G147869_T01	GRMZM2G147869	FW	
GRMZM2G092154_T01	GRMZM2G092154		
GRMZM2G420733_T01	GRMZM2G420733		
GRMZM2G150179_T01	GRMZM2G150179		LER
GRMZM2G022547_T02	GRMZM2G022547		
GRMZM2G034896_T01	GRMZM2G034896	emergence	
GRMZM2G448185_T01	GRMZM2G448185		
GRMZM2G087259_T01	GRMZM2G087259		Lwe LA Lwi
GRMZM2G107082_T01	GRMZM2G107082		
GRMZM2G045534_T01	GRMZM2G045534		Tm Te
GRMZM2G018566_T02	GRMZM2G018566		FW DW
GRMZM2G151041_T02	GRMZM2G151041		FLL
GRMZM2G171707_T01	GRMZM2G171707	Tm Te LED FLL LA emergence	
GRMZM2G370852_T02	GRMZM2G370852		Te LED
GRMZM2G025366_T01	GRMZM2G025366		Tm Te LED
GRMZM2G116872_T01	GRMZM2G116872		FW
GRMZM2G068455_T03	GRMZM2G068455		FLL Lwe LA
GRMZM2G361693_T01	GRMZM2G361693		
GRMZM2G165176_T01	GRMZM2G165176		Lwe
GRMZM2G036534_T01	GRMZM2G036534		Lwe LA Lwi
GRMZM2G145595_T01	GRMZM2G145595		FW
GRMZM2G302259_T02	GRMZM2G302259		Tm Lwi
GRMZM2G134134_T01	GRMZM2G134134		Lwi
GRMZM2G397247_T04	GRMZM2G397247		Lwe
GRMZM2G105436_T01	GRMZM2G105436		emergence
GRMZM2G063048_T01	GRMZM2G063048		DZS

AC213521.3_FGT005	AC213521.3_FG005		LER
GRMZM2G022192_T03	GRMZM2G022192		
GRMZM2G116258_T01	GRMZM2G116258		FLL Lwe LA DZS
GRMZM2G419806_T02	GRMZM2G419806		FLL Lwe LA DZS
GRMZM2G161673_T01	GRMZM2G161673		Lwe Lwi DZS
GRMZM2G026117_T03	GRMZM2G026117		LA DZS
GRMZM2G084958_T06	GRMZM2G084958		FLL Lwe
GRMZM2G039396_T01	GRMZM2G039396		FW DW
GRMZM2G162776_T03	GRMZM2G162776		emergence
GRMZM2G044074_T01	GRMZM2G044074		
GRMZM2G024738_T04	GRMZM2G024738		FW DW
GRMZM2G116053_T01	GRMZM2G116053		
GRMZM2G119894_T01	GRMZM2G119894		
GRMZM5G832772_T02	GRMZM5G832772	LER	
GRMZM2G365957_T01	GRMZM2G365957		
AC234203.1_FGT004	AC234203.1_FG004		LER
GRMZM2G004748_T01	GRMZM2G004748		Lwe LA
GRMZM2G477872_T01	GRMZM2G477872		
GRMZM2G157564_T01	GRMZM2G157564		DZS
GRMZM2G177812_T01	GRMZM2G177812		FLL Lwe LA DZS
GRMZM5G868168_T02	GRMZM5G868168	LER	
GRMZM2G040720_T01	GRMZM2G040720	LER FLL	
GRMZM2G432390_T01	GRMZM2G432390		emergence
GRMZM2G119345_T01	GRMZM2G119345	Tm Te emergence	FW DW
GRMZM2G085236_T01	GRMZM2G085236		
GRMZM2G076526_T02	GRMZM2G076526		Tm Te
GRMZM2G336448_T02	GRMZM2G336448	DZS	
GRMZM2G031954_T01	GRMZM2G031954	Tm Te LED emergence	
AC209460.3_FGT002	AC209460.3_FG002	Tm Te	FW DW
GRMZM2G139920_T01	GRMZM2G139920		
GRMZM2G104419_T01	GRMZM2G104419		
GRMZM2G170927_T01	GRMZM2G170927		FLL Lwe LA DZS
GRMZM2G148200_T01	GRMZM2G148200		
GRMZM2G078292_T01	GRMZM2G078292	Lwe LA Lwi DZS emergence	
GRMZM2G433162_T01	GRMZM2G433162		LED
GRMZM2G076593_T01	GRMZM2G076593		
GRMZM2G125832_T01	GRMZM2G125832		
GRMZM2G097802_T01	GRMZM2G097802		LER
GRMZM2G101125_T01	GRMZM2G101125	Tm Te LED emergence	
GRMZM2G177659_T01	GRMZM2G177659		
GRMZM2G150406_T01	GRMZM2G150406		FW DW
GRMZM2G036448_T01	GRMZM2G036448		Lwe
GRMZM2G136794_T02	GRMZM2G136794		
GRMZM2G105192_T05	GRMZM2G105192	Tm Te	
GRMZM2G109865_T01	GRMZM2G109865	LER	
GRMZM5G894432_T02	GRMZM5G894432		LER
GRMZM2G141704_T01	GRMZM2G141704		Tm Te LED

GRMZM2G080767_T01	GRMZM2G080767		LER
GRMZM2G135651_T01	GRMZM2G135651		
GRMZM2G169788_T01	GRMZM2G169788	Tm Te	
GRMZM2G014914_T01	GRMZM2G014914		DZS
GRMZM2G174807_T01	GRMZM2G174807		
AC209208.3_FGT002	AC209208.3_FG002		LER FLL Lwe DZS FW DW
GRMZM2G443265_T02	GRMZM2G443265		Tm Te LED
GRMZM2G003033_T01	GRMZM2G003033		DZS
GRMZM2G540403_T02	GRMZM2G540403		
GRMZM2G136016_T01	GRMZM2G136016		Tm Te emergence
GRMZM2G067877_T01	GRMZM2G067877		Tm Te LED LA emergence
GRMZM2G137849_T01	GRMZM2G137849	DZS	
GRMZM2G383088_T01	GRMZM2G383088		DZS
GRMZM2G042146_T02	GRMZM2G042146		
GRMZM2G118208_T01	GRMZM2G118208		
GRMZM2G000510_T04	GRMZM2G000510		
GRMZM2G118497_T01	GRMZM2G118497	DZS emergence	
GRMZM2G057820_T01	GRMZM2G057820		LED emergence
GRMZM2G119527_T01	GRMZM2G119527		Lwe Lwi
GRMZM2G115635_T01	GRMZM2G115635		
GRMZM2G355610_T01	GRMZM2G355610		
GRMZM2G171354_T02	GRMZM2G171354	emergence	
GRMZM2G021912_T01	GRMZM2G021912		
GRMZM2G080387_T01	GRMZM2G080387	FLL Lwe LA DZS	
GRMZM2G100484_T02	GRMZM2G100484	LER Lwe DZS FW DW	
GRMZM2G162461_T01	GRMZM2G162461	FLL	
GRMZM2G137894_T02	GRMZM2G137894		LER
GRMZM2G063575_T01	GRMZM2G063575	DW	
GRMZM2G125768_T01	GRMZM2G125768	Tm Te	DW
GRMZM2G073743_T01	GRMZM2G073743		
GRMZM2G001466_T01	GRMZM2G001466		
GRMZM2G018573_T01	GRMZM2G018573	LED	
GRMZM2G010363_T01	GRMZM2G010363	LED	
GRMZM5G812555_T01	GRMZM5G812555	LED Lwe LA Lwi	
GRMZM2G414569_T01	GRMZM2G414569		
GRMZM2G031837_T01	GRMZM2G031837		FLL Lwe
GRMZM2G129268_T01	GRMZM2G129268	LER	
GRMZM2G068259_T01	GRMZM2G068259	LER	
GRMZM2G172183_T01	GRMZM2G172183		
GRMZM2G104325_T01	GRMZM2G104325		
GRMZM2G006894_T02	GRMZM2G006894		Tm Te LED FLL
GRMZM2G019404_T01	GRMZM2G019404		Te LED FLL
GRMZM2G094497_T01	GRMZM2G094497	emergence	
GRMZM2G003988_T01	GRMZM2G003988	Lwe	
GRMZM2G090849_T01	GRMZM2G090849	Lwe LA Lwi	
GRMZM2G411916_T01	GRMZM2G411916	Tm Te	
GRMZM2G354525_T01	GRMZM2G354525		

GRMZM2G101020_T01	GRMZM2G101020		
GRMZM2G181151_T03	GRMZM2G181151		
GRMZM5G867882_T01	GRMZM5G867882	emergence	
GRMZM2G163233_T01	GRMZM2G163233	emergence	
GRMZM2G161459_T02	GRMZM2G161459		FLL Lwe
GRMZM2G104542_T01	GRMZM2G104542		LER FLL Lwe LA DZS
GRMZM2G026391_T02	GRMZM2G026391		FLL DZS
GRMZM2G079889_T01	GRMZM2G079889	emergence	
GRMZM5G867390_T01	GRMZM5G867390	DZS	
GRMZM2G026459_T03	GRMZM2G026459		DZS
GRMZM2G112039_T02	GRMZM2G112039		DZS
GRMZM2G176282_T02	GRMZM2G176282	LER FLL	
GRMZM2G375116_T01	GRMZM2G375116	DW	
GRMZM2G443728_T01	GRMZM2G443728	LA	
GRMZM2G327234_T01	GRMZM2G327234		
GRMZM2G036916_T01	GRMZM2G036916	Lwi	
GRMZM2G022915_T01	GRMZM2G022915	LED	
GRMZM2G178356_T01	GRMZM2G178356		
GRMZM2G097768_T03	GRMZM2G097768		
GRMZM2G012923_T01	GRMZM2G012923		DW
GRMZM2G083173_T01	GRMZM2G083173		LED FLL
GRMZM2G160069_T01	GRMZM2G160069		
GRMZM2G067789_T01	GRMZM2G067789	Tm Te emergence	
GRMZM2G403915_T01	GRMZM2G403915	LA Lwi	
GRMZM2G012992_T02	GRMZM2G012992		
GRMZM5G811095_T01	GRMZM5G811095		
GRMZM2G115049_T01	GRMZM2G115049	FW	Tm Te LED
GRMZM2G307561_T03	GRMZM2G307561	emergence	
GRMZM2G444801_T01	GRMZM2G444801		LED
GRMZM2G166159_T01	GRMZM2G166159		
GRMZM2G113409_T01	GRMZM2G113409	emergence	
GRMZM2G057616_T01	GRMZM2G057616		Lwi
GRMZM2G344163_T01	GRMZM2G344163		Lwi DZS
GRMZM2G170382_T01	GRMZM2G170382	DZS	
GRMZM2G013728_T01	GRMZM2G013728	Lwe emergence	
GRMZM2G067747_T04	GRMZM2G067747		
GRMZM2G089086_T01	GRMZM2G089086	LA Lwi	
GRMZM2G159295_T01	GRMZM2G159295		
GRMZM2G018706_T01	GRMZM2G018706	LER FLL Lwe	
GRMZM2G037342_T01	GRMZM2G037342		
AY530952.1_FGT001	AY530952.1_FG001		
AY542798.1_FGT003	AY542798.1_FG003	FW DW	

posC_8-way	negC_8-way	trait group in overlap
	LER FLL DZS	
emergence		
	DW	
LER FW		
	FW	
	LA	
Tm Te LED FLL Lwe LA		
Tm emergence		
Te LED FLL Lwe LA Lwi DZS		
	Lwe LA Lwi DZS	size
Tm Te LED FLL Lwe LA Lwi emergence		size
LER FW		
FW DW		
	Tm Te LED DZS	timing
	Tm	
LER FLL DZS FW DW		
FW DW		
	Tm Te LED emergence	
	FLL	
DZS		
FLL Lwe LA Lwi DZS		

Tm Te	FW DW	
	FLL Lwe LA Lwi DZS	
	Tm Te LED FLL Lwe LA Lwi DZS	
	Tm Te LED DZS	timing
	Tm Te LED LA Lwi DZS	timing
Tm Te LED FLL Lwe LA Lwi DZS emergenc		size
	Tm Te LED Lwe	timing
LER		
	LED Lwe LA Lwi	
FLL LA DZS		size
LER FLL		
LER		
LER		
Tm Te LED		timing
Lwi		
	Tm Te LED Lwe LA Lw	size
LED Lwe LA Lwi		
	Lwe LA FW DW	
LER		
LER FLL Lwe LA DZS FW		shoot
	Tm Te emergence	
	LER	
FW		
FW		
	FLL	size
	Tm Te LED	
	LER	
	emergence	
LER FLL		
	Tm Te LED FLL DZS	size

Tm
Tm Te LED Lwe LA Lwi emergence
Lwi

LER FLL Lwe LA DZS FW DW
Lwe LA Lwi DZS size

LER
LER
LER FW DW
FW
LER

Lwi DZS
LA Lwi DZS
LA Lwi DZS

FLL

emergence
Lwi

FW DW

Tm Te LED DZS emergence

LED FLL Lwe LA Lwi DZS

FW DW
emergence FW DW

LER

FW

FW DW

FW DW
emergence

FW DW

FW
Tm Te LED FLL Lwe LA timing
Lwe LA
FLL

Tm timing

LER

FW DW

LER Lwe size

FW

LER FLL Lwe LA DZS F' size

FLL
emergence
LER DZS
FW DW

LER

LER

FW DW

Tm Te LED DZS emergence

emergence

Tm Te LED FLL Lwe LA DZS

FW DW
Lwi

FW DW
Lwe LA Lwi

FLL LA size
LER

FLL

emergence

FLL Lwe LA Lwi DZS
LA Lwi DZS size

FLL Lwe LA Lwi

LER

Te LED
Lwi

FW
Tm Te LED emergence

LER

emergence
Lwi

FLL Lwe LA Lwi DZS

Tm Te LED FW DW

FLL

Lwi

FW DW
FW DW
FW DW

LED

FLL Lwe LA Lwi DZS size
DW
LER

LED FLL Lwe LA Lwi D: size

LER FLL DZS

LED FLL Lwe LA DZS
DZS

Tm Te LED FLL Lwe LA Lwi DZS size_timing

LER

Tm Te FW
LER
LER FLL Lwe
LER

Lwe LA Lwi size

LER FLL DZS size

DW

emergence

Te LED FLL Lwe LA Lwi DZS

FW DW
emergence
emergence
LA Lwi size

LED FLL

LER
LED DZS
FW DW

FW
LER

LER
Lwe emergence size_timing
Te LED timing
LER
Lwe Lwi

LER

LER

LER

LER

emergence
LER

emergence
Tm Te LED Lwe LA Lw size

FLL Lwe LA Lwi DZS

emergence

FW
Tm Te LED FW DW

Lwe LA Lwi size

LER

LED FLL Lwe LA Lwi DZS size
LER
Tm Te emergence timing

LER
emergence

LER

LER
FLL Lwe
LER

Lwe

LA Lwi

Lwe LA DZS FW size

LER

FLL Lwe LA Lwi DZS size

Lwe

FLL LA size

LER FLL Lwe

Tm Te LED FLL LA Lwi size_timing

FW DW

FW DW

Tm Te LED

LER

LER

Lwe

FLL Lwe LA Lwi DZS size

FLL LA DZS

emergence

Tm Te LED Lwe
Tm Te

DZS

LER
DW shoot
Lwi

Tm Te emergence

FW DW

LER
Tm Te
LER
FLL Lwe
LER FLL Lwe LA Lwi DZS FW DW size
Tm Te LED FLL DZS

LER FLL
FLL Lwe LA Lwi DZS
DZS

FLL Lwe DZS
FLL

Lwi DZS

Tm Te LED FLL Lwe LA size

FLL

LER

Tm emergence

FW DW
LA Lwi DZS emergence size

FW DW
DZS
Tm Te FLL Lwe LA Lwi size
FLL Lwe LA Lwi DZS

emergence
Lwi
Tm Te emergence

emergence
emergence
LED FLL Lwe
LER

FW DW

FLL Lwe LA Lwi DZS size

Te LED DZS emergence
FW DW

LER
FW DW
emergence
emergence

LER FLL
FLL
FLL Lwe LA Lwi DZS

FLL Lwe

LER FLL

FW

DZS
Lwe Lwi
Lwi

Lwe LA Lwi
Tm Te emergence
Lwe DZS FW DW
FW

emergence
DW
ce

Lwe
Lwe
Tm Te LED emergence
DZS size
FW
Tm Te DZS timing

LER
LER FLL
Tm Te LED FLL Lwe LA Lwi DZS size
Lwe LA Lwi
LER

DW
FW
LER
LER FLL
LER FLL LA
LA

FW

LED Lwe LA Lwi

FW

Tm Te LED Lwe LA Lwi emergence
LER

LER FLL Lwe LA Lwi DZS
DW

LER

emergence
LER FLL

Tm FLL size

LER

FW

LER Tm Te LED FLL Lw size_timing

Lwe LA Lwi
emergence
FLL Lwe LA Lwi DZS

Te LED Lwe Lwi

LER
emergence
Lwe LA Lwi DZS size

DZS

LER
LER

FW DW
Tm Te LED Lwe Lwi

LED Lwe

FLL Lwe LA Lwi size
LA Lwi

FW
Lwe LA
LER

Tm Te LED Lwe LA Lwi DZS emergence
Tm Te LED
Tm Te LED FLL emergence
FLL DZS
FW DW
LER FW DW
emergence

DZS
FW emergence
emergence

DW

DW
Tm Te LED emergence timing

Te LED
Tm Te LED timing

FW DW
FW DW
FW DW
Lwe LA Lwi DZS

DZS
FW DW
Lwe LA Lwi size

Tm Te LED
Te LED
Tm Te LED Lwe LA Lwi
Lwe

Tm Te
FW DW

Tm Te LED

DZS
Lwi

LER
DW
FLL Lwe LA Lwi DZS

Tm Te LED LA Lwi DZS size_timing
LER FLL Lwe DZS size

Te LED DZS
LER
FW DW

DW
Tm Te LED emergence
LER

FW DW

LER

emergence

LED emergence

DZS size

LER DZS

Tm Te LED FLL Lwe LA emergence

emergence

DW

LER FLL Lwe LA DZS timing

DW

Tm Te LED FLL

FW DW

FLL Lwe LA Lwi

DZS

emergence

DZS

FW DW

LA Lwi size

Tm Te

FW

LER FW DW

LED FLL Lwe LA Lwi DZS
DW

FW DW

LER

FW DW

FW

FW

Lwe

LER

FW DW
LER

Lwi DZS
FLL

FW DW

DZS
DW

FW DW
LER

FLL LA

Tm emergence

Tm
Tm Te LED emergence
FW DW

DW
LER
Tm Te

Lwe LA Lwi
Lwe LA Lwi DZS

FW DW

Tm Te LED FLL LA DZS

FLL Lwe LA

Te LED emergence
FW DW
FW DW

Te LED Lwe LA Lwi timing
LA Lwi DZS

Lwe LA Lwi

FW DW

Tm Te LED FLL

LER

LER

LER

FW

LER

LER

FW DW

FW DW shoot

Lwi

FLL Lwe LA Lwi DZS size

FW DW

Tm Te

FW DW

FW DW

FW

LER

emergence

LER

LER FLL Lwe

LED
FW DW
Tm Te LED Lwi emerg timing

LER FW DW

DZS
DZS
FW

Lwe LA Lwi emergence

Tm Te LED DZS
FLL Lwe LA
LER

DZS size
FW
LER FLL
Tm emergence FW DW

DZS

DW

LED FLL LA timing

LER FLL Lwe LA
FW DW

FW DW
Tm Te LED FLL LA size
Lwe LA Lwi emergence timing
LER

DW

LED
emergence FW DW

FW DW

Tm emergence

FW
LER

Lwi
DZS

Te LED

LED

DW

Tm Te emergence timing

Te LED timing

Lwe LA Lwi DZS size

FW
emergence

DW

LER
Tm Te LED

LER

LER

Lwe LA Lwi

FW DW

FLL
Tm Te LED FLL Lwe LA Lwi DZS size

LER FW DW
LER

emergence FW DW

FW
emergence

FW DW

LER

Lwe DZS
Tm Te LED emergence timing

emergence

FW DW
FW DW
LER FW DW

LER

DW
Tm Te LED FLL Lwe LA Lwi DZS size

Lwe Lwi

DW

Tm Te LED FLL Lwe LA Lwi DZS

emergence

	Tm FLL	
	LER	
LER		
Tm Te LED FLL emergence		timing
Lwe		
Tm Te LA Lwi		size
	LA Lwi	
FW DW		
	FW DW	
	Tm Te LED	
	FW DW	
	FW DW	
	FW DW	
emergence		
	LER FLL	
FW DW		
	FW DW	
FLL LA Lwi DZS		
	emergence	
LER		
	Tm Te LED FLL Lwe LA	size_timing
	FLL LA DZS	size
	FW DW	
	FW DW	
LER		
emergence		
	DW	
LER Lwe		
DW		
DZS		

Lwe
FLL LA size

Tm Te LED emergence

Tm Te LED LA Lwi emergence timing

Tm Te LED FLL Lwe LA Lwi DZS emergen size_timing

Tm Te LED Lwe LA Lwi DZS emergence size

LER
DZS

Te LED Lwe LA Lwi size
FLL

Te LED timing

FLL Lwe DZS size
Tm Te LED FW
FW DW
FW DW

Tm Te LED FLL Lwe LA Lwi DZS emergence

Tm Te LED
emergence
FW

LER
FLL Lwe LA Lwi DZS size

Tm Te DZS emergence timing
LED FLL Lwe LA Lwi

LA Lwi DZS

FW DW

DZS size
FW DW

FW DW
emergence
emergence
LA Lwi size

FW DW

Lwi
Lwi
FW
Tm Te LED Lwi

Tm Te LED FLL Lwe LA Lwi DZS

FW

Lwe LA Lwi

LED FLL DZS

emergence

Tm

LER

Tm Te

Tm

Lwi

emergence

LER

FW DW

FLL Lwe LA DZS

LER

Tm Te LED FLL Lwe LA Lwi DZS emergence

Tm Te LED Lwe DZS emergence

LER

FLL Lwe LA Lwi

LER FW DW

LER

LER

Tm Te LED Lwi emergence

DW

FW DW

emergence

LER

LER

LER FLL DW

DW
FW DW

Lwi
LER FW DW

FLL
FW
FW DW

emergence
DZS

LER
LED Lwe LA Lwi
LER

FW DW
DW

Te LED Lwe LA Lwi DZS
LER
FW DW
Te LED

LER
FW

LER DW
FW DW
LER

FW

LER
FW
Tm emergence
Te LED FLL Lwe LA Lwi DZS

LER

LER

LER

LER

FW DW

LER

LER

FW DW

LER

FW DW

LER

FW DW

FW

LER

emergence

LER

emergence

Tm Te LED FLL Lwe LA size

FW DW

LER

FLL DZS

FW DW

FW DW

FW DW

Lwe

Lwi

Tm Te LED FLL Lwe LA size

Tm Te LED emergence

FW DW

LER

Te LED timing

LER

	FLL LA DZS	size
LER		
FW DW		
	LED Lwe Lwi	timing
	FW DW	
	FLL Lwe LA Lwi DZS	size
	LER	
FW DW		
	Tm Te LED FLL Lwe LA	size_timing
	FLL Lwe LA DZS	size
FW DW		
	Te LED FLL Lwe LA DZ	size
	FLL Lwe	
	FLL Lwe LA Lwi	size
	emergence	

LER FLL Lwe LA Lwi DZS

Lwi
Tm Te LED FLL Lwe LA Lwi DZS emergence
Tm Te LED timing
Lwe LA Lwi DZS FW size
Tm Te LED emergence

Te LED

Lwe LA Lwi size
FW DW

Tm Te emergence
emergence
emergence
FW
LER
FW
Lwe LA Lwi DZS
LER
FW DW
Lwi

Lwe Lwi
LER FLL DZS FW
Tm Te emergence
FLL Lwe LA Lwi DZS size

emergence

FW DW

Tm Te LED FLL Lwe LA timing

FW DW

FW DW

FW DW

Tm Te LED DZS emergence timing

LER

ence Tm Te LED Lwe LA Lw size_timing

Tm emergence timing

Tm Te LED

LER FW DW

DZS

LED Lwe LA Lwi

FLL Lwe LA Lwi DZS
LER FLL Lwe LA

FW DW shoot
DW

Lwe
DW

LED FLL LA Lwi DZS size_timing

Tm Te LED FLL Lwe LA Lwi DZS emergen timing
LER

Tm Te

LER

Tm emergence
Tm Te LED FLL Lwi DZS emergence
Te LED FLL Lwe LA Lwi size

DZS

LER

LA
Tm Te LED

FW DW

FW DW

FLL size
FLL Lwe LA DZS
FLL Lwe LA Lwi DZS size

LER

FW DW
Lwi

Tm Te LED FLL LA Lwi DZS emergence
DW

Tm Te LED

Lwe DZS

LED FLL Lwe LA Lwi DZS size
emergence

emergence
LER FW DW
LED FLL Lwe LA Lwi DZS

FW DW

DZS

FLL size

Tm Te LED Lwe LA Lwi DZS emergence

Lwe LA Lwi
DW

Tm emergence
emergence FW

Tm Te LED FLL Lwe LA Lwi DZS emergence

Tm Te LED DZS emergence size_timing

LER

FLL size

Tm Te LED FLL Lwe LA Lwi DZS emergence

LA

emergence

LER

FW DW

LER

FW

LER FLL Lwe DZS

FLL Lwe LA Lwi DZS size

FW DW

LER

Tm Te LED FLL Lwe LA size

Tm Te LED DZS

FLL DZS

LER

DW

emergence

FW DW

LER FW DW
FW

LER

FW DW emergence
DZS

Tm Te LED Lwe LA Lwi emergence size

emergence
FLL
Lwe

LED

FW DW

LER

FLL
LER FLL size
FW DW

Tm Te LED

Tm
emergence
emergence

Tm emergence
DW
FLL LA size

Lwe LA Lwi

Lwe LA Lwi size

Tm Te LED FLL Lwe LA Lwi DZS size_timing
FW DW
LER
DW
FLL

FW

FW DW

emergence DW

Lwi
LER

Tm Te emergence

FW DW

LED Lwe LA Lwi size_timing

emergence
emergence
FLL Lwe LA
FLL Lwe LA Lwi DZS

Lwe Lwi

Tm Te LED FLL Lwe LA Lwi DZS

LER

emergence
emergence

Tm Te LED Lwi emergence

FLL size
FLL Lwe LA DZS size
LER

emergence

FW DW

emergence

emergence
emergence

FLL Lwe LA Lwi
Lwe LA Lwi
emergence

FW DW
LER

Te LED emergence
FW DW
FW DW
FW DW Tm Te LED emergence
FLL
Tm Te LED emergence
FW DW
FLL DZS
LED FLL
FW DW
emergence
Te LED

Tm Te LED emergence
FLL
FW DW

DW	Tm Te LED emergenc timing
DW	
	Tm Te LED emergence
	Tm Te LED emergence
	Tm Te LED emergence
	LED
ence	Tm Te LED FLL Lwe LA size_timing
	Tm Te LED
	Tm emergence
	Tm Te LED FLL
	LED
	Tm Te LED emergence
	Tm Te LED FLL emerg timing
	Tm Te LED emergence
FW DW	
	Tm Te LED timing
	emergence
	FLL
DW	Tm Te LED emergence
	Tm Te LED emergence
	FLL
	Tm Te LED emergence
	FLL
	Tm Te LED
DW	Tm Te LED emergence
	Tm Te LED emergence
	Tm Te LED emergence
FW DW	Tm Te LED
	FLL Lwe DZS
	LED
	FLL
	Tm Te LED FLL emerg timing
	Tm Te LED
	Tm Te LED
	Tm Te LED FLL LA Lwi timing
	Tm Te LED FLL Lwe LA size_timing
	Tm Te LED emergence
FW DW	Tm emergence
	Tm Te LED emergenc timing
FW DW	Tm Te

	emergence	
	Tm Te LED emergence	
FW DW	Tm Te LED emergence	
	Tm Te LED FLL emerg	timing
FW DW	Tm emergence	
	Tm Te LED FLL LA emergence	
	Tm Te LED emergence	
	Tm Te LED emergence	
	Tm Te LED FLL Lwe L	timing
	Tm Te LED DZS emergence	
	Tm Te LED Lwi emergence	
	Tm Te LED FLL emerg	timing
	DZS	size
	LER DW	
	LER	
	emergence	
	Lwe LA Lwi DZS	
	LER	
	FLL LA Lwi DZS	size
	LER FLL Lwe LA DZS	size
	LA DZS	size
	DZS emergence	
FW DW		
	FLL DZS	size
	LER FLL Lwe LA DZS	size
	LER	
	DZS	
ce	Tm Te LED FLL Lwe L	size
	Tm Te LED emergence	
	emergence	
FW DW		
	Tm	
	LER	
	Lwe LA DZS	size

emergence	DW	
	Tm Te	
FW DW	Tm Te LED emergence	
FW DW	Tm Te emergence	
	emergence	
FW DW		
DW		
	emergence	
	Te LED	
ence	DZS	
	Lwi DZS emergence	
	Tm Te Lwi	
	Te emergence	timing
FW DW		
FW DW		
Tm Te emergence		
	Tm Te LED Lwe LA Lwi DZS emergence	
DW		
	Tm Te LED FLL DZS	size_timing
LER FLL Lwe LA Lwi DZS FW DW		
	FW DW	
LER		
	Tm Te LED FLL Lwe LA	timing
DW		

FLL

FLL

LER

emergence

LER

Tm Te LED FLL Lwe LA Lwi DZS emergence
LER

LER

LER
LER

LER

DZS

Tm emergence
LER

LED
FW DW

LED FLL Lwe LA Lwi D: size
DZS
Tm Te LED Lwe Lwi er size_timing

Lwi
emergence timing
Lwe DZS
LER
LER
DW

Tm
FW
DW

FW DW
FW DW

emergence

DW

Tm

FW

LER FLL Lwe LA Lwi DZS

gence	FLL	size
	Tm Te LED FLL Lwe LA	
LED		
	LER	
	Lwi emergence	timing
LER FLL		
LER		
	Tm Te LED LA Lwi	size_timing
Tm Te LED FLL Lwe LA		timing
Tm Te LED FLL Lwe LA Lwi DZS		
Tm Te LED FLL Lwe LA Lwi DZS		
Tm Te LED FLL Lwe LA DZS		
Tm Te LED FLL Lwe LA Lwi DZS		
	Lwi emergence	
Tm Te LED FLL Lwe LA		
LER FLL		
LED FLL LA DZS		timing
FLL		
Te LED FLL Lwe LA Lwi DZS		size_timing
FW DW		shoot
Lwe DZS		
FW DW		
emergence		
LER		
	FW DW	
	LA Lwi	
Tm Te LED FLL LA DZS		timing
Te LED FLL Lwe LA Lwi DZS		

LED		
	FLL Lwe DZS	size
LER FLL DZS		size
	FLL Lwe LA DZS	size
	FLL DZS	size
	Tm Te LED FLL Lwe LA Lwi DZS	
Lwe emergence		
Tm Te LED FLL Lwe LA Lwi DZS		size
	Lwe LA Lwi	
	Te LED FLL Lwe LA Lw	size_timing
	FW DW	
	LER	
Tm Te LED Lwe LA Lwi		
	FLL Lwe LA DZS	
Tm Te LED Lwi DZS emergence		timing
	LER	
FW DW		
DZS		size
	Tm FLL Lwe LA	size
	LER FLL Lwe LA Lwi DZS	
	LER	
	LER FLL Lwe	
	LER DW	
LED		
	LER FLL Lwe LA DZS	size
	Lwe LA Lwi DZS	size
	Tm Te FLL Lwe LA Lwi	size
Te LED		
	DW	
	LER	
DZS		
Tm		

Tm Te LED		
Tm Te LED Lwe LA	Lwi	timing
	Lwi	
	LER FW DW	size_shoot
	FLL Lwe LA DZS	size
emergence		
emergence		
FLL		
LED		
	FW	
LED		
Tm Te LED DZS emergence		
FLL		
Lwe LA Lwi DZS		size
	FW	
FW		
	LER	
	FLL Lwe	
Tm Te LED FLL Lwe LA DZS		size
	FW	
Tm Te LED Lwe Lwi		
	FW DW	
ce	LER FLL Lwe LA Lwi D;	size
	Lwi	
LER FLL		
Tm Lwe		
LER		

Tm Lwe
LER
Tm emergence FW DW
Tm Te
DW

LER

DZS

LER

DW
FW

Lwe LA Lwi
Lwe LA Lwi
Lwe LA Lwi DZS size

Tm Te emergence timing
FW DW

Tm Te Lwi emergence

Tm Te LED Lwe LA Lwi

Te LED
Tm Te LED emergence

FW
FLL Lwe LA Lwi DZS D size

Tm Te LED FLL LA Lwi DZS emergence
Tm DZS emergence

Tm FLL Lwe LA Lwi DZS

LA Lwi

DZS

Lwi

Tm Lwi emergence

LER FLL DW

LA Lwi size

Te LED FLL Lwe LA Lwi DZS

Tm Te LED emergence
Tm DZS emergence
DZS
Tm Te emergence
Lwi
FW DW
Tm Te Lwi emergence
FW

emergence timing

DW

Lwe LA size

LER

FW DW

emergence
FW DW
FW DW
Tm Te LED

Tm Te LED FLL Lwe LA Lwi DZS emergen		size_timing
Lwe LA Lwi		size
emergence		
Te LED FLL Lwe LA DZS		size_timing
Tm Te LED FLL Lwi		timing
FW DW		
	FW DW	
	LER	
	FW DW	
Tm Te LED FLL Lwe LA Lwi DZS emergen		size_timing
LA Lwi		
	LER	
	LER	
	LER	
	LER FLL Lwe	size
	LER FLL Lwe LA Lwi D	size
	Tm Te LED FLL Lwe LA Lwi DZS emergence	
	LER	
	LER	
	LER	
	Tm Te LED FLL Lwe LA	size_timing
	emergence	
emergence		
Lwi		
emergence		
	emergence	
	LER	
Tm Te Lwi		
emergence		
FLL		size

Tm Te LED emergence

emergence
emergence

Lwi

LER FLL

LER
FW
LER size

LER

LER
Tm Te LED Lwe LA Lwi DZS emergence
LER
FLL

LER

DZS

LER
emergence
LER FW DW
FLL Lwe LA Lwi DZS size
Lwe

Tm Te LED FLL Lwe LA size
Te LED

FW DW
emergence FW DW

FW DW
FLL DZS
FW

Tm Te LED Lwe LA Lwi DZS
Tm Te LED Lwe LA Lwi DZS emergence
Tm Te LED FLL Lwe LA size_timing

FW DW

FLL Lwe LA Lwi DZS

DW
DW

LER
LER FLL Lwe LA DZS

FW
FW DW

LED timing
Lwe LA Lwi
emergence

DW

emergence

FW DW
Tm Te LED timing

FLL LA DZS
Lwi

LER

LER FW DW

LER DW

LER

emergence

Tm emergence

FW

LER

Lwi

LA emergence

FLL Lwe LA Lwi DZS

FLL Lwe LA DZS

Tm Te LED FLL Lwe LA size

Lwi DZS size

FW DW

Lwe LA Lwi size

Te LED FLL Lwe LA Lw timing

Lwe Lwi

LER

FW DW shoot

emergence

Tm Te LED emergence

LA Lwi emergence timing

Tm Te LED

Tm

LER

FW

emergence

LER

FLL Lwe LA Lwi

Tm Te emergence
Tm Te emergence

DZS
DW

FW DW

FW DW

LA

Lwi

FW DW
DW

FLL

LER FLL DZS DW size

FW DW
Tm Te LED Lwe LA Lwi emergence
LER FLL

Lwe

LER FLL FW DW
DW
FW

Tm emergence

Lwi DZS

emergence

FW DW
Lwi

FW
DW

Te LED FLL Lwe LA Lwi DZS

FW DW
Tm Te Lwi emergence
Lwe LA DW

FLL Lwe LA Lwi DZS size

LER

Tm Te LED FLL Lwe LA Lwi DZS

LER FLL Lwe LA Lwi D. size
Te LED

Tm emergence

Tm Te LED FLL Lwe LA Lwi DZS

LER
Tm Te LED FLL LA Lwi size_timing
FW DW
LER
FW DW

FW DW

FW DW

DW

i DZS	Tm Te LED FLL Lwe LA	size_timing
Lwe		
Tm Te		
	Tm Te LED LA Lwi DZS	
emergence	FW DW	
	FLL Lwe LA Lwi DZS	
	Tm Te LED emergence	
	emergence	
	emergence	
	LER	
	LER	
LED FLL DZS		timing
	DZS	
	DZS	
	FW DW	
Tm Te emergence		
	FW DW	
	LER	
	DZS	size
Tm Te LED Lwe LA	Lwi DZS emergence	

	Tm Te LED FLL Lwe LA	size
	LER	
DZS		size
LER		
	FW DW	
Tm Te LED FLL Lwe LA Lwi DZS		size_timing
	Lwi	
emergence		
Tm		
	LER	
Te LED emergence		
FW DW		
FW DW		
	Te LED Lwe LA	timing
LER FLL		size
	Lwi emergence	
FW DW		
FW		

DZS
Tm Te LA Lwi DZS em size

LER
Lwe LA Lwi DZS size

DZS

LER
DZS

Lwe LA Lwi

Tm emergence
Tm Te LED FLL Lwe LA Lwi emergence
FLL Lwe LA Lwi DZS size

LED Lwi

Tm Te LED Lwe LA Lwi DZS size

emergence
LER FW DW

FW DW
LER

Tm
Te LED
DZS

LER

LER

Te LED timing

Tm Te emergence

LER
LER FLL

Tm Te LED emergence
emergence

e Te LED Lwi emergenc timing

Tm FLL emergence
LER
FW DW
Te LED emergence

LA
LED

Lwe LA Lwi DZS emergence

LER size
DZS emergence

Lwi
FW DW

Tm Te LED LA DZS timing
Lwi size
LER FW DW

emergence
LER FLL FW DW
FW
Tm Te LED timing

DW

Tm Te
LER

LED Lwe LA Lwi DZS size
Tm Te emergence

Tm Te LED Lwe LA Lwi
FW

DW

DW
emergence

LER

FW DW

LER

FW DW
FLL DZS

MapMan
amino acid metabolism
amino acid metabolism
amino acid metabolism.degradation.aromatic aa.tyrosine
amino acid metabolism.degradation.aromatic aa.tyrosine
amino acid metabolism.degradation.aromatic aa.tyrosine
amino acid metabolism.degradation.aromatic aa.tyrosine
amino acid metabolism.degradation.aromatic aa.tyrosine
amino acid metabolism.degradation.aspartate family.lysine
amino acid metabolism.degradation.aspartate family.lysine
amino acid metabolism.degradation.aspartate family.threonine
amino acid metabolism.degradation.branched-chain group.leucine
amino acid metabolism.degradation.branched-chain group.shared
amino acid metabolism.degradation.branched-chain group.valine
amino acid metabolism.degradation.glutamate family.arginine
amino acid metabolism.degradation.glutamate family.arginine
amino acid metabolism.degradation.histidine
amino acid metabolism.degradation.serine-glycine-cysteine group.glycine
amino acid metabolism.synthesis.aromatic aa.chorismate.chorismate synthase
amino acid metabolism.synthesis.aromatic aa.phenylalanine and tyrosine.chorismate mutase
amino acid metabolism.synthesis.aromatic aa.tryptophan.anthranilate synthase
amino acid metabolism.synthesis.aromatic aa.tryptophan.tryptophan synthase
amino acid metabolism.synthesis.aspartate family.asparagine.asparagine synthetase
amino acid metabolism.synthesis.aspartate family.methionine
amino acid metabolism.synthesis.aspartate family.methionine.cystathionine beta-lyase
amino acid metabolism.synthesis.aspartate family.methionine.homocysteine S-methyltransferase
amino acid metabolism.synthesis.aspartate family.methionine.homocysteine S-methyltransferase
amino acid metabolism.synthesis.aspartate family.misc.homoserine.aspartate kinase
amino acid metabolism.synthesis.aspartate family.misc.homoserine.aspartate kinase
amino acid metabolism.synthesis.aspartate family.misc.homoserine.homoserine dehydrogenase
amino acid metabolism.synthesis.branched chain group.common.acetolactate synthase
amino acid metabolism.synthesis.branched chain group.isoleucine specific
amino acid metabolism.synthesis.central amino acid metabolism.aspartate.aspartate aminotransferase
amino acid metabolism.synthesis.central amino acid metabolism.aspartate.aspartate aminotransferase
amino acid metabolism.synthesis.central amino acid metabolism.aspartate.aspartate aminotransferase
amino acid metabolism.synthesis.central amino acid metabolism.aspartate.aspartate aminotransferase
amino acid metabolism.synthesis.central amino acid metabolism.aspartate.aspartate aminotransferase
amino acid metabolism.synthesis.central amino acid metabolism.GABA.Glutamate decarboxylase
amino acid metabolism.synthesis.glutamate family.arginine.arginosuccinate synthase
amino acid metabolism.synthesis.glutamate family.arginine.ornithine carbamoyltransferase
amino acid metabolism.synthesis.glutamate family.proline
amino acid metabolism.synthesis.serine-glycine-cysteine group.cysteine
amino acid metabolism.synthesis.serine-glycine-cysteine group.cysteine
amino acid metabolism.synthesis.serine-glycine-cysteine group.cysteine.OASTL
amino acid metabolism.synthesis.serine-glycine-cysteine group.cysteine.OASTL
amino acid metabolism.synthesis.serine-glycine-cysteine group.serine.phosphoglycerate dehydrogenas
amino acid metabolism.synthesis.serine-glycine-cysteine group.serine.phosphoserine aminotransferase

Biodegradation of Xenobiotics.hydroxyacylglutathione hydrolase
C1-metabolism.5-formyltetrahydrofolate cyclo-ligase
C1-metabolism.tetrahydrofolate synthase
cell wall.cell wall proteins
cell wall.cell wall proteins
cell wall.cell wall proteins.AGPs.AGP
cell wall.cell wall proteins.AGPs.AGP
cell wall.cell wall proteins.RGP
cell wall.cell wall proteins.RGP
cell wall.cellulose synthesis
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cell wall.cellulose synthesis.cellulose synthase
cell wall.cellulose synthesis.cellulose synthase
cell wall.cellulose synthesis.cellulose synthase
cell wall.degradation.cellulases and beta -1,4-glucanases
cell wall.degradation.mannan-xylose-arabinose-fucose
cell wall.degradation.mannan-xylose-arabinose-fucose
cell wall.degradation.pectate lyases and polygalacturonases
cell wall.degradation.pectate lyases and polygalacturonases
cell wall.degradation.pectate lyases and polygalacturonases
cell wall.degradation.pectate lyases and polygalacturonases
cell wall.degradation.pectate lyases and polygalacturonases
cell wall.hemicellulose synthesis
cell wall.hemicellulose synthesis
cell wall.hemicellulose synthesis.glucuronoxylan
cell wall.modification
cell wall.modification
cell wall.modification
cell wall.modification
cell wall.modification
cell wall.modification
cell wall.pectin*esterases.acetyl esterase
cell wall.pectin*esterases.acetyl esterase
cell wall.pectin*esterases.acetyl esterase
cell wall.pectin*esterases.misc
cell wall.pectin*esterases.PME
cell wall.pectin*esterases.PME
cell wall.precursor synthesis.GAE
cell wall.precursor synthesis.GER
cell wall.precursor synthesis.NDP sugar pyrophosphorylase.multiple NDP-Sugars
cell wall.precursor synthesis.UDP-glucose 4,6-dehydratase
cell wall.precursor synthesis.UGD

cell wall.precursor synthesis.UGD
cell wall.precursor synthesis.UXS
cell wall.precursor synthesis.UXS
cell wall.precursor synthesis.UXS
cell.cycle
cell.cycle
cell.cycle
cell.cycle
cell.cycle
cell.cycle
cell.cycle
cell.cycle.peptidylprolyl isomerase
cell.cycle.peptidylprolyl isomerase
cell.cycle.peptidylprolyl isomerase
cell.cycle.peptidylprolyl isomerase
cell.division
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cell.division
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Co-factor and vitamine metabolism
Co-factor and vitamine metabolism
Co-factor and vitamine metabolism
Co-factor and vitamine metabolism.folate & vitamine K.DHNA Phytyltransferase
Co-factor and vitamine metabolism.folate & vitamine K.vitamine K.isochorismate synthase
Co-factor and vitamine metabolism.lipoic acid
Co-factor and vitamine metabolism.molybdenum cofactor
Co-factor and vitamine metabolism.pantothenate.3-methyl-2-oxobutanoate hydroxymethyltransferase
Co-factor and vitamine metabolism.thiamine
development.storage proteins
development.storage proteins
development.unspecified
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DNA.synthesis/chromatin structure.retrotransposon/transposase.hat-like transposase
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fermentation.ADH
fermentation.aldehyde dehydrogenase
fermentation.aldehyde dehydrogenase
fermentation.LDH
fermentation.PDC
gluconeogenese/ glyoxylate cycle.citrate synthase
glycolysis.cytosolic branch.fructose-2,6-bisphosphatase (Fru2,6BisPase)
glycolysis.cytosolic branch.glyceraldehyde 3-phosphate dehydrogenase (GAP-DH)
glycolysis.cytosolic branch.phosphoglycerate mutase
glycolysis.cytosolic branch.phosphoglycerate mutase
glycolysis.cytosolic branch.pyruvate kinase (PK)
glycolysis.cytosolic branch.pyruvate kinase (PK)
glycolysis.cytosolic branch.triosephosphate isomerase (TPI)
glycolysis.cytosolic branch.triosephosphate isomerase (TPI)
glycolysis.cytosolic branch.triosephosphate isomerase (TPI)
glycolysis.plastid branch.pyruvate kinase (PK)
glycolysis.unclear/dually targeted.phosphofructokinase (PFK)

glycolysis.unclear/dually targeted.phosphoglucomutase (PGM)
glycolysis.unclear/dually targeted.UGPase
hormone metabolism.abscisic acid.induced-regulated-responsive-activated
hormone metabolism.abscisic acid.induced-regulated-responsive-activated
hormone metabolism.abscisic acid.induced-regulated-responsive-activated
hormone metabolism.abscisic acid.induced-regulated-responsive-activated
hormone metabolism.abscisic acid.induced-regulated-responsive-activated
hormone metabolism.abscisic acid.signal transduction
hormone metabolism.abscisic acid.synthesis-degradation
hormone metabolism.abscisic acid.synthesis-degradation
hormone metabolism.auxin.induced-regulated-responsive-activated
hormone metabolism.auxin.induced-regulated-responsive-activated
hormone metabolism.auxin.induced-regulated-responsive-activated
hormone metabolism.auxin.induced-regulated-responsive-activated
hormone metabolism.auxin.induced-regulated-responsive-activated
hormone metabolism.auxin.induced-regulated-responsive-activated
hormone metabolism.auxin.induced-regulated-responsive-activated
hormone metabolism.auxin.induced-regulated-responsive-activated
hormone metabolism.auxin.signal transduction
hormone metabolism.auxin.signal transduction
hormone metabolism.auxin.signal transduction
hormone metabolism.auxin.signal transduction
hormone metabolism.auxin.synthesis-degradation
hormone metabolism.brassinosteroid.signal transduction.BRI
hormone metabolism.brassinosteroid.synthesis-degradation.sterols.CYP51
hormone metabolism.brassinosteroid.synthesis-degradation.sterols.DWF1
hormone metabolism.brassinosteroid.synthesis-degradation.sterols.DWF7
hormone metabolism.brassinosteroid.synthesis-degradation.sterols.SMT2
hormone metabolism.cytokinin.signal transduction
hormone metabolism.cytokinin.signal transduction
hormone metabolism.cytokinin.signal transduction
hormone metabolism.cytokinin.signal transduction
hormone metabolism.cytokinin.synthesis-degradation
hormone metabolism.ethylene.induced-regulated-responsive-activated
hormone metabolism.ethylene.induced-regulated-responsive-activated
hormone metabolism.ethylene.signal transduction
hormone metabolism.ethylene.signal transduction
hormone metabolism.ethylene.signal transduction
hormone metabolism.ethylene.synthesis-degradation
hormone metabolism.ethylene.synthesis-degradation.1-aminocyclopropane-1-carboxylate synthase
hormone metabolism.gibberelin.synthesis-degradation.copalyl diphosphate synthase
hormone metabolism.gibberelin.synthesis-degradation.GA3 oxidase
hormone metabolism.jasmonate.induced-regulated-responsive-activated
hormone metabolism.jasmonate.synthesis-degradation.12-Oxo-PDA-reductase
hormone metabolism.jasmonate.synthesis-degradation.allene oxidase synthase
hormone metabolism.jasmonate.synthesis-degradation.allene oxidase synthase
hormone metabolism.jasmonate.synthesis-degradation.lipoxygenase

hormone metabolism.jasmonate.synthesis-degradation.lipoxygenase
lipid metabolism.exotics (steroids, squalene etc)
lipid metabolism.exotics (steroids, squalene etc).3-beta hydroxysteroid dehydrogenase/isomerase
lipid metabolism.exotics (steroids, squalene etc).sphingolipids
lipid metabolism.exotics (steroids, squalene etc).sphingolipids
lipid metabolism.exotics (steroids, squalene etc).sphingolipids.ceramide glucosyltransferase
lipid metabolism.exotics (steroids, squalene etc).sphingolipids.serine C-palmitoyltransferase
lipid metabolism.exotics (steroids, squalene etc).UDP-glucose:sterol glucosyltransferase
lipid metabolism.exotics (steroids, squalene etc).UDP-glucose:sterol glucosyltransferase
lipid metabolism.FA desaturation.omega 3 desaturase
lipid metabolism.FA synthesis and FA elongation.ACP desaturase
lipid metabolism.FA synthesis and FA elongation.ACP protein
lipid metabolism.FA synthesis and FA elongation.ACP thioesterase
lipid metabolism.FA synthesis and FA elongation.ACP thioesterase
lipid metabolism.FA synthesis and FA elongation.acyl coa ligase
lipid metabolism.FA synthesis and FA elongation.acyl coa ligase
lipid metabolism.FA synthesis and FA elongation.acyl coa ligase
lipid metabolism.FA synthesis and FA elongation.acyl-CoA binding protein
lipid metabolism.FA synthesis and FA elongation.acyl-CoA binding protein
lipid metabolism.FA synthesis and FA elongation.acyl-CoA binding protein
lipid metabolism.FA synthesis and FA elongation.acyl-CoA binding protein
lipid metabolism.FA synthesis and FA elongation.beta hydroxyacyl ACP dehydratase
lipid metabolism.FA synthesis and FA elongation.beta ketoacyl CoA synthase
lipid metabolism.FA synthesis and FA elongation.beta ketoacyl CoA synthase
lipid metabolism.FA synthesis and FA elongation.beta ketoacyl CoA synthase
lipid metabolism.FA synthesis and FA elongation.beta ketoacyl CoA synthase
lipid metabolism.FA synthesis and FA elongation.ketoacyl ACP synthase
lipid metabolism.FA synthesis and FA elongation.ketoacyl ACP synthase
lipid metabolism.glyceral metabolism.Glycerol-3-phosphate dehydrogenase (NAD+)
lipid metabolism.glyceral metabolism.Glycerol-3-phosphate dehydrogenase (NAD+)
lipid metabolism.glyceral metabolism.Glycerol-3-phosphate dehydrogenase (NAD+)
lipid metabolism.glycolipid synthesis.DGDG synthase
lipid metabolism.glycolipid synthesis.DGDG synthase
lipid metabolism.glycolipid synthesis.MGDG synthase
lipid metabolism.glycolipid synthesis.sulfolipid synthase
lipid metabolism.lipid degradation.beta-oxidation.acyl CoA DH
lipid metabolism.lipid degradation.beta-oxidation.acyl CoA DH
lipid metabolism.lipid degradation.beta-oxidation.acyl CoA DH
lipid metabolism.lipid degradation.beta-oxidation.acyl CoA reductase
lipid metabolism.lipid degradation.beta-oxidation.acyl CoA reductase
lipid metabolism.lipid degradation.beta-oxidation.acyl CoA reductase
lipid metabolism.lipid degradation.beta-oxidation.acyl-CoA thioesterase
lipid metabolism.lipid degradation.beta-oxidation.multifunctional
lipid metabolism.lipid degradation.beta-oxidation.multifunctional
lipid metabolism.lipid degradation.lipases
lipid metabolism.lipid degradation.lipases.triacylglycerol lipase
lipid metabolism.lipid degradation.lipases.triacylglycerol lipase

lipid metabolism.lipid degradation.lipases.triacylglycerol lipase
lipid metabolism.lipid degradation.lysophospholipases
lipid metabolism.lipid degradation.lysophospholipases
lipid metabolism.lipid degradation.lysophospholipases
lipid metabolism.lipid degradation.lysophospholipases
lipid metabolism.lipid degradation.lysophospholipases.carboxylesterase
lipid metabolism.lipid degradation.lysophospholipases.glycerophosphodiester phosphodiesterase
lipid metabolism.lipid degradation.lysophospholipases.phosphoinositide phospholipase C
lipid metabolism.lipid degradation.lysophospholipases.phospholipase D
lipid metabolism.lipid transfer proteins etc
lipid metabolism.Phospholipid synthesis
lipid metabolism.Phospholipid synthesis
lipid metabolism.Phospholipid synthesis.(S)-coclaurine-N-methyltransferase
lipid metabolism.Phospholipid synthesis.choline kinase
lipid metabolism.Phospholipid synthesis.choline monooxygenase
lipid metabolism.Phospholipid synthesis.choline-phosphate cytidylyltransferase
lipid metabolism.Phospholipid synthesis.choline-phosphate cytidylyltransferase
lipid metabolism.Phospholipid synthesis.choline-phosphate cytidylyltransferase
lipid metabolism.Phospholipid synthesis.cyclopropane-fatty-acyl-phospholipid synthase
lipid metabolism.Phospholipid synthesis.cyclopropane-fatty-acyl-phospholipid synthase
lipid metabolism.Phospholipid synthesis.diacylglycerol kinase
lipid metabolism.Phospholipid synthesis.phosphatidate cytidylyltransferase
lipid metabolism.TAG synthesis
lipid metabolism.unassigned
major CHO metabolism.degradation.starch.limit dextrinase/ pullulanase
major CHO metabolism.degradation.starch.starch cleavage
major CHO metabolism.degradation.starch.starch cleavage
major CHO metabolism.degradation.starch.starch cleavage.beta amylase
major CHO metabolism.degradation.starch.starch phosphorylase
major CHO metabolism.degradation.sucrose.fructokinase
major CHO metabolism.degradation.sucrose.fructokinase
major CHO metabolism.degradation.sucrose.fructokinase
major CHO metabolism.degradation.sucrose.fructokinase
major CHO metabolism.degradation.sucrose.hexokinase
major CHO metabolism.degradation.sucrose.hexokinase
major CHO metabolism.degradation.sucrose.invertases.neutral
major CHO metabolism.degradation.sucrose.invertases.neutral
major CHO metabolism.degradation.sucrose.invertases.neutral
major CHO metabolism.degradation.sucrose.Susy
major CHO metabolism.degradation.sucrose.Susy
major CHO metabolism.degradation.sucrose.Susy
major CHO metabolism.synthesis.starch.AGPase
major CHO metabolism.synthesis.starch.debranching
major CHO metabolism.synthesis.starch.debranching
major CHO metabolism.synthesis.starch.starch branching
major CHO metabolism.synthesis.starch.starch synthase
major CHO metabolism.synthesis.starch.starch synthase

major CHO metabolism.synthesis.starch.starch synthase
major CHO metabolism.synthesis.sucrose.SPP
major CHO metabolism.synthesis.sucrose.SPS
metal handling
metal handling.binding, chelation and storage
metal handling.binding, chelation and storage
metal handling.binding, chelation and storage
metal handling.binding, chelation and storage
minor CHO metabolism.callose
minor CHO metabolism.callose
minor CHO metabolism.galactose.alpha-galactosidases
minor CHO metabolism.myo-inositol.InsP Synthases
minor CHO metabolism.others
minor CHO metabolism.others
minor CHO metabolism.others
minor CHO metabolism.others
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minor CHO metabolism.trehalose.potential TPS/TPP
minor CHO metabolism.trehalose.potential TPS/TPP
minor CHO metabolism.trehalose.TPP
minor CHO metabolism.trehalose.TPS
minor CHO metabolism.trehalose.TPS
misc.acid and other phosphatases
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misc.alcohol dehydrogenases
misc.beta 1,3 glucan hydrolases
misc.beta 1,3 glucan hydrolases
misc.beta 1,3 glucan hydrolases
misc.beta 1,3 glucan hydrolases.glucan endo-1,3-beta-glucosidase
misc.beta 1,3 glucan hydrolases.glucan endo-1,3-beta-glucosidase
misc.calcineurin-like phosphoesterase family protein
misc.calcineurin-like phosphoesterase family protein
misc.calcineurin-like phosphoesterase family protein
misc.calcineurin-like phosphoesterase family protein
misc.cytochrome P450
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misc.cytochrome P450
misc.cytochrome P450
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misc.dynamin
misc.GCN5-related N-acetyltransferase
misc.GCN5-related N-acetyltransferase
misc.GDSL-motif lipase
misc.GDSL-motif lipase
misc.GDSL-motif lipase
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misc.GDSL-motif lipase
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misc.GDSL-motif lipase
misc.gluco-, galacto- and mannosidases
misc.gluco-, galacto- and mannosidases
misc.gluco-, galacto- and mannosidases
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misc.gluco-, galacto- and mannosidases
misc.gluco-, galacto- and mannosidases
misc.gluco-, galacto- and mannosidases.beta-galactosidase
misc.gluco-, galacto- and mannosidases.beta-galactosidase
misc.glutathione S transferases
misc.glutathione S transferases
misc.glutathione S transferases
misc.misc2
misc.misc2
misc.misc2
misc.myrosinases-lectin-jacalin
misc.nitrilases, *nitrile lyases, berberine bridge enzymes, reticuline oxidases, troponine reductases
misc.nitrilases, *nitrile lyases, berberine bridge enzymes, reticuline oxidases, troponine reductases
misc.nitrilases, *nitrile lyases, berberine bridge enzymes, reticuline oxidases, troponine reductases
misc.nitrilases, *nitrile lyases, berberine bridge enzymes, reticuline oxidases, troponine reductases
misc.nitrilases, *nitrile lyases, berberine bridge enzymes, reticuline oxidases, troponine reductases
misc.oxidases - copper, flavone etc.
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misc.oxidases - copper, flavone etc.
misc.peroxidases
misc.peroxidases
misc.peroxidases

misc.plastocyanin-like
misc.protease inhibitor/seed storage/lipid transfer protein (LTP) family protein
misc.rhodanese
misc.short chain dehydrogenase/reductase (SDR)
misc.short chain dehydrogenase/reductase (SDR)
misc.short chain dehydrogenase/reductase (SDR)
misc.short chain dehydrogenase/reductase (SDR)
misc.UDP glucosyl and glucoronyl transferases
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mitochondrial electron transport / ATP synthesis.cytochrome c
mitochondrial electron transport / ATP synthesis.cytochrome c oxidase
mitochondrial electron transport / ATP synthesis.cytochrome c oxidase
mitochondrial electron transport / ATP synthesis.cytochrome c oxidase
mitochondrial electron transport / ATP synthesis.cytochrome c reductase
mitochondrial electron transport / ATP synthesis.cytochrome c reductase
mitochondrial electron transport / ATP synthesis.electron transfer flavoprotein
mitochondrial electron transport / ATP synthesis.electron transfer flavoprotein
mitochondrial electron transport / ATP synthesis.F1-ATPase
mitochondrial electron transport / ATP synthesis.F1-ATPase
mitochondrial electron transport / ATP synthesis.NADH-DH.complex I
mitochondrial electron transport / ATP synthesis.NADH-DH.localisation not clear
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mitochondrial electron transport / ATP synthesis.NADH-DH.type II.external
N-metabolism.ammonia metabolism.glutamine synthase
N-metabolism.N-degradation.glutamate dehydrogenase
N-metabolism.nitrate metabolism.NR
N-metabolism.nitrate metabolism.NR

N-metabolism.nitrate metabolism.NR
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OPP.electron transfer
OPP.non-reductive PP.ribose 5-phosphate isomerase
OPP.non-reductive PP.ribose 5-phosphate isomerase
OPP.non-reductive PP.transaldolase
OPP.oxidative PP.6-phosphogluconate dehydrogenase
OPP.oxidative PP.6-phosphogluconate dehydrogenase
OPP.oxidative PP.6-phosphogluconate dehydrogenase
OPP.oxidative PP.6-phosphogluconolactonase
OPP.oxidative PP.G6PD
polyamine metabolism.synthesis.arginine decarboxylase
polyamine metabolism.synthesis.SAM decarboxylase
polyamine metabolism.synthesis.SAM decarboxylase
protein.aa activation
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protein.synthesis.ribosomal protein.prokaryotic.chloroplast.30S subunit.S30A
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PS.calvin cycle.phosphoglycerate kinase
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PS.calvin cycle.transketolase
PS.carbon concentrating mechanism.C4
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PS.carbon concentrating mechanism.C4
PS.lightreaction.ATP synthase.delta chain
PS.lightreaction.ATP synthase.gamma chain
PS.lightreaction.cytochrome b6/f
PS.lightreaction.NADH DH
PS.lightreaction.other electron carrier (ox/red).ferredoxin
PS.lightreaction.other electron carrier (ox/red).ferredoxin
PS.lightreaction.other electron carrier (ox/red).ferredoxin oxireductase
PS.lightreaction.other electron carrier (ox/red).plastocyanin
PS.lightreaction.photosystem I.LHC-I
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PS.lightreaction.photosystem II.PSII polypeptide subunits
PS.lightreaction.unspecified
PS.photorespiration.serine hydroxymethyltransferase
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redox.ascorbate and glutathione
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redox.ascorbate and glutathione.ascorbate
redox.ascorbate and glutathione.glutathione
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redox.glutaredoxins
redox.glutaredoxins
redox.glutaredoxins
redox.glutaredoxins
redox.misc

redox.misc
redox.peroxiredoxin
redox.peroxiredoxin.BAS1
redox.peroxiredoxin.BAS1
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RNA.regulation of transcription.AS2,Lateral Organ Boundaries Gene Family
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RNA.regulation of transcription.Aux/IAA family
RNA.regulation of transcription.Aux/IAA family
RNA.regulation of transcription.Aux/IAA family
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RNA.regulation of transcription.bHLH,Basic Helix-Loop-Helix family
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RNA.regulation of transcription.C2C2(Zn) CO-like, Constans-like zinc finger family
RNA.regulation of transcription.C2C2(Zn) CO-like, Constans-like zinc finger family
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RNA.regulation of transcription.C2C2(Zn) GATA transcription factor family
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RNA.regulation of transcription.C2H2 zinc finger family
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RNA.regulation of transcription.PWWP domain protein
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RNA.regulation of transcription.SBP,Squamosa promoter binding protein family
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S-assimilation.ATPS
secondary metabolism.flavonoids.dihydroflavonols.dihydroflavonol 4-reductase
secondary metabolism.isoprenoids
secondary metabolism.isoprenoids.carotenoids.phytoene dehydrogenase
secondary metabolism.isoprenoids.mevalonate pathway.farnesyl pyrophosphate synthetase
secondary metabolism.isoprenoids.non-mevalonate pathway.CMK
secondary metabolism.isoprenoids.non-mevalonate pathway.geranylgeranyl pyrophosphate synthase
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secondary metabolism.isoprenoids.terpenoids
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secondary metabolism.isoprenoids.tocopherol biosynthesis
secondary metabolism.isoprenoids.tocopherol biosynthesis.tocopherol cyclase
secondary metabolism.phenylpropanoids
secondary metabolism.phenylpropanoids.lignin biosynthesis.COMT
secondary metabolism.phenylpropanoids.lignin biosynthesis.HCT
secondary metabolism.phenylpropanoids.lignin biosynthesis.PAL
secondary metabolism.simple phenols
secondary metabolism.sulfur-containing.glucosinolates.synthesis.aliphatic.methylthioalkylmalate isom
secondary metabolism.wax
signalling.14-3-3 proteins

signalling.14-3-3 proteins
signalling.14-3-3 proteins
signalling.calcium
signalling.calcium
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signalling.lipids
signalling.lipids
signalling.MAP kinases
signalling.MAP kinases
signalling.MAP kinases
signalling.phosphinositides
signalling.phosphinositides.inositol-1,3,4-trisphosphate 5/6-kinase

signalling.phosphinositides.phosphatidylinositol-4-phosphate 5-kinase
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signalling.receptor kinases.DUF 26
signalling.receptor kinases.extensin
signalling.receptor kinases.leucine rich repeat II
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signalling.receptor kinases.leucine rich repeat V
signalling.receptor kinases.leucine rich repeat VI
signalling.receptor kinases.leucine rich repeat X
signalling.receptor kinases.leucine rich repeat XI
signalling.receptor kinases.leucine rich repeat XI
signalling.receptor kinases.leucine rich repeat XI
signalling.receptor kinases.leucine rich repeat XI
signalling.receptor kinases.leucine rich repeat XI
signalling.receptor kinases.leucine rich repeat XI
signalling.receptor kinases.leucine rich repeat XI
signalling.receptor kinases.leucine rich repeat XI
signalling.receptor kinases.leucine rich repeat XIII
signalling.receptor kinases.leucine rich repeat XIII
signalling.receptor kinases.leucine rich repeat XIV
signalling.receptor kinases.lysine motif
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signalling.unspecified
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stress.abiotic

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stress.abiotic.drought/salt
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stress.abiotic.touch/wounding
stress.abiotic.unspecified

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stress.biotic
stress.biotic
stress.biotic
stress.biotic.respiratory burst
stress.biotic.respiratory burst
stress.biotic.respiratory burst
TCA / org. transformation.carbonic anhydrases
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tetrapyrrole synthesis.ALA dehydratase
tetrapyrrole synthesis.coproporphyrinogen III oxidase
tetrapyrrole synthesis.divinyl chlorophyllide-a 8-vinyl-reductase

tetrapyrrole synthesis.glu-tRNA reductase
tetrapyrrole synthesis.glu-tRNA synthetase
tetrapyrrole synthesis.GSA
tetrapyrrole synthesis.magnesium chelatase
tetrapyrrole synthesis.magnesium protoporphyrin IX methyltransferase
tetrapyrrole synthesis.porphobilinogen deaminase
tetrapyrrole synthesis.protochlorophyllide reductase
tetrapyrrole synthesis.protoporphyrin IX oxidase
tetrapyrrole synthesis.unspecified
tetrapyrrole synthesis.uroporphyrinogen decarboxylase
tetrapyrrole synthesis.uroporphyrinogen decarboxylase
transport
transport.ABC transporters and multidrug resistance systems
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transport.amino acids
transport.amino acids
transport.amino acids
transport.amino acids
transport.calcium

transport.calcium
transport.cyclic nucleotide or calcium regulated channels
transport.cyclic nucleotide or calcium regulated channels
transport.Major Intrinsic Proteins.PIP
transport.Major Intrinsic Proteins.PIP
transport.Major Intrinsic Proteins.PIP
transport.metabolite transporters at the envelope membrane
transport.metabolite transporters at the mitochondrial membrane
transport.metabolite transporters at the mitochondrial membrane
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transport.misc
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transport.p- and v-ATPases
transport.p- and v-ATPases
transport.p- and v-ATPases
transport.p- and v-ATPases
transport.p- and v-ATPases
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transport.p- and v-ATPases

transport.p- and v-ATPases.H+-transporting two-sector ATPase
transport.p- and v-ATPases.H+-transporting two-sector ATPase
transport.p- and v-ATPases.H+-transporting two-sector ATPase
transport.p- and v-ATPases.H+-transporting two-sector ATPase
transport.peptides and oligopeptides
transport.peptides and oligopeptides
transport.peptides and oligopeptides
transport.peptides and oligopeptides
transport.peptides and oligopeptides
transport.peptides and oligopeptides
transport.peptides and oligopeptides
transport.phosphate
transport.potassium
transport.potassium
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transport.potassium
transport.potassium
transport.potassium
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transport.sugars
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transport.sugars
transport.sugars.sucrose
transport.sulphate
transport.unspecified anions
transport.unspecified anions
transport.unspecified anions
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RIL	original number	LER (mm/h)			leaf length (mm)			leaf weight (g
A632		2.93	+/-	0.15	517	+/-	23	1.55	+/-
B73		3.20	+/-	0.09	653	+/-	16	3.99	+/-
CML91		3.56	+/-	0.15	817	+/-	32	5.94	+/-
F7		2.97	+/-	0.10	767	+/-	15	4.43	+/-
H99		2.22	+/-	0.13	592	+/-	18	3.87	+/-
HP301		2.71	+/-	0.14	625	+/-	10	2.56	+/-
Mo17		2.59	+/-	0.08	707	+/-	19	5.53	+/-
W153R		2.37	+/-	0.07	630	+/-	29	4.37	+/-
RIL_8W_1	26_7	2.61	+/-	0.09	689	+/-	19	4.12	+/-
RIL_8W_2	25_17	2.97	+/-	0.05	703	+/-	20	5.66	+/-
RIL_8W_3	23_8	2.45	+/-	0.12	577	+/-	23	3.37	+/-
RIL_8W_4	20_26	3.06	+/-	0.18	647	+/-	37	4.36	+/-
RIL_8W_5	18_29	3.19	+/-	0.02	652	+/-	19	3.60	+/-
RIL_8W_6	15_1	2.57	+/-	0.07	644	+/-	17	4.70	+/-
RIL_8W_7	14_93	2.41	+/-	0.11	594	+/-	29	3.45	+/-
RIL_8W_8	12_1	2.59	+/-	0.06	730	+/-	9	4.55	+/-
RIL_8W_9	11_65	2.68	+/-	0.13	581	+/-	19	2.74	+/-
RIL_8W_10	2_61	2.58	+/-	0.18	510	+/-	21	1.96	+/-
RIL_8W_11	2_62	2.24	+/-	0.11	502	+/-	14	1.39	+/-
RIL_8W_12	2_67	2.34	+/-	0.08	510	+/-	20	3.15	+/-
RIL_8W_13	3_16	2.84	+/-	0.10	571	+/-	10	3.22	+/-
RIL_8W_14	4_68	3.32	+/-	0.20	792	+/-	53	6.28	+/-
RIL_8W_15	7_70	3.30	+/-	0.13	745	+/-	23	5.74	+/-
RIL_8W_16	9_10	3.10	+/-	0.10	629	+/-	13	3.97	+/-
RIL_8W_18	12_66	2.90	+/-	0.15	636	+/-	25	2.72	+/-
RIL_8W_19	12_36	2.80	+/-	0.11	600	+/-	15	3.18	+/-
RIL_8W_20	14_25	3.00	+/-	0.09	750	+/-	13	6.19	+/-
RIL_8W_22	28_30	3.41	+/-	0.12	862	+/-	26	7.70	+/-
RIL_8W_23	28_39	2.23	+/-	0.08	489	+/-	20	1.98	+/-
RIL_8W_24	28_44	2.33	+/-	0.04	549	+/-	12	2.89	+/-
RIL_8W_26	30_8	2.52	+/-	0.11	583	+/-	30	3.32	+/-
RIL_8W_27	31_12	2.50	+/-	0.03	563	+/-	17	2.93	+/-
RIL_8W_28	1_23	2.65	+/-	0.08	615	+/-	18	3.92	+/-
RIL_8W_29	2_54	2.67	+/-	0.06	644	+/-	8	3.38	+/-
RIL_8W_30	4_58	2.61	+/-	0.14	632	+/-	16	3.49	+/-
RIL_8W_31	5_47	2.49	+/-	0.03	723	+/-	7	5.24	+/-
RIL_8W_32	6_19	3.00	+/-	0.15	681	+/-	26	3.11	+/-
RIL_8W_33	7_33	2.59	+/-	0.09	507	+/-	5	2.10	+/-
RIL_8W_34	9_21	2.65	+/-	0.09	680	+/-	17	3.73	+/-
RIL_8W_35	10_38	2.57	+/-	0.09	662	+/-	18	4.73	+/-
RIL_8W_36	11_63	2.58	+/-	0.09	570	+/-	27	2.00	+/-
RIL_8W_37	12_21	2.44	+/-	0.09	603	+/-	13	4.21	+/-
RIL_8W_38	13_14	2.86	+/-	0.12	712	+/-	7	5.43	+/-
RIL_8W_39	14_13	2.96	+/-	0.16	735	+/-	18	5.50	+/-
RIL_8W_40	15_15	2.68	+/-	0.11	623	+/-	15	4.59	+/-
RIL_8W_41	16_104	3.04	+/-	0.12	662	+/-	8	5.15	+/-

RIL_8W_42	18_3	2.87	+/-	0.12	628	+/-	25	3.84	+/-
RIL_8W_44	20_13	2.53	+/-	0.05	706	+/-	12	7.62	+/-
RIL_8W_45	21_47	3.09	+/-	0.08	790	+/-	11	7.04	+/-
RIL_8W_46	22_45	2.72	+/-	0.05	686	+/-	19	3.82	+/-
RIL_8W_47	23_29	3.50	+/-	0.13	702	+/-	22	4.21	+/-
RIL_8W_48	24_1	3.13	+/-	0.12	681	+/-	16	6.76	+/-
RIL_8W_49	25_15	3.03	+/-	0.10	618	+/-	23	4.02	+/-
RIL_8W_50	26_2	3.03	+/-	0.14	640	+/-	16	3.69	+/-
RIL_8W_51	27_52	2.69	+/-	0.07	550	+/-	11	2.20	+/-
RIL_8W_52	17_12	2.19	+/-	0.08	511	+/-	13	2.20	+/-
RIL_8W_53	29_35	3.22	+/-	0.10	731	+/-	20	5.43	+/-
RIL_8W_54	30_11	3.50	+/-	0.06	780	+/-	26	6.03	+/-
RIL_8W_55	31_31	2.71	+/-	0.04	619	+/-	13	3.45	+/-
RIL_8W_57	33_43	3.29	+/-	0.10	811	+/-	12	5.09	+/-
RIL_8W_58	34_33	3.15	+/-	0.12	735	+/-	32	4.48	+/-
RIL_8W_59	35_15	2.69	+/-	0.10	654	+/-	29	5.80	+/-
RIL_8W_60	1_39	2.88	+/-	0.11	590	+/-	15	3.70	+/-
RIL_8W_61	1_45	2.31	+/-	0.13	513	+/-	45	3.70	+/-
RIL_8W_62	2_46	3.30	+/-	0.14	634	+/-	23	2.85	+/-
RIL_8W_63	2_73	2.82	+/-	0.04	710	+/-	17	4.39	+/-
RIL_8W_64	3_84	1.75	+/-	0.07	409	+/-	18	1.45	+/-
RIL_8W_65	4_55	2.91	+/-	0.07	760	+/-	18	4.26	+/-
RIL_8W_66	4_60	2.38	+/-	0.11	508	+/-	36	2.45	+/-
RIL_8W_67	5_11	2.79	+/-	0.08	591	+/-	16	2.82	+/-
RIL_8W_68	5_18	2.66	+/-	0.05	680	+/-	17	6.50	+/-
RIL_8W_69	6_24	2.56	+/-	0.11	580	+/-	21	4.35	+/-
RIL_8W_70	6_66	2.68	+/-	0.11	634	+/-	20	4.35	+/-
RIL_8W_71	7_6	2.86	+/-	0.07	728	+/-	28	6.60	+/-
RIL_8W_72	8_5	2.49	+/-	0.13	617	+/-	31	3.54	+/-
RIL_8W_73	8_58	3.03	+/-	0.08	799	+/-	14	4.78	+/-
RIL_8W_74	8_75	2.40	+/-	0.07	562	+/-	17	2.96	+/-
RIL_8W_75	9_9	2.83	+/-	0.07	592	+/-	11	2.26	+/-
RIL_8W_76	10_15	2.73	+/-	0.08	605	+/-	40	4.89	+/-
RIL_8W_77	11_52	2.51	+/-	0.07	584	+/-	6	3.77	+/-
RIL_8W_78	11_74	2.79	+/-	0.11	648	+/-	13	3.38	+/-
RIL_8W_79	13_5	3.20	+/-	0.12	786	+/-	16	3.38	+/-
RIL_8W_80	14_70	3.40	+/-	0.14	706	+/-	16	4.23	+/-
RIL_8W_81	14_95	2.36	+/-	0.07	601	+/-	20	2.76	+/-
RIL_8W_82	15_22	3.39	+/-	0.16	751	+/-	19	5.45	+/-
RIL_8W_83	16_92	3.36	+/-	0.08	832	+/-	19	6.12	+/-
RIL_8W_84	17_6	2.52	+/-	0.10	547	+/-	18	2.55	+/-
RIL_8W_85	18_27	2.51	+/-	0.08	463	+/-	11	2.30	+/-
RIL_8W_86	18_66	3.10	+/-	0.09	604	+/-	14	3.24	+/-
RIL_8W_87	19_33	2.60	+/-	0.08	630	+/-	20	4.92	+/-
RIL_8W_88	20_12	3.20	+/-	0.07	674	+/-	8	4.92	+/-
RIL_8W_89	20_45	2.83	+/-	0.20	636	+/-	17	3.05	+/-
RIL_8W_90	21_49	3.19	+/-	0.06	708	+/-	14	4.30	+/-

RIL_8W_91	22_10	3.08	+/-	0.25	653	+/-	41	3.52	+/-
RIL_8W_92	22_36	3.06	+/-	0.06	662	+/-	11	3.67	+/-
RIL_8W_93	22_39	2.92	+/-	0.06	742	+/-	27	6.01	+/-
RIL_8W_94	10_9	2.56	+/-	0.07	569	+/-	14	4.49	+/-
RIL_8W_95	23_24	3.52	+/-	0.12	801	+/-	22	4.68	+/-
RIL_8W_96	24_19	2.69	+/-	0.06	624	+/-	15	2.48	+/-
RIL_8W_97	25_36	3.07	+/-	0.38	695	+/-	67	2.48	+/-
RIL_8W_98	26_8	3.34	+/-	0.13	819	+/-	23	7.21	+/-
RIL_8W_99	26_32	2.97	+/-	0.07	762	+/-	15	5.26	+/-

g)	leaf area (mm^2)			leaf width (mm)			division zone size (um)		
0.09	38.76	+/-	1.69	1.41	+/-	0.05	8117	+/-	580
0.29	70.86	+/-	3.53	2.15	+/-	0.05	10908	+/-	312
0.44	107.22	+/-	6.31	2.61	+/-	0.12	11100	+/-	404
0.22	81.47	+/-	3.60	2.23	+/-	0.08	9917	+/-	252
0.41	61.79	+/-	4.65	2.09	+/-	0.10	11067	+/-	593
0.12	53.61	+/-	1.67	1.70	+/-	0.03	10050	+/-	375
0.67	88.70	+/-	10.04	2.69	+/-	0.21	11883	+/-	220
0.34	93.82	+/-	4.31	2.67	+/-	0.06	12083	+/-	273
0.20	77.65	+/-	4.19	2.55	+/-	0.09	9067	+/-	406
0.33	94.57	+/-	4.03	2.23	+/-	0.06	10158	+/-	258
0.32	57.79	+/-	3.48	2.08	+/-	0.07	9158	+/-	408
0.51	77.31	+/-	7.19	2.23	+/-	0.16	11600	+/-	917
0.17	56.18	+/-	2.80	1.86	+/-	0.06	7700	+/-	404
0.22	87.75	+/-	3.66	2.74	+/-	0.07	9850	+/-	161
0.15	60.10	+/-	2.45	2.08	+/-	0.04	9883	+/-	484
0.14	81.23	+/-	1.99	2.57	+/-	0.06	13442	+/-	1140
0.21	52.82	+/-	4.54	1.83	+/-	0.09	8167	+/-	233
0.12	43.03	+/-	2.10	1.52	+/-	0.07	10025	+/-	671
0.08	26.42	+/-	0.75	1.49	+/-	0.03	7700	+/-	0
0.20	61.24	+/-	4.90	2.54	+/-	0.15	9108	+/-	444
0.14	60.50	+/-	2.28	2.23	+/-	0.08	8167	+/-	617
0.75	95.88	+/-	9.21	2.34	+/-	0.11	13775	+/-	225
0.48	100.55	+/-	7.87	2.77	+/-	0.12	13342	+/-	367
0.22	76.12	+/-	3.54	2.37	+/-	0.07	11150	+/-	150
0.20	59.21	+/-	3.24	1.98	+/-	0.06	9600	+/-	252
0.10	61.71	+/-	1.99	1.97	+/-	0.03	9017	+/-	277
0.33	93.64	+/-	3.70	2.72	+/-	0.06	12192	+/-	408
0.52	128.67	+/-	7.21	2.94	+/-	0.14	12208	+/-	196
0.20	45.48	+/-	3.82	1.88	+/-	0.09	9033	+/-	232
0.25	50.58	+/-	2.64	1.87	+/-	0.06	7467	+/-	617
0.35	68.88	+/-	5.69	2.24	+/-	0.13	7233	+/-	233
0.18	54.21	+/-	1.88	1.88	+/-	0.05	9550	+/-	229
0.17	69.23	+/-	1.30	2.36	+/-	0.04	9567	+/-	408
0.16	65.64	+/-	2.98	2.24	+/-	0.07	9860	+/-	272
0.14	64.57	+/-	2.31	2.29	+/-	0.02	9067	+/-	406
0.56	99.90	+/-	5.85	2.89	+/-	0.13	12550	+/-	150
0.10	56.08	+/-	2.33	1.75	+/-	0.04	9233	+/-	418
0.08	43.91	+/-	0.61	1.88	+/-	0.02	8867	+/-	467
0.22	72.37	+/-	3.48	2.03	+/-	0.08	9417	+/-	174
0.16	81.43	+/-	1.99	2.56	+/-	0.03	12017	+/-	1009
0.13	40.82	+/-	2.02	1.26	+/-	0.05	8993	+/-	661
0.15	88.57	+/-	2.98	3.08	+/-	0.06	8900	+/-	252
0.34	101.11	+/-	4.97	2.86	+/-	0.14	10550	+/-	328
0.30	100.48	+/-	5.39	2.62	+/-	0.09	14177	+/-	733
0.15	76.05	+/-	1.97	2.29	+/-	0.03	7467	+/-	233
0.16	84.71	+/-	2.13	2.47	+/-	0.07	10808	+/-	499

0.34	63.98	+/-	4.63	1.91	+/-	0.09	9300	+/-	586
0.20	128.83	+/-	4.26	3.74	+/-	0.05	12625	+/-	399
0.09	109.88	+/-	2.38	2.64	+/-	0.05	14233	+/-	296
0.23	64.54	+/-	3.31	1.90	+/-	0.08	10300	+/-	115
0.04	74.08	+/-	2.26	2.10	+/-	0.03	10817	+/-	428
0.30	95.26	+/-	3.03	2.80	+/-	0.09	8800	+/-	252
0.46	74.24	+/-	8.10	2.49	+/-	0.19	8617	+/-	421
0.26	67.76	+/-	3.39	2.25	+/-	0.10	9617	+/-	280
0.10	31.54	+/-	3.13	1.46	+/-	0.10	7433	+/-	593
0.10	44.54	+/-	1.77	1.80	+/-	0.03	7700	+/-	0
0.44	91.59	+/-	7.06	2.41	+/-	0.13	10450	+/-	725
0.43	88.15	+/-	5.76	2.47	+/-	0.08	9800	+/-	0
0.12	64.94	+/-	2.78	2.23	+/-	0.06	9117	+/-	497
0.21	92.20	+/-	3.29	2.32	+/-	0.07	8700	+/-	831
0.27	84.69	+/-	4.58	2.49	+/-	0.07	9350	+/-	236
0.30	82.26	+/-	5.72	2.62	+/-	0.14	11567	+/-	448
0.13	64.59	+/-	2.47	2.04	+/-	0.06	10700	+/-	252
0.17	45.09	+/-	1.66	1.88	+/-	0.03	8867	+/-	480
0.32	52.11	+/-	5.59	1.66	+/-	0.12	8600	+/-	252
0.30	85.53	+/-	4.84	2.42	+/-	0.07	11633	+/-	433
0.06	49.36	+/-	1.96	2.34	+/-	0.09	10017	+/-	268
0.38	81.52	+/-	3.43	2.29	+/-	0.06	13283	+/-	309
0.26	55.09	+/-	3.65	1.98	+/-	0.08	9217	+/-	309
0.15	52.45	+/-	1.93	1.93	+/-	0.03	9517	+/-	337
0.43	109.82	+/-	4.99	3.25	+/-	0.09	10583	+/-	311
0.17	69.95	+/-	2.80	2.51	+/-	0.05	9067	+/-	246
0.16	64.22	+/-	2.79	2.13	+/-	0.06	10600	+/-	321
0.51	114.81	+/-	7.77	2.93	+/-	0.13	10317	+/-	83
0.36	67.00	+/-	5.43	2.20	+/-	0.07	10967	+/-	765
0.57	93.04	+/-	10.38	2.60	+/-	0.15	10817	+/-	468
0.15	66.73	+/-	2.53	2.13	+/-	0.07	9267	+/-	809
0.11	38.72	+/-	2.24	1.43	+/-	0.05	8600	+/-	833
0.25	99.96	+/-	5.12	3.12	+/-	0.12	9717	+/-	398
0.25	71.45	+/-	3.46	2.54	+/-	0.11	10850	+/-	480
0.19	74.69	+/-	3.65	2.16	+/-	0.07	9417	+/-	518
0.18	110.97	+/-	2.73	2.74	+/-	0.08	12467	+/-	669
0.29	72.29	+/-	3.57	2.08	+/-	0.17	12317	+/-	772
0.16	69.98	+/-	3.05	2.34	+/-	0.04	10318	+/-	310
0.50	92.39	+/-	5.72	2.48	+/-	0.13	8417	+/-	188
1.04	101.35	+/-	18.46	2.81	+/-	0.30	12525	+/-	344
0.20	50.70	+/-	3.87	2.02	+/-	0.09	11233	+/-	242
0.15	43.44	+/-	1.60	1.92	+/-	0.05	6533	+/-	233
0.20	60.63	+/-	3.14	2.27	+/-	0.07	9550	+/-	350
0.16	83.82	+/-	3.51	2.80	+/-	0.06	12750	+/-	104
0.09	69.43	+/-	0.64	2.33	+/-	0.03	10950	+/-	50
0.17	65.35	+/-	2.66	2.03	+/-	0.07	9450	+/-	180
0.20	90.31	+/-	3.67	2.49	+/-	0.07	11867	+/-	324

0.07	75.13	+/-	1.94	2.14	+/-	0.05	10698	+/-	221
0.24	63.57	+/-	3.11	1.94	+/-	0.05	10283	+/-	671
0.49	97.72	+/-	4.91	2.78	+/-	0.06	11642	+/-	305
0.26	75.17	+/-	3.35	2.83	+/-	0.06	9517	+/-	377
0.43	63.56	+/-	3.65	1.76	+/-	0.04	11567	+/-	332
0.21	50.60	+/-	4.64	1.75	+/-	0.14	8723	+/-	179
0.78	67.88	+/-	12.53	1.95	+/-	0.26	11567	+/-	240
0.23	139.98	+/-	2.71	3.21	+/-	0.07	10667	+/-	83
0.22	84.24	+/-	2.34	2.33	+/-	0.06	11625	+/-	128

Leaf 4 emergence (d)			t_e(h)			t_m (h)			
11.20	+/-	0.14	399.68	+/-	6.41	306.85	+/-	8.07	300.35
11.60	+/-	0.20	456.29	+/-	14.11	363.37	+/-	14.98	329.36
12.10	+/-	0.19	502.03	+/-	10.42	400.75	+/-	9.24	369.43
12.15	+/-	0.18	535.90	+/-	13.81	422.09	+/-	12.29	401.15
12.15	+/-	0.18	544.66	+/-	4.53	422.26	+/-	5.25	409.05
11.50	+/-	0.11	482.58	+/-	11.16	378.98	+/-	9.67	357.40
13.45	+/-	0.23	560.60	+/-	9.65	448.99	+/-	8.59	405.67
11.80	+/-	0.21	518.98	+/-	14.33	408.85	+/-	14.50	381.95
13.05	+/-	0.31	603.68	+/-	8.47	469.82	+/-	10.03	456.99
11.53	+/-	0.25	474.88	+/-	6.89	369.79	+/-	4.46	359.98
11.42	+/-	0.16	505.56	+/-	8.87	391.99	+/-	5.53	379.22
12.42	+/-	0.27	527.04	+/-	11.44	422.17	+/-	8.86	376.08
11.19	+/-	0.21	465.51	+/-	4.67	377.21	+/-	6.91	326.93
11.84	+/-	0.21	541.93	+/-	14.06	416.25	+/-	11.43	415.90
12.79	+/-	0.22	567.97	+/-	10.69	440.32	+/-	9.78	427.40
13.84	+/-	0.26	609.97	+/-	3.87	482.36	+/-	5.02	452.23
12.11	+/-	0.16	508.13	+/-	14.46	406.14	+/-	7.87	362.18
11.05	+/-	0.05	411.92	+/-	11.88	313.75	+/-	14.10	311.50
12.32	+/-	0.19	491.63	+/-	13.83	392.23	+/-	9.74	347.17
11.53	+/-	0.12	459.84	+/-	7.42	356.84	+/-	7.52	341.11
11.42	+/-	0.12	438.06	+/-	15.24	341.76	+/-	12.26	325.83
11.16	+/-	0.13	478.68	+/-	15.80	364.74	+/-	13.89	376.39
12.74	+/-	0.13	494.78	+/-	10.95	394.96	+/-	8.22	361.96
11.79	+/-	0.14	458.77	+/-	10.38	370.38	+/-	9.99	323.53
11.47	+/-	0.23	456.47	+/-	16.43	360.15	+/-	9.69	327.79
11.63	+/-	0.21	484.40	+/-	13.78	389.73	+/-	10.24	341.72
12.74	+/-	0.21	572.65	+/-	15.18	434.25	+/-	9.20	451.57
11.47	+/-	0.16	543.75	+/-	18.09	416.26	+/-	13.09	427.99
11.32	+/-	0.22	463.01	+/-	13.51	358.27	+/-	10.78	343.60
12.44	+/-	0.22	535.50	+/-	21.68	422.40	+/-	15.43	390.15
12.32	+/-	0.23	531.92	+/-	18.38	407.62	+/-	14.16	406.01
11.53	+/-	0.12	511.90	+/-	14.32	387.34	+/-	7.26	391.12
11.05	+/-	0.05	473.13	+/-	8.88	372.52	+/-	7.20	348.62
11.84	+/-	0.23	513.10	+/-	9.23	397.64	+/-	7.95	388.81
11.21	+/-	0.12	476.38	+/-	12.49	367.94	+/-	10.33	362.37
11.68	+/-	0.23	548.75	+/-	21.39	416.45	+/-	12.42	430.55
11.32	+/-	0.15	482.00	+/-	10.53	381.90	+/-	10.05	354.00
11.00	+/-	0.00	430.69	+/-	4.40	335.79	+/-	5.35	317.47
11.16	+/-	0.09	503.54	+/-	7.37	388.47	+/-	6.49	385.29
11.89	+/-	0.21	536.72	+/-	8.75	408.27	+/-	2.78	416.91
11.11	+/-	0.07	451.69	+/-	6.53	347.78	+/-	4.70	342.12
13.68	+/-	0.17	586.69	+/-	8.08	436.22	+/-	7.73	466.36
12.26	+/-	0.17	562.38	+/-	14.84	421.32	+/-	8.66	447.79
10.74	+/-	0.10	475.91	+/-	13.42	357.51	+/-	8.56	378.96
11.42	+/-	0.12	498.32	+/-	8.91	388.54	+/-	3.77	372.22
11.00	+/-	0.13	459.29	+/-	8.22	363.35	+/-	8.23	337.58

10.32	+/-	0.11	422.19	+/-	11.35	324.65	+/-	8.44	321.45
12.89	+/-	0.21	620.45	+/-	5.99	460.10	+/-	5.60	500.82
13.32	+/-	0.19	606.83	+/-	15.12	457.14	+/-	9.17	482.09
11.17	+/-	0.19	507.93	+/-	16.38	389.55	+/-	11.83	389.25
9.89	+/-	0.20	404.39	+/-	8.16	315.54	+/-	9.26	304.94
12.11	+/-	0.11	496.32	+/-	13.99	393.91	+/-	8.64	363.67
11.16	+/-	0.21	441.93	+/-	8.30	357.82	+/-	8.72	309.29
12.37	+/-	0.17	504.17	+/-	14.27	408.78	+/-	10.12	352.89
9.42	+/-	0.14	397.17	+/-	6.73	302.26	+/-	5.10	304.96
12.63	+/-	0.17	521.99	+/-	17.05	412.87	+/-	12.39	375.59
12.11	+/-	0.15	494.41	+/-	11.68	387.96	+/-	7.56	370.68
12.21	+/-	0.12	504.31	+/-	16.14	400.46	+/-	9.91	372.47
11.11	+/-	0.21	479.97	+/-	21.26	367.00	+/-	19.43	368.47
12.32	+/-	0.19	530.51	+/-	16.19	408.06	+/-	12.14	413.34
13.05	+/-	0.16	565.56	+/-	10.53	445.61	+/-	8.67	422.02
11.79	+/-	0.20	524.96	+/-	6.29	404.27	+/-	5.26	401.67
10.42	+/-	0.12	423.03	+/-	11.77	327.89	+/-	10.16	318.58
10.42	+/-	0.14	436.13	+/-	5.38	336.02	+/-	7.48	325.97
9.26	+/-	0.10	394.00	+/-	5.85	301.04	+/-	5.57	304.06
12.26	+/-	0.21	557.64	+/-	14.64	425.23	+/-	10.87	435.61
10.95	+/-	0.14	466.05	+/-	7.91	356.59	+/-	7.98	346.84
12.79	+/-	0.25	559.45	+/-	11.49	433.96	+/-	13.91	427.91
11.89	+/-	0.25	507.94	+/-	21.29	395.15	+/-	20.43	376.38
10.89	+/-	0.13	445.76	+/-	7.51	349.55	+/-	6.16	329.86
11.21	+/-	0.10	506.78	+/-	13.37	382.71	+/-	9.23	399.33
12.95	+/-	0.21	506.01	+/-	18.53	403.42	+/-	10.56	382.55
12.05	+/-	0.26	510.95	+/-	12.36	400.47	+/-	10.75	380.11
12.22	+/-	0.19	553.50	+/-	20.11	426.73	+/-	15.63	425.72
12.32	+/-	0.17	540.82	+/-	9.37	420.91	+/-	9.03	405.56
13.00	+/-	0.13	592.91	+/-	9.20	442.65	+/-	7.73	478.84
13.21	+/-	0.31	583.07	+/-	6.85	457.19	+/-	9.53	427.99
10.58	+/-	0.12	436.75	+/-	2.67	351.84	+/-	2.32	308.17
13.00	+/-	0.30	557.13	+/-	16.52	432.26	+/-	11.41	417.11
11.26	+/-	0.24	521.11	+/-	10.11	392.46	+/-	6.90	407.27
10.16	+/-	0.09	465.24	+/-	14.49	355.76	+/-	9.92	359.55
12.05	+/-	0.14	545.17	+/-	9.16	400.75	+/-	5.23	446.16
11.89	+/-	0.21	491.11	+/-	20.23	384.84	+/-	14.11	368.80
10.47	+/-	0.16	487.51	+/-	13.32	362.71	+/-	7.81	386.76
12.79	+/-	0.12	517.73	+/-	17.72	412.20	+/-	10.08	379.14
12.79	+/-	0.26	561.44	+/-	11.08	442.96	+/-	9.71	422.53
10.53	+/-	0.18	443.60	+/-	10.17	345.98	+/-	8.91	328.13
12.53	+/-	0.19	471.94	+/-	11.60	386.14	+/-	10.04	314.48
10.58	+/-	0.12	424.76	+/-	2.27	340.34	+/-	3.61	303.22
10.79	+/-	0.20	469.04	+/-	13.45	364.73	+/-	10.29	352.59
10.74	+/-	0.17	443.67	+/-	6.63	348.11	+/-	6.39	331.46
10.84	+/-	0.22	472.17	+/-	15.74	374.33	+/-	12.26	345.18
11.58	+/-	0.14	492.97	+/-	6.91	391.52	+/-	4.46	361.81

10.79	+/-	0.10	441.03	+/-	7.66	340.30	+/-	7.03	334.79
9.58	+/-	0.12	418.27	+/-	1.77	325.44	+/-	2.31	316.07
12.42	+/-	0.18	551.85	+/-	17.66	418.12	+/-	13.03	435.17
13.28	+/-	0.28	564.00	+/-	51.53	448.35	+/-	39.80	411.56
10.68	+/-	0.11	456.10	+/-	5.42	356.11	+/-	5.07	347.48
11.28	+/-	0.30	459.26	+/-	21.97	370.59	+/-	18.15	323.54
11.88	+/-	0.20	495.36	+/-	21.48	381.96	+/-	12.60	379.56
12.37	+/-	0.22	565.47	+/-	15.57	443.34	+/-	13.75	426.35
11.95	+/-	0.14	557.06	+/-	14.53	418.97	+/-	10.58	444.04

LED$_{5-e}$ (h)		fresh weight (g)			dry weight (g)			Number of leaves at	
+/-	9.66	29.39	+/-	2.41	2.30	+/-	0.20	10.5	+/-
+/-	10.01	38.17	+/-	5.84	3.07	+/-	0.49	9.2	+/-
+/-	7.72	41.42	+/-	4.23	3.52	+/-	0.39	8.3	+/-
+/-	9.97	26.61	+/-	3.60	2.12	+/-	0.33	7.8	+/-
+/-	6.96	22.59	+/-	2.18	1.45	+/-	0.18	7.8	+/-
+/-	9.08	25.83	+/-	3.14	2.36	+/-	0.33	8.3	+/-
+/-	9.06	25.82	+/-	2.87	1.90	+/-	0.25	7.3	+/-
+/-	9.45	30.46	+/-	4.94	2.54	+/-	0.42	7.7	+/-
+/-	5.30	18.28	+/-	1.20	1.38	+/-	0.09	7.3	+/-
+/-	7.96	46.33	+/-	1.14	3.68	+/-	0.13	8.8	+/-
+/-	8.78	28.79	+/-	3.22	2.05	+/-	0.21	9.0	+/-
+/-	15.12	34.49	+/-	4.64	2.50	+/-	0.37	8.8	+/-
+/-	3.93	34.43	+/-	2.59	2.58	+/-	0.23	8.3	+/-
+/-	11.31	31.05	+/-	2.63	2.39	+/-	0.23	8.2	+/-
+/-	8.57	22.35	+/-	1.82	1.64	+/-	0.17	8.3	+/-
+/-	2.09	19.49	+/-	1.15	1.34	+/-	0.10	7.3	+/-
+/-	16.42	22.31	+/-	2.23	1.53	+/-	0.17	8.5	+/-
+/-	8.55	50.00	+/-	3.95	3.57	+/-	0.30	10.5	+/-
+/-	14.59	10.26	+/-	1.48	0.82	+/-	0.12	7.5	+/-
+/-	6.23	28.33	+/-	1.55	2.36	+/-	0.16	9.3	+/-
+/-	11.61	37.05	+/-	3.98	2.86	+/-	0.35	9.2	+/-
+/-	11.83	62.70	+/-	5.38	4.84	+/-	0.47	9.2	+/-
+/-	9.58	48.31	+/-	1.85	3.72	+/-	0.17	9.2	+/-
+/-	6.74	41.65	+/-	3.50	3.08	+/-	0.30	9.0	+/-
+/-	26.88	34.10	+/-	5.07	2.75	+/-	0.44	8.8	+/-
+/-	14.02	28.67	+/-	2.86	1.67	+/-	0.21	8.7	+/-
+/-	15.76	35.79	+/-	2.87	2.83	+/-	0.29	8.3	+/-
+/-	16.17	45.80	+/-	2.99	4.00	+/-	0.36	8.2	+/-
+/-	12.49	23.51	+/-	2.40	2.03	+/-	0.25	9.0	+/-
+/-	18.92	21.97	+/-	4.81	1.64	+/-	0.38	7.8	+/-
+/-	16.44	29.46	+/-	3.02	2.27	+/-	0.31	8.3	+/-
+/-	22.72	27.31	+/-	2.40	2.17	+/-	0.21	9.2	+/-
+/-	7.43	35.74	+/-	4.21	3.06	+/-	0.41	9.0	+/-
+/-	6.64	24.51	+/-	2.32	1.86	+/-	0.20	8.2	+/-
+/-	9.08	33.83	+/-	3.75	2.82	+/-	0.37	8.3	+/-
+/-	21.79	27.82	+/-	1.77	2.20	+/-	0.14	7.5	+/-
+/-	6.28	30.33	+/-	3.93	2.34	+/-	0.31	9.0	+/-
+/-	3.51	31.22	+/-	2.04	2.42	+/-	0.18	8.8	+/-
+/-	6.81	29.41	+/-	2.71	2.38	+/-	0.24	8.0	+/-
+/-	12.55	30.83	+/-	1.78	2.35	+/-	0.16	8.0	+/-
+/-	8.65	23.05	+/-	1.75	1.95	+/-	0.16	9.2	+/-
+/-	6.77	23.52	+/-	1.81	1.56	+/-	0.12	7.5	+/-
+/-	16.46	36.25	+/-	2.91	2.92	+/-	0.28	8.2	+/-
+/-	12.98	54.57	+/-	4.64	4.39	+/-	0.40	9.5	+/-
+/-	12.91	36.02	+/-	2.66	2.53	+/-	0.24	9.0	+/-
+/-	5.13	41.27	+/-	3.29	3.29	+/-	0.34	8.7	+/-

+/-	10.99	56.08	+/-	2.26	3.96	+/-	0.20	10.2	+/-
+/-	4.24	29.14	+/-	1.73	2.17	+/-	0.15	7.3	+/-
+/-	19.38	33.66	+/-	2.40	2.41	+/-	0.16	7.5	+/-
+/-	12.20	32.22	+/-	2.30	2.3	+/-	0.2	8.8	+/-
+/-	3.34	60.24	+/-	2.08	5.1	+/-	0.2	10.0	+/-
+/-	14.27	46.33	+/-	3.33	2.9	+/-	0.3	8.6	+/-
+/-	4.67	48.03	+/-	3.39	3.6	+/-	0.2	9.3	+/-
+/-	13.28	31.36	+/-	2.81	2.2	+/-	0.2	8.8	+/-
+/-	6.75	33.36	+/-	1.28	2.9	+/-	0.1	9.2	+/-
+/-	14.04	33.36	+/-	3.01	1.4	+/-	0.2	7.7	+/-
+/-	12.82	38.60	+/-	2.74	3.0	+/-	0.2	8.2	+/-
+/-	18.12	46.35	+/-	4.35	3.4	+/-	0.3	8.5	+/-
+/-	14.97	29.49	+/-	3.25	2.2	+/-	0.3	8.7	+/-
+/-	13.70	30.46	+/-	1.21	2.6	+/-	0.2	7.7	+/-
+/-	9.38	27.50	+/-	2.92	2.2	+/-	0.3	8.3	+/-
+/-	5.67	38.23	+/-	1.54	2.7	+/-	0.1	8.0	+/-
+/-	8.16	43.99	+/-	3.98	3.3	+/-	0.3	9.3	+/-
+/-	6.44	43.99	+/-	2.75	2.2	+/-	0.2	9.0	+/-
+/-	4.53	55.18	+/-	3.28	4.6	+/-	0.3	9.8	+/-
+/-	13.06	25.56	+/-	2.68	2.2	+/-	0.2	8.0	+/-
+/-	5.91	14.21	+/-	0.60	1.2	+/-	0.0	8.3	+/-
+/-	4.55	24.64	+/-	3.76	1.8	+/-	0.3	7.2	+/-
+/-	11.87	24.47	+/-	4.63	2.1	+/-	0.4	8.5	+/-
+/-	5.78	37.31	+/-	3.37	2.5	+/-	0.2	9.0	+/-
+/-	12.52	39.95	+/-	1.25	3.0	+/-	0.1	8.2	+/-
+/-	13.26	36.90	+/-	3.24	2.7	+/-	0.3	8.3	+/-
+/-	8.72	36.90	+/-	2.43	1.8	+/-	0.2	8.0	+/-
+/-	17.79	43.81	+/-	4.33	3.5	+/-	0.3	8.0	+/-
+/-	9.62	23.51	+/-	2.71	1.8	+/-	0.2	7.8	+/-
+/-	6.84	24.80	+/-	2.33	2.1	+/-	0.2	7.2	+/-
+/-	5.35	19.11	+/-	1.44	1.7	+/-	0.1	7.8	+/-
+/-	2.76	27.00	+/-	1.35	2.0	+/-	0.1	9.0	+/-
+/-	19.67	25.94	+/-	1.18	1.8	+/-	0.1	7.8	+/-
+/-	9.69	28.71	+/-	3.79	2.2	+/-	0.3	7.8	+/-
+/-	12.79	35.16	+/-	3.42	2.9	+/-	0.3	8.8	+/-
+/-	9.52	35.16	+/-	3.33	2.9	+/-	0.3	8.5	+/-
+/-	18.59	34.23	+/-	2.24	2.8	+/-	0.2	8.3	+/-
+/-	13.44	27.40	+/-	2.75	2.4	+/-	0.3	8.7	+/-
+/-	20.68	35.51	+/-	2.94	2.8	+/-	0.3	8.3	+/-
+/-	7.19	37.51	+/-	3.13	2.8	+/-	0.3	7.3	+/-
+/-	7.93	31.67	+/-	2.19	2.1	+/-	0.3	9.2	+/-
+/-	7.25	21.39	+/-	2.21	1.5	+/-	0.2	7.8	+/-
+/-	1.80	40.37	+/-	1.12	3.1	+/-	0.1	9.0	+/-
+/-	12.45	43.26	+/-	2.21	3.4	+/-	0.3	8.7	+/-
+/-	3.44	43.26	+/-	1.82	3.4	+/-	0.2	9.5	+/-
+/-	12.81	28.62	+/-	5.48	2.4	+/-	0.6	8.3	+/-
+/-	8.28	36.64	+/-	1.10	2.9	+/-	0.1	9.0	+/-

+/-	9.36	45.37	+/-	2.69	3.8	+/-	0.2	9.0	+/-
+/-	1.63	56.03	+/-	4.02	4.2	+/-	0.4	9.8	+/-
+/-	15.48	35.27	+/-	3.88	2.9	+/-	0.4	8.0	+/-
+/-	44.65	30.62	+/-	1.86	2.2	+/-	0.2	8.2	+/-
+/-	4.33	43.20	+/-	2.76	3.3	+/-	0.2	9.0	+/-
+/-	17.15	26.95	+/-	4.17	1.9	+/-	0.3	8.5	+/-
+/-	22.51	26.95	+/-	8.57	2.0	+/-	0.7	8.0	+/-
+/-	12.46	40.35	+/-	3.45	3.6	+/-	0.3	8.2	+/-
+/-	12.84	33.61	+/-	3.11	2.5	+/-	0.3	7.8	+/-

t harvest	V-stage at harvest		
0.5	6.0	+/-	0.0
0.4	5.3	+/-	0.2
0.3	4.8	+/-	0.2
0.3	4.5	+/-	0.2
0.2	4.8	+/-	0.2
0.2	5.2	+/-	0.2
0.2	4.3	+/-	0.2
0.3	4.5	+/-	0.2
0.2	4.2	+/-	0.2
0.2	5.0	+/-	0.0
0.0	5.0	+/-	0.0
0.2	5.2	+/-	0.2
0.3	5.8	+/-	0.3
0.2	4.8	+/-	0.2
0.2	4.8	+/-	0.2
0.2	4.2	+/-	0.2
0.2	5.2	+/-	0.2
0.3	6.7	+/-	0.2
0.2	5.0	+/-	0.0
0.2	5.3	+/-	0.2
0.3	5.5	+/-	0.2
0.3	5.3	+/-	0.2
0.2	6.0	+/-	0.0
0.3	5.5	+/-	0.2
0.3	5.7	+/-	0.2
0.2	5.2	+/-	0.2
0.2	5.2	+/-	0.2
0.2	4.8	+/-	0.2
0.3	5.7	+/-	0.2
0.4	4.8	+/-	0.3
0.2	5.3	+/-	0.2
0.2	5.5	+/-	0.2
0.3	5.2	+/-	0.2
0.2	5.0	+/-	0.0
0.2	5.3	+/-	0.2
0.2	4.3	+/-	0.2
0.3	5.2	+/-	0.2
0.2	6.0	+/-	0.0
0.0	5.0	+/-	0.0
0.0	5.0	+/-	0.0
0.2	5.7	+/-	0.2
0.2	4.5	+/-	0.2
0.2	4.8	+/-	0.2
0.2	5.5	+/-	0.2
0.3	5.2	+/-	0.2
0.2	5.0	+/-	0.0

0.2	6.0	+/-	0.3
0.2	4.0	+/-	0.0
0.2	4.3	+/-	0.2
0.2	5.2	+/-	0.2
0.0	6.0	+/-	0.0
0.2	5.2	+/-	0.2
0.2	5.7	+/-	0.2
0.2	5.5	+/-	0.2
0.2	6.0	+/-	0.0
0.3	5.2	+/-	0.2
0.2	5.0	+/-	0.0
0.2	5.2	+/-	0.2
0.3	5.3	+/-	0.2
0.2	4.7	+/-	0.2
0.2	4.8	+/-	0.2
0.0	5.0	+/-	0.0
0.2	5.8	+/-	0.2
0.3	5.8	+/-	0.2
0.3	6.5	+/-	0.2
0.3	4.8	+/-	0.2
0.2	5.5	+/-	0.2
0.2	4.3	+/-	0.2
0.5	5.3	+/-	0.2
0.3	5.8	+/-	0.2
0.2	5.0	+/-	0.0
0.2	5.2	+/-	0.2
0.4	5.3	+/-	0.2
0.4	4.5	+/-	0.2
0.2	5.0	+/-	0.0
0.2	4.3	+/-	0.2
0.2	4.8	+/-	0.2
0.0	6.0	+/-	0.0
0.2	4.7	+/-	0.2
0.2	5.0	+/-	0.0
0.3	5.5	+/-	0.2
0.2	4.8	+/-	0.2
0.2	5.2	+/-	0.2
0.2	5.0	+/-	0.0
0.2	4.8	+/-	0.2
0.2	4.3	+/-	0.2
0.2	5.5	+/-	0.2
0.3	5.5	+/-	0.2
0.0	5.8	+/-	0.2
0.2	5.3	+/-	0.2
0.2	5.7	+/-	0.2
0.3	5.2	+/-	0.2
0.0	5.0	+/-	0.0

0.0	6.0	+/-	0.0
0.2	6.0	+/-	0.0
0.3	4.8	+/-	0.2
0.2	5.0	+/-	0.0
0.0	5.7	+/-	0.2
0.4	5.7	+/-	0.2
0.4	5.5	+/-	0.3
0.2	5.0	+/-	0.3
0.3	4.8	+/-	0.2