LIST OF TABLES

3.1: Master mix preparation for primary PCR ..................................................36
3.2: Master mix preparation for secondary PCR .............................................37
3.3: Details of primers used for primary and secondary PCR amplifications .................................................................37
3.4: Master mix for ligating the secondary PCR product to pGEMT vector ........38
3.5: Genes identified in the forward SSH library of *C. canephora* cv CxR plant infested with CWSB for 36 hrs .................................................................43
3.6: Distribution of matches of contigs on different pseudochromosomes of Coffee Genome Hub ..............................................................62
4.1: Details of primers used for qRT-PCR ..........................................................99
4.2: Relative quantification of caffeine synthase in (arabica) *C. arabica* and (robusta) *C. canephora* at different periods of CWSB larval infestation (hours post inoculation) ..........................................................103
4.3: Relative quantification of Lipoygenase (LOX) in (arabica) *C. arabica* and (robusta) *C. canephora* at different periods of CWSB larval infestation (hours post inoculation) ..........................................................105
4.4: Relative quantification of CCCH type zinc finger protein in (arabica) *C. arabica* and (robusta) *C. canephora* at different periods of CWSB larval infestation (hours post inoculation) ..........................................................107
4.5: Relative quantification of MYB domain transcription factor in (arabica) *C. arabica* and (robusta) *C. canephora* at different periods of CWSB larval infestation (hours post inoculation) ..........................................................109
4.6: Relative quantification of transcription factor LHW (bHLH-MYC) in (arabica) *C. arabica* and (robusta) *C. canephora* at different periods of CWSB larval infestation (hours post inoculation) ..........................................................110
4.7: Relative quantification of Pectate Lyase in (arabica) *C. arabica* and (robusta) *C. canephora* at different periods of CWSB larval infestation (hours post inoculation) ..........................................................112
5.1: List of genes selected for RACE from SSH library of C. canephora Cv CxR and from SGN database .................................................................122
5.2: Details of primers used for RACE ..................................................................................125
5.3: Analysis of 3’ & 5’ RACE sequences obtained for Phosphatidyl Ethanolamine-Binding Protein (PEBP) domain .........................................................129
5.4: Analysis of 3’ RACE sequences for CBL-interacting protein kinase ..........130
5.5: Matches in the SGN (BLASTx search) for RACE cDNA sequence of C. canephora Cv. CxR phosholipase A2 obtained by RACE reactions ......133
5.6: Detailed analysis of 3’ & 5’ RACE sequences obtained for transcription factor LHW ..........................................................................................134
5.7: Results of 3’ RACE clones analysis for transcription factor LHW ..........136
5.8: Results of 5’ RACE clones analysis for transcription factor LHW ..........138
5.9: Matches in the SOL genomics (BLASTx search) for cDNA sequence of C. canephora Cv. CxR E3 ubiquitin- protein ligase obtained by RACE reactions ..................................................................................143
5.10: Analysis of 3’ & 5’ RACE sequence obtained for GAGA Binding factor ..................................................................................152
5.11: Different markers identified from the sequences obtained by RACE ......156
5.12: Summary of RACE efforts for different genes .........................................................157
6.1: Details of Primers used for Genome Walking ...............................................................165
6.2: Results of Softberry - NSITE-PL result for 692bp upstream sequence of CBC1128 ..................................................................................180
6.3: Binding Site Prediction Results in Plant Transcriptional Regulatory Map (PlantRegMap) against Arabidopsis thaliana. 67 binding sites of 61 TFs are identified from 1 input sequence (672bp preATG sequence of CBC1128) ..................................................................................182
6.4: Regulation Prediction Results- PlantREg ..................................................................187
6.5: Results of CBC1128 (preATG 692bp sequence) PAN2 analysis ..................188
7.1: Protein sequences of A. thaliana for the key genes involved in jasmonic acid biosynthesis from NCBI used as query and C. canephora matches obtained in Coffee Genome Hub database ............197
7.2: Matches obtained for lipoxygenase (LOX) in *C. canephora* genome from Coffee Genome Hub database. *A. thaliana* protein sequence AAF97315.1 was used as query .................................................................197

7.3: Matches obtained for allene oxide synthase (AOS) in *C. canephora* from Coffee Genome Hub database. *A. thaliana* protein sequence NP_199079.1 was used as query .................................................................198

7.4: Matches obtained for allene oxide cyclase (AOC) in *C. canephora* from Coffee Genome Hub database. *A. thaliana* protein sequence CAC83763.1 was used as query .................................................................199

7.5: Matches obtained for 12-oxophytodienoate reductase (OPR) in *C. canephora* from Coffee genome database. *A. thaliana* protein sequence CAB66143.1 was used as query .................................................................199

8.1: Composition of control diet used for bioassay of caffeine on CWSB larvae..................................................................................................................................................209

8.2: Effect of caffeine in the artificial diet on CWSB larvae in one month. Diet without caffeine was the control..........................................................................................................................................................212

8.3: Weight of CWSB larvae after three and a half months on artificial diet supplemented with different concentrations of caffeine..........................................................................................................................218