**SUPPLEMENTARY MATERIAL**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table S1. Experimental details of screening Indian sugarcane hybrids against internode borer  *Chilo sacchariphagus indicus* during 2013-2016** | | | | | |
| **Year** | **No. of hybrids evaluated** | **Location** | **Planting Date** | **Internode borer assessment** | |
| **Date of observation** | **Damage parameters** |
| 2013 | 535 | ICAR-SBIRC, Kannur*1* | Jan 2013 | Dec 2013 | i. % bored canes  ii. % bored or tunneled internodes  iii. Infestation index |
| 2014 | 187 | RSCL experimental farm*2* | Jan 2014 | Dec 2014 |
| 2015 | 52 | RSCL experimental farm | Jan 2015 | Jan 2016 |
| 2016 | 6 | RSCL experimental farm | Jan 2016 | Jan 2017 |
| *1* ICAR-Sugarcane Breeding Institute Research Center, Kannur, Kerala State, India  *2*M/s Rajshree Sugars and Chemicals Ltd., Mundiyampakkam, Villupuram district, Tamil Nadu State, India | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table S2. Status of Indian sugarcane hybrids screened against internode borer *Chilo sacchariphagus indicus*  in successive years (2013 - 2016)** | | | | | | | | |
| **Category** | **% incidence** | **Hybrids** | | | | | | |
| **Screening Year - 2013** | | | | | | | | |
| Resistant | 0.0-15.0 | Co 62022  Co 1252  Co 318  SEL 74/1  CoL 22  Co 6611  Co 1061  Co 62143  FR 28  Co 530  Co 993  Co 62019 | Co 62213  Co 62142  Co 1212  Co 62010  Co 62268  Co 281  Co 285  Co 6612  Co 745  Co 527  Co 62018  Co 62197 | Co 62009  CoS 221  Co 292  Co 1057  Co 1085  Co 1321  Co 348  Co 877  Co 1062  Co 62101  Co 847  Co 293 | Co 62035  Co 1206  Co 1056  Co 270  Co 951  Co 62060  Co 62104  Co 471  Co 1067  Co 337  Co 710  CoS 109 | Co 552  Co 1099  Co 62066  CoS 574  Co 1092  Co 1112  Co 62004  Co 6415  Co 639  Co 770  Co 62189  Co 1183 | Co 453  Co 467  Co 62109  Co 1090  Co 937  Co 617  Co 62117  Co 1011  Co 1013  CoK 34  CoJ 64 Co SEL 74/12 | Co 456  Co 62005  Mys 130  Co 670  Co 6402  Co 62191  Co 1100  Co 869  Co 1240  Co 62119  Co 1063  HM 607  CoK 28 |
| Moderately resistant | 15.0- 30.0 | Co 389  Co 1015  Co 508  Co 451  Co 62175  Co 62182  Co 519  Co 62269  Co 1058  Co 299  Co 312  Co 1071  Co 1042  Co 6618  Co 213 | Co 330  Co 422  Co 341  Co 889  Co 6518  Co 8231  Co 1074  Co 336  BO 3  Co 62215  Co 1077  Co 657  CoK 22  Co 1072  Co 62200 | Co 62209  Co 62194  Co 62181  Co 1166  Co 1198  Co 1159  Co 719  Co 62008  Co 1203  Co 62002  Co 423  Co 715  Co 325  Co 302  Co 692 | Co 716  Co 1161  Co 755  Co 840  Co 319  Co 1145  Co 313  Co 335  Co 62193  Co 359  Co 684  Co 764  CoK 32  Co 680  Co 323 | Co 1110  Co 1029  Co 648  Co 62224  Co 1023  CoK 30  Co 766  Co 918  Co 6405  CoK 38  Co 6615  Co 758  Co 843  Co 1137  Co 976 | Co 300  Co 717  Co 393  Co 6303  Co 950  Co 6320  Co 210  Co 6514  Co 6806  Co 1021  Co 606  Co 894  Co 62212  Co 691  Co 827 | Co 640  Co 1010  Co 6706  Co 6603  Co 8339  Co 558  Co 6311  Co 1048  Co 940  Co 1174 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Category** | **% incidence** | **Accessions** | | | | | | | |
| Susceptible | >30.0 | Co 62021  Co 790  Co 1058  Co 62162  Co 724  Co 1241  Co 1283  Co 62025  Co 6709  Co 697  IC 36  Co 1247  Co 1093  Co 1118  Co 1154  Co 1277  Co 62055  Co 62115  IC 228  Co 1080  Co 1087  Co 1205  Co 1209  S 406  Co 378  Co 621  Co 1043  Co 1102  Co 1134  Co 1138  Co 1181  Co 331  Co 723  Co 214  Co 396 | Co 1254  Co 1121  Co 1130  Co 1158  Co 1196  Co 933  Co 1012  IC 25  IC 31  Co 686  Co 944  Co 1005  Co 62160  BO 22  Co 794  Co 1192  Co 62037  Co 6516  Co 626  Co 816  Co 945  Co 1115  Co 1279  Co 62127  Co 62227  Co 62047  Co 6414  Co 1096  Co 1244  Co 1292  Co 973  Co 975  Co 1108  Co 1109  Co 1177 | Co 645  Co 732  Co 747  Co 62163  Co 464  Co 913  Co 707  Co 334  Co 371  Co 1129  Co 445  Co 304  Co 904  Co 6509  Co 1165  G 107  Co 649  Co 878  Co 1088  Co 1101  Co 1156  Co 1164  Co 1176  Co 1281  Co 62011  Co 62053  Co 62089  Co 62098  Co 62131  Co 62134  Co 762  Co 949  Co 962  Co 1050  Co 1055 | Co 677  Co 905  Co 1020  Co 1091  Co 1114  Co 62015  Co 62038  Co 62179  Co 6524  Co 634  Co 1019  Co 1113  Co 1146  Co 6319  Co 6318  Co 7230  Co 62024  Co 353  Co 703  Co 863  Co 1041  Co 6304  Co 6515  Co 6519  CoK 33  HM 629  IC 217  BO 11  BO 91  BO 99  LG 7271  Co 349  Co 421  Co 1002  Co 375 | Co 1064  Co 1175  Co 1213  Co 62079  LG 7227  Co 859  Co 957  Co 1028  Co 1083  Co 1111  Co 1153  Co 1179  Co 1214  Co 768  Co 1044  Co 1125  Co 1144  Co 1171  BO 10  Co 775  CoK 39  Co 407  Co 424  Co 903  Co 1160  Co 62068  Co 62169  IC 11  Co 624  Co 842  Co 62085  Co 347  Co 1116  Co 1131  Co 1132 | Co 391  Co 765  Co 1133  SG 63/32  Co 1004  Co 1014  BO 21  Co 62073  Co 62128  Co 62165  Co 62129  Co 1148  Co 1287  Co 62052  Co 62103  CoS 146  SEL 76/59  Co 7313  Co 1046  Co 1211  Co 1191  Co 62014  Co 62133  Co 62211  Co 604  Co 725  Co 756  Co 1126  Co 1152  Co 1201  Co 6502  CoL 9  CoL 17  CoK 31  Co 613 | Co 769  Co 773  Co 564  Co 607  Co 6317  Co 1027  Co 1170  CoK 36  IC 216  Co 740  Mys 336  Co 699  IC 195  LG 7270  Co 7804  Co 62078  Co 1030  Co 6309  Co 822  Co 6501  Co 1276  Co 661  Co 695  Co 828  Co 857  Co 1032  Co 62170  IC 137  BO 43  Co 1036  Co 6306  Co 383  Co 736  CoK 35  Co 62132 | |
| **Category** | **% incidence** | **Accessions** | | | | | | | |
|  |  | LG 7331  Co 1000  Co 1141  Co 1210  Co 1018  Co 7703  Co 382  Co 1182  IC 136  BO 4  HIND SPECIAL  Co 301  Co 6610  Co 62175  Co 1075 | Co 62105  IC 130  Co 1025  Co 62080  CoL 5  Co 792  Co 917  Co 283  Co 746  Co 892  Co 1054  Co 6507  Co 6602  POJ 2878 X r  Co 563 | Co 1079  Co 1084  Co 1107  Co 781  Co 845  Co 946  Co 1139  Co 1216  Co 1223  Co 1224  Co 1225  Co 674  Co 850  Co 974  CoC 671 | Co 900  Co 797  Co 1040  Co 1073  Co 6314  Co 713  Co 660  Co 754  Co 779  Co 858  Co 1049  Co 1204  Co 62168  CoP 1  Co 419 | Co 62258  Co 7702  CoJ 67  Co 603  Co 1052  Co 1140  Co 62141  Co 1197  Co 780  Co 887  Co 907  Co 972  Co 994  Co 1288  Co 708 | Co 961  Co 1207  Co 6616  Co 6310  Co 62203  Co 890  Co 1038  Co 62188  Co 62225  IC 225  Co 761  Co 6508  Co 6614  Co 8232  IC 200 | Co 6506  Co 1024  Co 6511  Co 62042  IC 37  Co 676  Co 788  Co 921  Co 418  Co 912  BO 30  Co 386  Co 818  Co 86032  Co 1060 | |
| **Screening Year - 2014** | | | | | | | | | |
| Resistant | 0.0-15.0 | Co 293  Co 1056  Co 770  Co 62117  Co 1015  CoS 109  Co 648  Co 552 | Co 617  Co 393  CoS 574  Co 918  Co 639  CoJ 64  Co 6603  Co 62101 | Co 62224  Co 1072  Co 312  Co 6405  HM 607  Co 62191 Co 62193  Co 62019 | Co 670  Co 1029  Co 62213  Co 335  Co 302  Co 1203  Co 6612  Co 471 | Co 62018  Co 1063  Co 6611  Co 657  Co 766  Co 389  Co 1099  Co 456 | Co 1110  Co 1166  CoK 34  Co 843  Co 558  BO 3  Co 1090  Co 1198 | Co 710  Co 745 | |
| Moderately resistant | 15.0- 30.0 | Co 422  Co 62008  Co 691  Co 62005  Co 299  Co 951  Co 336  Co 62215  Co 715  Co 1112  Co 62104 | Co 6514  Co 62175  Co 1145  Co 527  Co 804  Co 1074  Co 467  Co 337  Co 1100  Co 755  Co 680 | Co 62212  Co 1321  Co 62182  Co 940  Co 1021  Co 8231  Co 6220  Co 950  Co 1085  Co 6618  Co 325 | Co 62197  Co 976  Co 62209  CoK 38  Co 330  Co 62189  Co 348  Co 847  Co 6806  Co 6402 Co1137 | Co 62009  Co 719  Co 1206  Co 1092  Co 1058  CoK 22  FR 28  Co 62269  Co 1174  Co 62194  Co 6706 | Co 640  Co 1161  Co 894  CoS 221  Co 62268  Co 1023  Co 323  CoK 32  Co 313  Co 62060  Co 62002 | Co 1212  Co 62022  Co 937  Co 285  Co 606  Co 993  Co 758  Co 764  Co 62004 | |
| **Category** | **% incidence** | **Accessions** | | | | | | | |
| Susceptible | >30.0 | Co 213  Co 1010  CoL 22  Co 1048  Co 530  Co 341  Co 877  Co 717  Co 1062 | Co 300  Co 1057  Co 451  Co 889  Co 318  Co 692  Co 6518  Co 1077  Co 1071 | Co 869  Co 8339  Co 1061  Co 519  CoK 30  Co 292  Co 270  Co 1013  CoK 28 | Co 62143  Co 508  Co 62142  Co 62109  Co 359  Co 1240  Co 6303  Co 62035  MYS 130 | Co 1011  Co 453  Co 1159  Co 423  Co 716  Co 6615  Co 6311  Co 1067  Co 827 | Co 1252  Co 1042  Co 210  Co 319  Co 1183  Co 6415  Co 684  Co 281  Co 62200 | Co 62010  Co SEL74/12  Co SEL 74/1 Co 62119  Co 62066  Co 62181  Co 86032  Co 1060 | |
| **Screening Year - 2015** | | | | | | | | | |
| Resistant | 0.0-15.0 | CO 293 | CO 389 | CO 62019 | CO 62213 | - | - | - | |
| Moderately resistant | 15.0- 30.0 | CO 1029  CO 62117  Co 639  CO 62018 | CO 552  CO 6405  CO 1015  CO 648 | CO S109  CO 335  CO 1063  CO 1090 | CO 6612  COS 574  CO 471  CO 456 | CO 6611  CO 312  CO K34  CO 86032 | CO 62191  CO 617  HM 607  CO 670 | CO 657  CO 6603  CO 393  CO 745 | |
| Susceptible | >30.0 | CO 62101  CO 302  CO 918 | CO 1072  CO J64  CO 62193 | BO 3  CO 1166  CO 558 | CO 1203  CO 770  CO 62224 | CO 766  CO 1056  CO 1099 | CO 1110  CO 1198  CO 843 | CO 1060  CO 710 | |
| **Screening Year - 2016** | | | | | | | | | |
| Resistant | 0.0-15.0 | Co 293 | - | - | - | - | - | | - |
| Moderately resistant | 15.0- 30.0 | - | - | - | - | - | - | | - |
| Susceptible | >30.0 | Co 389 | Co 62213 | Co 62019 | Co 86032 | Co 1060 | - | | - |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table S3. Summary of Indian sugarcane hybrids screened and categorized for *Chilo sacchariphagus indicus* resistance by the process of elimination during 2013-2016** | | | | | |
| **Category** | **% infestation** | **Year of evaluation** | | | |
| **2013** | **2014** | **2015** | **2016** |
| Resistant | 0.0-15.0 | 85 | 50 | 4 | 1 |
| Moderately  resistant | 15.0-30.0 | 100 | 75 | 28 | 0 |
| Susceptible@ | >30.0 | 350 | 62 | 20 | 5 |
| Total |  | 535 | 187 | 52 | 6 |
| @Includes two susceptible checks carried forward to the next season | | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Table S4. Extent of injury by *Chilo sacchariphagus indicus* among six sugarcane hybrids screened in the field at  ICAR-SBIRC, Kannur, Kerala State, India, in 2013** | | | |
| **Hybrid** | **% of infestation** | **% of intensity** | **Infestation index** |
| Co 62019 | 4.55 | 7.41 | 0.34 |
| Co 62213 | 4.55 | 4.00 | 0.18 |
| Co 389 | 15.15 | 8.06 | 1.22 |
| Co 293 | 11.43 | 9.26 | 1.06 |
| Co 86032 | 29.17 | 11.76 | 3.43 |
| Co 1060 | 30.43 | 3.85 | 1.17 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table S5. Phenolic content in shoots of three sugarcane hybrids screened for *Chilo sacchariphagus indicus* resistance** | | | | | |
| **S. No.** | **Phenolic acid** | **Retention time (min)** | **Phenolic content (ppm)** | | |
| **Co 293** | **Co 1060** | **Co 86032** |
| 1 | Caffeic acid | 4.59 | 0.00039 | 0.00112 | 0.00045 |
| 2 | Rutin | 6.84 | 0.00237 | 0.00198 | 0.00058 |
| 3 | Vanillic acid | 27.63 | 0.01164 | 0.00431 | 0.00022 |
| 4 | Syringic acid | 28.96 | 0.31058 | 0.06059 | 0.62229 |
| 5 | Ellagic acid | 30.73 | 0.00740 | 0.00564 | 0.00028 |
| 6 | Ferulic acid | 32.65 | 0.00061 | 0.00040 | 0.00008 |
| 7 | Coumarin | 33.17 | 0.00103 | 0.00078 | 0.00014 |
| 8 | Flavone | 58.55 | 0.04323 | 0.00781 | 0.02455 |
| 9 | Catechin | 61.71 | 0.31490 | 0.16894 | 0.00031 |
| 10 | Gallic acid | 63.89 | - | 180.64945 | 719.90379 |
| 11 | Orcinol | 64.21 | 0.66115 | 0.12348 | 0.04703 |
| 12 | Phloroglucinol | 64.99 | - | 0.49639 | 0.00157 |