

Appendix 3 Summary of grouping of the genotypes based on Euclidean distance, population structure; stem borer and storage pest resistance

S/N	Germplasm	Entry	Name	Group based on Euclidean distance From PowerMarker	Group based on Structure at K=2	Group based on Structure at K=3	Group based on Structure at K=4	Group based on Structure at K=5
1	Inbred	5082	CKSBL10029	SBR lines	Pop1	Pop2	Pop1	Pop4
2	Inbred	5083	CKSBL10005	SBR lines	Pop1	Pop2	Pop1	Pop2
3	Inbred	5084	P300C5S1B	Unassigned	Pop1	Pop2	Pop1	Pop4
4	Inbred	5085	LPSC7-52	SPR and other lines	Pop1	Mixed	Pop1	Pop4
5	Inbred	5086	CKSPL10086	SPR and other lines	Pop2	Pop1	Pop3	Pop5
6	Inbred	5087	CKSBL10028	SBR lines	Pop1	Mixed	Pop1	Pop4
7	Inbred	5088	CKSBL10045	SBR lines	Pop1	Pop2	Pop1	Pop2
8	Inbred	5089	CKSBL10040	SPR and other lines	Pop1	Mixed	Pop1	Pop4
9	Inbred	5090	CKSBL10030	SBR lines	Pop1	Pop2	Pop1	Pop2
10	Inbred	5091	CML78	Unassigned	Pop1	Mixed	Pop1	Pop4
11	Inbred	5092	CZL03014	SPR and other lines	Pop1	Pop1	Pop1	Pop4
12	Inbred	5093	CKSBL10039	SPR and other lines	Pop1	Mixed	Pop1	Pop4
13	Inbred	5095	CKSPL10170	SPR and other lines	Pop2	Pop1	Pop3	Pop5
14	Inbred	5096	CKSBL10025	SBR lines	Pop1	Pop2	Pop1	Pop2
15	Inbred	5097	CML511	SPR and other lines	Pop1	Mixed	Pop1	Pop4
16	Inbred	5098	CML444	Unassigned	Pop1	Mixed	Mixed	Mixed
17	Inbred	5099	CKSPL10036	SPR and other lines	Pop2	Pop1	Pop3	Pop5
18	Inbred	5100	CKSPL10088	SPR and other lines	Pop2	Pop1	Pop3	Pop5
19	Inbred	5101	CKSPL10111	SPR and other lines	Pop2	Pop1	Pop3	Pop5
20	Inbred	5102	CKSPL10113	SPR and other lines	Pop2	Pop1	Pop3	Pop5
21	Inbred	5103	CML440	Unassigned	Pop1	Mixed	Pop1	Pop4
22	Inbred	5104	CML334	SBR lines	Pop1	Mixed	Pop1	Pop4
23	Inbred	5105	CKSBL10042	Unassigned	Pop1	Pop2	Pop1	Mixed
24	Inbred	5106	CML442	SBR lines	Pop1	Mixed	Pop1	Pop4
25	Inbred	5107	P100C-54	SPR and other lines	Pop1	Mixed	Pop1	Pop4
26	Inbred	5108	CKSBL10033	Unassigned	Pop1	Pop2	Mixed	Mixed
27	Inbred	5109	CKSPL10218	SPR and other lines	Pop2	Pop1	Pop3	Pop5
28	Inbred	5110	CKSPL10089	SPR and other lines	Pop2	Pop1	Pop3	Pop5
29	Inbred	5111	CKSPL10090	SPR and other lines	Pop2	Pop1	Pop3	Pop5
30	Inbred	5112	CML443	SPR and other lines	Pop1	Mixed	Pop1	Pop4
31	Inbred	5114	CML144	Unassigned	Pop1	Mixed	Pop1	Pop4
32	Inbred	5115	CKSBL10027	SBR lines	Pop1	Mixed	Pop1	Pop2
33	Inbred	5116	CKSBL10046	SPR and other lines	Pop1	Mixed	Pop1	Pop4
34	Inbred	5117	LaPosta-50	SPR and other lines	Pop1	Mixed	Pop1	Pop4
35	Inbred	5118	CKSBL10007	SPR and other lines	Pop1	Mixed	Pop1	Pop4
36	Inbred	5119	CKSPL10177	SPR and other lines	Pop2	Pop1	Pop3	Pop5
37	Inbred	5120	CKSPL10344	SPR and other lines	Pop1	Pop2	Pop1	Pop4
38	Inbred	5121	DTPWC9-49	SPR and other lines	Pop1	Pop1	Pop1	Pop4
39	Inbred	5123	DTPWC9-48	Unassigned	Pop1	Mixed	Pop1	Pop4
40	Inbred	5124	CZL00003	Unassigned	Pop1	Pop2	Mixed	Mixed

S/N	Germplasm	Entry	Name	Group based on Euclidean distance From PowerMarker	Group based on Structure at K=2	Group based on Structure at K=3	Group based on Structure at K=4	Group based on Structure at K=5
41	Inbred	5125	CKSPL10035	SPR and other lines	Pop2	Pop1	Pop3	Pop5
42	Inbred	5126	CKSBL10082	SBR lines	Pop1	Pop2	Mixed	Pop2
43	Inbred	5127	CKSBL10001	SBR lines	Pop1	Pop2	Pop1	Pop2
44	Inbred	5128	CKSBL10015	SBR lines	Pop1	Pop2	Pop1	Mixed
45	Inbred	5129	CML441	SPR and other lines	Pop1	Mixed	Pop1	Pop4
46	Inbred	5130	CKSBL10004	SBR lines	Pop1	Pop2	Pop1	Pop2
47	Inbred	5132	CKSPL10280	SPR and other lines	Pop2	Pop1	Pop3	Pop5
48	Inbred	5133	CKSBL10035	SPR and other lines	Pop1	Mixed	Pop1	Pop4
49	Inbred	5134	CKSBL10014	SBR lines	Pop1	Mixed	Pop1	Pop4
50	Inbred	5135	CKSPL10273	SPR and other lines	Pop2	Pop1	Pop3	Pop5
51	Inbred	5136	CKSBL10013	SBR lines	Pop1	Mixed	Pop1	Pop4
52	Inbred	5137	CKSPL10042	SPR and other lines	Pop2	Pop1	Pop3	Pop5
53	Inbred	5138	CKSPL10256	SPR and other lines	Pop2	Pop1	Pop3	Pop5
54	Inbred	5139	CKSPL10003	SPR and other lines	Pop2	Pop1	Pop3	Pop5
55	Inbred	5140	CML488	SPR and other lines	Pop1	Mixed	Pop1	Pop4
56	Inbred	5141	CKSPL10230	SPR and other lines	Pop2	Pop1	Pop3	Pop5
57	Inbred	5142	CKSBL10021	SBR lines	Pop1	Pop2	Pop1	Pop2
58	Inbred	5143	CKSPL10309	SPR and other lines	Pop2	Pop1	Pop3	Pop5
59	Inbred	5144	CML264	Unassigned	Pop1	Pop2	Mixed	Mixed
60	Inbred	5146	CKSBL10038	Unassigned	Pop1	Pop2	Pop1	Pop4
61	Inbred	5147	CKSBL10020	SBR lines	Pop1	Mixed	Pop1	Pop2
62	Inbred	5148	CKSBL10043	SPR and other lines	Pop1	Mixed	Pop1	Pop4
63	Inbred	5149	CKSPL10021	SPR and other lines	Pop2	Pop1	Pop3	Pop5
64	Inbred	5150	CML159	SPR and other lines	Pop1	Mixed	Pop1	Pop4
65	Inbred	5151	CKSPL10164	SPR and other lines	Pop2	Pop1	Pop3	Pop5
66	Inbred	5153	CKSPL10343	SPR and other lines	Pop1	Mixed	Pop1	Pop4
67	Inbred	5155	CKSPL10080	SPR and other lines	Pop2	Pop1	Pop3	Pop5
68	Inbred	5157	CKSPL10212	SPR and other lines	Pop2	Pop1	Pop3	Pop5
69	Inbred	5158	CKSBL10026	SBR lines	Pop1	Pop2	Pop1	Pop2
70	Inbred	5160	DTPWC9-53	Unassigned	Pop1	Mixed	Pop1	Pop4
71	Inbred	5161	CKSBL10041	SPR and other lines	Pop1	Pop1	Pop1	Pop4
72	Inbred	5162	CML204	Unassigned	Pop2	Mixed	Mixed	Mixed
73	Inbred	5163	CML445	Unassigned	Pop1	Mixed	Pop1	Pop4
74	Inbred	5164	CKSPL10206	SPR and other lines	Pop2	Pop1	Pop3	Pop5
75	Inbred	5165	CKSBL10060	SBR lines	Pop1	Mixed	Pop1	Pop4
76	Inbred	5166	CKSBL10023	SPR and other lines	Pop1	Mixed	Pop1	Pop4
77	Inbred	5167	CKSPL10224	SPR and other lines	Pop2	Pop1	Pop3	Pop5
78	Inbred	5168	CKSPL10087	SPR and other lines	Pop2	Pop1	Pop3	Pop5
79	Inbred	5171	CKSPL10341	SPR and other lines	Pop1	Pop1	Mixed	Pop4
80	Inbred	5172	CKSPL10295	SPR and other lines	Pop2	Pop1	Pop3	Pop5
81	Inbred	5173	CKSPL10112	SPR and other lines	Pop2	Pop1	Pop3	Pop5

S/N	Germplasm	Entry	Name	Group based on Euclidean distance From PowerMarker	Group based on Structure at K=2	Group based on Structure at K=3	Group based on Structure at K=4	Group based on Structure at K=5
82	Inbred	5174	CKSPL10186	SPR and other lines	Pop2	Pop1	Pop3	Pop5
83	Inbred	5175	CKSPL10146	SPR and other lines	Pop2	Pop1	Pop3	Pop5
84	Inbred	5176	CZL03007	Unassigned	Mixed	Mixed	Pop1	Pop4
85	Inbred	5179	CZL01005	SPR and other lines	Pop1	Pop2	Pop1	Pop4
86	Inbred	5180	CKSBL10003	SPR and other lines	Pop1	Pop2	Mixed	Mixed
87	Inbred	5182	CKSPL10013	SPR and other lines	Pop2	Pop1	Pop3	Pop5
88	Inbred	5183	CKSPL10081	SPR and other lines	Pop2	Pop1	Pop3	Pop5
89	Inbred	5184	CKSBL10016	SBR lines	Pop1	Mixed	Pop1	Pop4
90	Inbred	5185	CKSPL10136	SPR and other lines	Pop2	Pop1	Pop3	Pop5
91	Inbred	5186	CML489	Unassigned	Pop1	Mixed	Pop1	Pop4
92	Inbred	5187	LPSC7-51	SPR and other lines	Pop1	Mixed	Pop1	Pop4
93	Inbred	5188	CML395	Unassigned	Pop1	Mixed	Pop1	Mixed
94	Inbred	5189	CML254	SPR and other lines	Mixed	Pop1	Pop1	Pop4
95	Inbred	5190	CML202	Unassigned	Mixed	Mixed	Mixed	Mixed
96	Inbred	5191	CKSPL10074	SPR and other lines	Pop2	Pop1	Pop3	Pop5
97	Inbred	5192	CML312	SPR and other lines	Pop1	Mixed	Pop1	Pop4
98	Inbred	5193	CML197	Unassigned	Pop1	Pop1	Pop1	Pop4
99	Inbred	5194	CKSBL10008	SPR and other lines	Pop1	Pop1	Pop1	Pop4
100	Inbred	5195	CKL06-1	Unassigned	Pop1	Mixed	Pop1	Pop4
101	Inbred	5196	CKSPL10229	SPR and other lines	Pop2	Pop1	Pop3	Pop5
102	Hybrid	5001	CKIR09005	SBR hybrids	Pop1	Pop2	Pop2	Pop1
103	Hybrid	5002	CKPH08012	SPR hybrids	Pop2	Pop3	Pop4	Pop3
104	Hybrid	5003	CKIR07013	SBR hybrids	Pop1	Pop2	Mixed	Mixed
105	Hybrid	5004	CKIR07009	Unassigned	Pop1	Pop2	Pop2	Pop1
106	Hybrid	5005	PH3253	Unassigned	Pop1	Pop2	Mixed	Pop4
107	Hybrid	5006	CKPH08038	SPR hybrids	Pop2	Pop3	Pop4	Pop3
108	Hybrid	5007	CML395-CML444	SBR hybrids	Pop1	Pop2	Pop2	Pop1
109	Hybrid	5008	CML312-CML442	SPR and other lines	Pop1	Pop2	Pop1	Pop4
110	Hybrid	5009	CKPH09002	SPR hybrids	Pop2	Pop3	Pop4	Pop3
111	Hybrid	5010	SCDuma43	SPR hybrids	Pop1	Pop2	Mixed	Mixed
112	Hybrid	5011	DH01	CH susceptible	Pop1	Pop2	Pop2	Pop1
113	Hybrid	5012	CKPH09004	SPR hybrids	Pop2	Pop3	Pop4	Pop3
114	Hybrid	5013	CKIR09006	SBR hybrids	Pop1	Pop2	Pop2	Pop1
115	Hybrid	5014	H6210	CH susceptible	Pop1	Pop2	Pop2	Pop1
116	Hybrid	5015	H628	CH susceptible	Pop1	Pop2	Pop2	Pop1
117	Hybrid	5016	H629	CH susceptible	Pop1	Pop2	Pop2	Pop1
118	Hybrid	5017	CKPH08010	SPR hybrids	Pop2	Pop3	Pop4	Pop3
119	Hybrid	5018	CKIR09008	SBR hybrids	Pop1	Pop2	Pop2	Pop1
120	Hybrid	5019	CKPH08004	SPR hybrids	Pop2	Pop3	Pop4	Pop3
121	Hybrid	5020	CKPH08037	SPR hybrids	Pop2	Pop3	Pop4	Pop3

S/N	Germplasm	Entry	Name	Group based on Euclidean distance From PowerMarker	Group based on Structure at K=2	Group based on Structure at K=3	Group based on Structure at K=4	Group based on Structure at K=5
122	Hybrid	5021	CKPH08043	SPR hybrids	Pop2	Pop3	Pop4	Pop3
123	Hybrid	5022	CKIR07008	SBR hybrids	Pop1	Pop2	Pop2	Pop1
124	Hybrid	5023	CKIR07005	SBR hybrids	Pop1	Pop2	Pop2	Pop1
125	Hybrid	5024	CKIR09002	SBR hybrids	Pop1	Pop2	Pop2	Pop1
126	Hybrid	5025	CKPH08024	SPR hybrids	Pop2	Pop3	Pop4	Pop3
127	Hybrid	5026	CKPH08036	SPR hybrids	Pop2	Pop3	Pop4	Pop3
128	Hybrid	5027	CKPH08032	SPR hybrids	Pop2	Pop3	Pop4	Pop3
129	Hybrid	5028	CKIR07003	SBR hybrids	Pop1	Pop2	Mixed	Mixed
130	Hybrid	5029	CKIR07010	SBR hybrids	Pop1	Pop2	Pop2	Pop1
131	Hybrid	5030	CKIR07018	SBR hybrids	Pop1	Pop2	Pop2	Pop1
132	Hybrid	5031	CKIR07011	SBR hybrids	Pop1	Pop2	Pop2	Pop1
133	Hybrid	5032	CKPH08033	SPR hybrids	Pop2	Pop3	Pop4	Pop3
134	Hybrid	5033	CKIR06009	SBR hybrids	Pop1	Pop2	Pop2	Pop1
135	Hybrid	5034	CKPH08035	SPR hybrids	Pop2	Pop3	Pop4	Pop3
136	Hybrid	5035	631Q	SPR hybrids	Pop1	Mixed	Mixed	Mixed
137	Hybrid	5036	CKPH08028	SPR hybrids	Pop2	Pop3	Pop4	Pop3
138	Hybrid	5037	WH403	SPR hybrids	Pop1	Mixed	Mixed	Mixed
139	Hybrid	5038	H6212	CH susceptible	Pop1	Pop2	Pop2	Pop1
140	Hybrid	5039	CKIR06006	SBR hybrids	Pop1	Pop2	Pop2	Pop1
141	Hybrid	5040	CKPH08009	SPR hybrids	Pop2	Pop3	Pop4	Pop3
142	Hybrid	5041	CKPH08014	SPR hybrids	Pop2	Pop3	Pop4	Pop3
143	Hybrid	5042	CKIR09003	SBR hybrids	Pop1	Pop2	Pop2	Pop1
144	Hybrid	5043	533A	SPR hybrids	Pop1	Mixed	Mixed	Mixed
145	Hybrid	5044	CKPH09001	SPR hybrids	Pop2	Pop3	Pop4	Pop3
146	Hybrid	5045	H6213	CH susceptible	Pop1	Pop2	Pop2	Pop1
147	Hybrid	5046	531A	SPR hybrids	Pop1	Mixed	Mixed	Mixed
148	Hybrid	5047	CML202-CML204	SBR hybrids	Pop1	Pop2	Pop2	Pop1
149	Hybrid	5048	CKIR06008	SPR hybrids	Pop2	Pop3	Pop4	Pop3
150	Hybrid	5049	CKIR07001	SBR hybrids	Pop1	Pop2	Pop2	Pop1
151	Hybrid	5050	CKIR06001	SBR hybrids	Pop1	Pop2	Pop2	Pop1
152	Hybrid	5051	CKIR07012	SBR hybrids	Pop1	Pop2	Mixed	Mixed
153	Hybrid	5052	CKPH09003	SPR hybrids	Pop2	Pop3	Pop4	Pop3
154	Hybrid	5053	CKPH08044	SPR hybrids	Pop2	Pop3	Pop4	Pop3
155	Hybrid	5054	CKPH08020	SPR hybrids	Pop2	Pop3	Pop4	Pop3
156	Hybrid	5055	611D	Unassigned	Pop1	Pop2	Mixed	Mixed
157	Hybrid	5056	DK8031	CH susceptible	Pop1	Pop2	Pop2	Pop1
158	Hybrid	5057	CKPH08025	SPR hybrids	Pop2	Pop3	Pop4	Pop3
159	Hybrid	5058	CKPH08040	SPR hybrids	Pop2	Pop3	Pop4	Pop3
160	Hybrid	5059	CKPH08039	SPR hybrids	Pop2	Pop3	Pop4	Pop3
161	Hybrid	5060	SCSimba61	SPR hybrids	Pop1	Pop2	Mixed	Mixed
162	Hybrid	5061	CKPH08026	SPR hybrids	Pop2	Pop3	Pop4	Pop3

S/N	Germplasm	Entry	Name	Group based on Euclidean distance From PowerMarker	Group based on Structure at K=2	Group based on Structure at K=3	Group based on Structure at K=4	Group based on Structure at K=5
163	Hybrid	5062	CKIR09001	SBR hybrids	Pop1	Pop2	Pop2	Pop1
164	Hybrid	5063	PH4	SBR hybrids	Pop1	Pop2	Pop2	Pop1
165	Hybrid	5064	CKIR09007	CH susceptible	Pop1	Pop2	Pop2	Pop1
166	Hybrid	5065	H626	CH susceptible	Pop1	Pop2	Pop2	Pop1
167	Hybrid	5066	PH1	CH susceptible	Pop1	Pop2	Pop2	Pop1
168	Hybrid	5067	CKPH08003	SPR hybrids	Pop2	Pop3	Pop4	Pop3
169	Hybrid	5068	H513	CH susceptible	Pop1	Pop2	Pop2	Pop1
170	Hybrid	5069	CKIR09004	SBR hybrids	Pop1	Pop2	Pop2	Pop1
171	Hybrid	5070	CKIR07004	SBR hybrids	Pop1	Pop2	Pop2	Mixed
172	Hybrid	5071	CKIR07017	SPR hybrids	Pop1	Mixed	Pop2	Pop1
173	Hybrid	5072	CKIR06004	SBR hybrids	Pop1	Pop2	Pop2	Pop1
174	Hybrid	5073	KH600-15A	CH susceptible	Pop1	Pop2	Pop2	Pop1
175	Hybrid	5074	SCDuma41	SPR and other lines	Pop1	Mixed	Pop1	Pop4
176	Hybrid	5075	500Q	SPR hybrids	Pop1	Mixed	Mixed	Mixed
177	Hybrid	5076	CKPH08002	SPR hybrids	Pop2	Pop3	Pop4	Pop3
178	Hybrid	5077	CKIR06007	SBR hybrids	Pop1	Pop2	Pop2	Pop1
179	Hybrid	5078	CKPH08041	SPR hybrids	Pop2	Pop3	Pop4	Pop3
180	Hybrid	5079	DH04	CH susceptible	Pop1	Pop2	Pop2	Pop1
181	Hybrid	5080	DH02	CH susceptible	Pop1	Pop2	Pop2	Pop1
182	Hybrid	5081	CKIR07002	SBR hybrids	Pop1	Pop2	Pop2	Pop1
183	Hybrid	5274	CKIR04003	SBR hybrids	Pop1	Pop2	Mixed	Mixed
184	Hybrid	5280	CKIR04002	SBR hybrids	Pop1	Pop2	Pop2	Pop1