

Supplementary Tables

Table 1: List of the genotypes used for submergence tolerance screening.

Sl. no	Genotype number	Landrace name
1	G1	IRGC 22
2	G2	IRGC 47
3	G3	IRGC 48
4	G4	IRGC 58
5	G5	IRGC 88
6	G6	IRGC 93
7	G7	IRGC 94
8	G8	IRGC 95
9	G9	IRGC 102
10	G10	IRGC 104
11	G11	IRGC 105
12	G12	IRGC 108
13	G13	IRGC 109
14	G14	IRGC 111
15	G15	IRGC 113
16	G16	IRGC 121
17	G17	IRGC 125
18	G18	IRGC 127
19	G19	IRGC 129
20	G20	IRGC 136
21	G21	IRGC 145
22	G22	IRGC 146
23	G23	IRGC 155
24	G24	IRGC 158
25	G25	IRGC 170
26	G26	IRGC 173
27	G27	IRGC 177
28	G28	IRGC 179
29	G29	IRGC 216
30	G30	IRGC 222
31	G31	IRGC 223
32	G32	IRGC 224
33	G33	IRGC 227
34	G34	IRGC 229
35	G35	IRGC 230
36	G36	IRGC 231
37	G37	IRGC 242
38	G38	IRGC 251
39	G39	IRGC 253
40	G40	IRGC 254
41	G41	IRGC 264
42	G42	IRGC 272
43	G43	IRGC 282
44	G44	IRGC 291
45	G45	IRGC 292
46	G46	IRGC 295
47	G47	IRGC 297

48	G48	IRGC 298
49	G49	IRGC 306
50	G50	IRGC 310
51	G51	IRGC 313
52	G52	IRGC 317
53	G53	IRGC 318
54	G54	IRGC 319
55	G55	IRGC 326
56	G56	IRGC 336
57	G57	IRGC 342
58	G58	IRGC 344
59	G59	IRGC 361
60	G60	IRGC 381
61	G61	IRGC 385
62	G62	IRGC 403
63	G63	IRGC 411
64	G64	IRGC 413
65	G65	IRGC 414
66	G66	IRGC 420
67	G67	IRGC 421
68	G68	IRGC 424
69	G69	IRGC 428
70	G70	IRGC 437
71	G71	IRGC 439
72	G72	IRGC 444
73	G73	IRGC 445
74	G74	IRGC 446
75	G75	IRGC 448
76	G76	IRGC 456
77	G77	IRGC 460
78	G78	IRGC 461
79	G79	IRGC 466
80	G80	IRGC 467
81	G81	IRGC 483
82	G82	IRGC 486
83	G83	IRGC 487
84	G84	IRGC 488
85	G85	IRGC 493
86	G86	IRGC 495
87	G87	IRGC 508
88	G88	IRGC 509
89	G89	IRGC 516
90	G90	IRGC 518
91	G91	IRGC 522
92	G92	IRGC 526
93	G93	IRGC 527
94	G94	IRGC 533
95	G95	IRGC 535
96	G96	IRGC 540
97	G97	IRGC 541
98	G98	IRGC 542
99	G99	IRGC 544
100	G100	IRGC 545

101	G101	IRGC 548
102	G102	IRGC 549
103	G103	IRGC 552
104	G104	IRGC 557
105	G105	IRGC 560
106	G106	IRGC 564
107	G107	IRGC 565
108	G108	IRGC 576
109	G109	IRGC 582
110	G110	IRGC 584
111	G111	IRGC 585
112	G112	IRGC 588
113	G113	IRGC 589
114	G114	IRGC 593
115	G115	IRGC 594
116	G116	IRGC 595
117	G117	IRGC 600
118	G118	IRGC 605
119	G119	IRGC 610
120	G120	IRGC 617
121	G121	IRGC 618
122	G122	IRGC 619
123	G123	IRGC 623
124	G124	IRGC 625
125	G125	IRGC 628
126	G126	IRGC 631
127	G127	IRGC 638
128	G128	IRGC 646
129	G129	IRGC 649
130	G130	IRGC 652
131	G131	IRGC 653
132	G132	IRGC 662
133	G133	IRGC 663
134	G134	IRGC 673
135	G135	IRGC 675
136	G136	IRGC 676
137	G137	IRGC 682
138	G138	IRGC 683
139	G139	IRGC 684
140	G140	IRGC 685
141	G141	IRGC 693
142	G142	IRGC 694
143	G143	IRGC 701
144	G144	IRGC 704
145	G145	IRGC 706
146	G146	IRGC 707
147	G147	IRGC 708
148	G148	IRGC 709
149	G149	IRGC 711
150	G150	IRGC 712
151	G151	IRGC 726
152	G152	IRGC 729
153	G153	IRGC 730

154	G154	IRGC 731
155	G155	IRGC 742
156	G156	IRGC 743
157	G157	IRGC 746
158	G158	IRGC 750
159	G159	IRGC 752
160	G160	IRGC 756
161	G161	IRGC 757
162	G162	IRGC 759
163	G163	IRGC 762
164	G164	IRGC 764
165	G165	IRGC 765
166	G166	IRGC 767
167	G167	IRGC 771
168	G168	IRGC 772
169	G169	IRGC 773
170	G170	IRGC 774
171	G171	IRGC 775
172	G172	IRGC 776
173	G173	IRGC 782
174	G174	IRGC 783
175	G175	IRGC 785
176	G176	IRGC 793
177	G177	IRGC 795
178	G178	IRGC 798
179	G179	IRGC 803
180	G180	IRGC 805
181	G181	IRGC 809
182	G182	IRGC 811
183	G183	IRGC 813
184	G184	IRGC 817
185	G185	IRGC 823
186	G186	IRGC 825
187	G187	IRGC 827
188	G188	IRGC 829
189	G189	IRGC 833
190	G190	IRGC 841
191	G191	IRGC 864
192	G192	IRGC 865
193	G193	IRGC 872
194	G194	IRGC 873
195	G195	IRGC 876
196	G196	IRGC 881
197	G197	IRGC 893
198	G198	IRGC 896
199	G199	IRGC 901
200	G200	IRGC 909
201	G201	IRGC 911
202	G202	IRGC 912
203	G203	IRGC 913
204	G204	IRGC 915
205	G205	IRGC 917
206	G206	IRGC 919

207	G207	IRGC 921
208	G208	IRGC 924
209	G209	IRGC 927
210	G210	IRGC 935
211	G211	IRGC 937
212	G212	IRGC 943
213	G213	IRGC 947
214	G214	IRGC 962
215	G215	IRGC 964
216	G216	IRGC 966
217	G217	IRGC 967
218	G218	IRGC 968
219	G219	IRGC 970
220	G220	IRGC 971
221	G221	IRGC 976
222	G222	IRGC 977
223	G223	IRGC 979
224	G224	IRGC 980
225	G225	IRGC 981
226	G226	IRGC 982
227	G227	IRGC 1000
228	G228	IRGC 1019
229	G229	IRGC 1020
230	G230	IRGC 1022
231	G231	IRGC 1029
232	G232	IRGC 1031
233	G233	IRGC 1032
234	G234	IRGC 1042
235	G235	IRGC 1046
236	G236	IRGC 1049
237	G237	IRGC 1055
238	G238	IRGC 1057
239	G239	IRGC 1066
240	G240	IRGC 1069
241	G241	IRGC 1070
242	G242	IRGC 1073
243	G243	IRGC 1077
244	G244	IRGC 1080
245	G245	IRGC 1083
246	G246	IRGC 1084
247	G247	IRGC 1085
248	G248	IRGC 1086
249	G249	IRGC 1088
250	G250	IRGC 1090
251	G251	FR13A
252	G252	Swarna Sub1
253	G253	IR64
254	G254	Jaya

Table 2: Analysis of variance for submergence tolerant traits among 254 genotypes.

Characters	Mean Sum of Squares	
	Genotype	Replication
Germination Percentage	225.85***	2.25
Plant height before submergence (14DAS)	57.23***	12.73
Plant height after submergence (14DAD)	144.48***	23.37
Shoot elongation	66.74***	1.60
Shoot elongation percentage	2048.08***	25.18
Number of leaves before submergence (14DAS)	0.26*	0.63*
Number of leaves after submergence (14DAD)	0.70***	0.00
Regeneration percentage of leaves	1129.95***	63.09
Survival Percentage	1065.13***	6.78

*,** and ***, refers to significance at p<0.05, 0.01 and 0.001, respectively

Table 3: Mean performance of 254 genotypes for submergence tolerant traits

Sl. no	Genotype number	Landrace name	Germination Percentage	Plant height before submergence (14DAS)	Plant height after submergence (14DAD)	Shoot elongation	Shoot elongation percentage	Number of leaves before submergence (14DAS)	Number of leaves after submergence (14DAD)	Regeneration percentage of leaves	Survival Percentage	Score
1	G1	IRGC 22	84.53	12.66	20.85	8.19	64.74	3.10	0.17	5.24	7.61	9.00
2	G2	IRGC 47	74.72	16.21	31.78	15.57	96.08	3.01	0.33	11.08	22.99	7.00
3	G3	IRGC 48	70.70	23.10	36.10	13.01	56.39	3.10	0.67	21.14	27.57	7.00
4	G4	IRGC 58	98.54	24.07	39.41	15.35	63.78	3.10	0.00	0.00	0.00	9.00
5	G5	IRGC 88	94.53	24.91	37.56	12.65	50.77	2.55	0.57	25.33	21.71	7.00
6	G6	IRGC 93	96.18	19.64	23.31	3.67	18.69	3.10	2.70	87.02	86.25	3.00
7	G7	IRGC 94	98.80	15.84	20.30	4.46	28.00	2.52	1.75	69.63	75.89	5.00
8	G8	IRGC 95	71.75	21.19	34.54	13.35	63.11	2.08	0.22	10.61	21.29	7.00
9	G9	IRGC 102	91.16	27.04	37.44	10.41	38.56	2.99	0.78	25.53	41.76	7.00
10	G10	IRGC 104	70.67	20.93	29.90	8.97	42.76	3.02	0.60	21.79	7.77	9.00
11	G11	IRGC 105	81.36	32.72	46.70	13.99	42.74	2.62	0.61	21.14	47.01	7.00

12	G12	IRGC 108	70.76	26.84	47.16	20.3 2	75.7 3	2.50	0.61	22.17	27.1 3	7.0 0
13	G13	IRGC 109	71.80	24.19	46.12	21.9 4	90.8 6	3.01	0.67	21.68	28.1 2	7.0 0
14	G14	IRGC 111	97.99	27.35	39.72	12.3 8	45.2 6	2.62	0.00	0.00	7.20	9.0 0
15	G15	IRGC 113	73.64	28.27	45.75	17.4 9	61.8 6	3.00	0.67	21.95	14.3 7	7.0 0
16	G16	IRGC 121	83.14	29.89	55.87	25.9 8	86.9 2	3.20	0.00	0.00	6.01	9.0 0
17	G17	IRGC 125	77.70	18.90	45.81	26.9 1	142. 33	2.24	0.00	0.00	5.80	9.0 0
18	G18	IRGC 127	83.78	18.86	32.72	13.8 6	73.6 3	2.87	0.67	22.81	18.3 8	7.0 0
19	G19	IRGC 129	78.57	22.90	35.68	12.7 8	56.1 3	2.11	0.51	24.06	30.8 7	7.0 0
20	G20	IRGC 136	92.10	27.27	48.60	21.3 3	78.3 0	2.08	0.00	0.00	9.43	9.0 0
21	G21	IRGC 145	82.07	30.84	60.66	29.8 2	96.8 1	2.83	0.00	0.00	4.85	9.0 0
22	G22	IRGC 146	95.76	35.15	57.26	22.1 1	63.0 7	2.42	0.90	37.34	46.5 3	7.0 0
23	G23	IRGC 155	88.90	22.29	36.00	13.7 1	61.5 9	2.43	0.00	0.00	5.58	9.0 0
24	G24	IRGC 158	97.84	24.15	37.34	13.1 9	54.6 3	2.85	0.67	23.32	27.4 1	7.0 0
25	G25	IRGC 170	92.55	12.23	14.98	2.75	22.4 1	2.74	2.25	82.05	83.7 5	3.0 0
26	G26	IRGC 173	77.31	30.97	45.93	14.9 6	48.4 0	2.08	0.00	0.00	4.44	9.0 0
27	G27	IRGC 177	85.81	28.05	41.97	13.9 2	49.6 1	2.60	0.00	0.00	1.06	9.0 0
28	G28	IRGC 179	86.57	21.53	28.89	7.36	34.2 1	2.05	0.51	24.58	47.4 9	7.0 0
29	G29	IRGC 216	60.39	28.46	50.84	22.3 9	78.6 8	2.09	0.00	0.00	3.97	9.0 0
30	G30	IRGC 222	60.63	24.92	38.95	14.0 3	56.2 8	2.22	0.00	0.00	4.89	9.0 0
31	G31	IRGC 223	72.06	28.33	52.49	24.1 6	85.2 7	2.08	0.00	0.00	3.44	9.0 0
32	G32	IRGC 224	84.40	29.28	46.92	17.6 4	60.3 0	2.47	0.00	0.00	3.62	9.0 0
33	G33	IRGC 227	99.64	19.79	44.32	24.5 3	124. 15	2.44	0.00	0.00	0.00	9.0 0
34	G34	IRGC 229	91.39	23.28	39.15	15.8 7	68.2 4	2.47	0.00	0.00	9.53	9.0 0
35	G35	IRGC 230	73.85	23.23	33.51	10.2 8	44.2 3	2.68	0.61	20.77	19.4 8	7.0 0
36	G36	IRGC 231	85.94	25.64	41.01	15.3 8	59.9 6	2.03	0.51	25.01	33.2 5	7.0 0
37	G37	IRGC 242	82.27	26.77	44.82	18.0 5	67.4 2	2.12	0.51	24.90	21.9 9	7.0 0
38	G38	IRGC 251	95.39	16.00	37.11	21.1 2	132. 12	3.07	0.00	0.00	4.17	9.0 0

39	G39	IRGC 253	88.87	23.79	36.11	12.3 2	51.8 2	2.90	0.67	22.78	24.4 9	7.0 0
40	G40	IRGC 254	91.63	22.32	49.28	26.9 6	120. 80	2.27	0.00	0.00	4.20	9.0 0
41	G41	IRGC 264	93.75	28.31	56.86	28.5 5	100. 80	2.43	0.00	0.00	6.47	9.0 0
42	G42	IRGC 272	89.22	25.11	42.63	17.5 3	69.9 7	3.05	0.67	22.47	39.3 8	7.0 0
43	G43	IRGC 282	82.09	23.39	33.32	9.94	42.6 8	3.22	0.67	20.53	29.6 4	7.0 0
44	G44	IRGC 291	92.31	16.41	32.53	16.1 2	98.3 0	2.06	0.00	0.00	5.47	9.0 0
45	G45	IRGC 292	67.45	25.81	35.36	9.55	37.0 9	2.08	0.00	0.00	5.01	9.0 0
46	G46	IRGC 295	99.11	28.71	45.17	16.4 7	57.3 4	2.00	0.00	0.00	3.98	9.0 0
47	G47	IRGC 297	97.56	26.14	49.71	23.5 8	90.2 9	2.49	0.00	0.00	0.00	9.0 0
48	G48	IRGC 298	89.83	21.52	41.25	19.7 4	92.2 8	2.67	0.00	0.00	2.50	9.0 0
49	G49	IRGC 306	85.34	24.07	38.91	14.8 4	61.7 3	2.63	0.00	0.00	0.00	9.0 0
50	G50	IRGC 310	87.09	27.81	39.43	11.6 2	41.9 0	2.00	0.00	0.00	3.87	9.0 0
51	G51	IRGC 313	81.48	23.59	36.58	12.9 9	55.1 6	3.23	0.00	0.00	5.88	9.0 0
52	G52	IRGC 317	99.00	35.22	50.45	15.2 4	43.3 5	3.03	0.50	16.51	13.7 9	7.0 0
53	G53	IRGC 318	91.40	19.55	39.11	19.5 6	100. 62	2.93	1.00	34.10	31.9 9	7.0 0
54	G54	IRGC 319	73.46	18.72	33.47	14.7 5	79.5 8	2.51	0.61	22.08	26.1 1	7.0 0
55	G55	IRGC 326	70.63	24.24	40.72	16.4 8	67.9 4	2.00	0.22	11.00	29.8 6	7.0 0
56	G56	IRGC 336	79.76	27.15	45.05	17.9 0	65.9 5	2.81	0.00	0.00	0.00	9.0 0
57	G57	IRGC 342	87.62	32.46	51.22	18.7 6	58.0 6	2.61	0.90	35.51	21.3 8	7.0 0
58	G58	IRGC 344	58.02	22.51	45.64	23.1 4	103. 80	2.27	0.00	0.00	6.05	9.0 0
59	G59	IRGC 361	96.67	28.01	34.35	6.35	22.5 7	2.03	1.40	68.84	64.7 5	5.0 0
60	G60	IRGC 381	95.65	29.16	45.31	16.1 5	55.4 1	2.46	0.61	22.60	19.8 0	7.0 0
61	G61	IRGC 385	75.44	24.35	46.83	22.4 8	92.3 4	2.52	0.00	0.00	0.00	9.0 0
62	G62	IRGC 403	95.83	26.24	33.97	7.73	29.4 5	3.04	2.10	69.12	72.0 0	5.0 0
63	G63	IRGC 411	73.26	26.22	46.98	20.7 7	79.2 7	2.95	0.67	21.99	13.9 6	7.0 0
64	G64	IRGC 413	94.67	20.04	34.68	14.6 4	73.1 0	2.49	0.00	0.00	5.35	9.0 0
65	G65	IRGC 414	93.27	23.01	37.46	14.4 5	62.7 7	2.63	0.61	21.60	14.6 3	7.0 0

66	G66	IRGC 420	95.16	13.63	27.29	13.6 6	100. 21	2.58	0.61	21.89	16.7 0	7.0 0
67	G67	IRGC 421	76.38	30.94	45.39	14.4 5	47.2 8	2.48	0.57	24.39	42.5 0	7.0 0
68	G68	IRGC 424	76.78	25.25	57.04	31.7 9	126. 92	2.08	0.00	0.00	0.00	9.0 0
69	G69	IRGC 428	77.45	28.27	48.26	19.9 9	70.7 5	2.62	0.00	0.00	6.04	9.0 0
70	G70	IRGC 437	90.13	29.43	41.94	12.5 1	42.5 1	2.88	1.00	34.76	34.0 0	7.0 0
71	G71	IRGC 439	78.93	29.26	42.80	13.5 4	46.4 0	2.02	0.51	25.05	18.6 0	7.0 0
72	G72	IRGC 444	92.10	27.61	40.08	12.4 8	45.2 2	2.54	0.57	25.37	17.5 4	7.0 0
73	G73	IRGC 445	79.63	20.02	39.21	19.1 9	95.8 9	3.19	0.00	0.00	1.04	9.0 0
74	G74	IRGC 446	83.00	28.39	42.79	14.4 1	50.8 0	2.00	0.00	0.00	5.54	9.0 0
75	G75	IRGC 448	81.93	24.19	40.17	15.9 8	66.1 1	2.66	0.61	21.01	19.5 0	7.0 0
76	G76	IRGC 456	75.29	25.51	39.04	13.5 3	53.0 6	2.01	0.51	25.31	23.2 8	7.0 0
77	G77	IRGC 460	83.96	31.29	43.68	12.3 9	39.5 7	2.03	0.51	25.35	13.7 5	7.0 0
78	G78	IRGC 461	65.74	26.04	39.03	12.9 9	49.9 2	2.21	0.10	4.45	0.00	9.0 0
79	G79	IRGC 466	91.94	22.75	33.76	11.0 1	48.4 4	2.13	0.51	24.85	20.9 7	7.0 0
80	G80	IRGC 467	83.56	24.32	46.96	22.6 5	93.1 4	2.00	0.00	0.00	1.39	9.0 0
81	G81	IRGC 483	72.17	24.64	46.83	22.1 9	90.0 3	2.53	0.00	0.00	5.33	9.0 0
82	G82	IRGC 486	86.13	31.27	49.66	18.3 9	58.9 3	2.46	0.00	0.00	1.06	9.0 0
83	G83	IRGC 487	98.95	25.24	41.97	16.7 3	66.3 1	2.00	0.00	0.00	0.00	9.0 0
84	G84	IRGC 488	85.93	28.43	33.65	5.22	18.4 0	2.53	2.25	88.43	82.5 0	3.0 0
85	G85	IRGC 493	76.53	31.64	45.50	13.8 6	43.7 8	2.39	0.15	5.39	1.29	9.0 0
86	G86	IRGC 495	84.40	23.88	36.71	12.8 3	53.7 3	2.67	0.10	4.78	0.00	9.0 0
87	G87	IRGC 508	96.15	25.61	30.77	5.17	20.1 7	2.07	1.80	86.85	82.5 0	3.0 0
88	G88	IRGC 509	87.71	32.02	45.52	13.5 0	42.1 6	2.05	0.00	0.00	1.07	9.0 0
89	G89	IRGC 516	95.87	24.75	35.23	10.4 8	42.3 4	2.18	0.00	0.00	1.39	9.0 0
90	G90	IRGC 518	83.65	26.68	39.11	12.4 3	46.7 7	2.73	0.00	0.00	1.07	9.0 0
91	G91	IRGC 522	81.11	25.71	37.71	12.0 0	46.6 3	2.93	0.67	23.13	43.7 7	7.0 0
92	G92	IRGC 526	85.28	22.31	35.58	13.2 7	59.4 9	2.49	0.61	22.88	40.8 6	7.0 0

93	G93	IRGC 527	95.65	26.72	39.45	12.7 3	47.6 5	2.45	0.90	36.84	23.7 3	7.0 0
94	G94	IRGC 533	85.86	23.75	34.30	10.5 5	44.3 7	2.00	0.22	11.00	24.1 3	7.0 0
95	G95	IRGC 535	70.20	28.47	34.59	6.13	21.5 7	2.14	1.80	84.31	87.5 0	3.0 0
96	G96	IRGC 540	80.26	32.34	54.40	22.0 6	68.2 8	2.40	0.61	23.41	15.8 4	7.0 0
97	G97	IRGC 541	84.64	26.35	44.81	18.4 7	70.1 9	3.01	0.67	21.27	17.6 0	7.0 0
98	G98	IRGC 542	78.35	25.22	31.01	5.79	22.8 7	2.13	1.80	84.50	80.0 0	3.0 0
99	G99	IRGC 544	84.42	28.70	37.00	8.31	28.8 9	3.13	2.10	67.23	67.2 5	5.0 0
100	G10 0	IRGC 545	62.29	23.17	36.03	12.8 6	55.5 9	2.85	0.67	23.64	27.0 7	7.0 0
101	G10 1	IRGC 548	80.49	25.73	41.47	15.7 4	61.1 9	2.10	0.00	0.00	0.00	9.0 0
102	G10 2	IRGC 549	79.83	25.18	47.79	22.6 1	89.8 0	2.00	0.00	0.00	0.00	9.0 0
103	G10 3	IRGC 552	71.74	27.77	44.17	16.4 0	59.0 4	2.88	0.50	17.80	9.49	9.0 0
104	G10 4	IRGC 557	89.93	19.75	25.24	5.49	27.8 5	2.07	1.40	67.86	61.0 0	5.0 0
105	G10 5	IRGC 560	99.12	21.78	37.63	15.8 5	72.7 7	2.37	0.57	25.79	16.2 2	7.0 0
106	G10 6	IRGC 564	74.24	23.24	35.40	12.1 6	52.4 0	2.08	0.51	25.11	23.8 3	7.0 0
107	G10 7	IRGC 565	93.25	29.58	52.76	23.1 8	78.3 8	2.41	0.57	25.83	34.4 9	7.0 0
108	G10 8	IRGC 576	64.44	28.71	47.68	18.9 7	66.0 9	2.46	0.61	23.20	31.8 0	7.0 0
109	G10 9	IRGC 582	89.53	23.53	39.65	16.1 2	68.6 2	2.61	0.00	0.00	5.00	9.0 0
110	G11 0	IRGC 584	55.59	23.05	45.02	21.9 8	95.5 0	2.91	0.00	0.00	3.98	9.0 0
111	G11 1	IRGC 585	96.52	26.34	50.17	23.8 3	90.5 6	2.46	0.57	25.53	45.5 0	7.0 0
112	G11 2	IRGC 588	77.25	27.59	43.94	16.3 5	59.2 9	2.00	0.51	25.50	42.2 8	7.0 0
113	G11 3	IRGC 589	90.04	29.04	53.85	24.8 2	85.5 1	2.93	0.00	0.00	1.29	9.0 0
114	G11 4	IRGC 593	94.63	22.07	38.80	16.7 4	75.9 3	2.41	0.57	25.85	27.4 5	7.0 0
115	G11 5	IRGC 594	63.52	26.08	39.03	12.9 5	49.5 5	2.99	0.00	0.00	4.81	9.0 0
116	G11 6	IRGC 595	83.83	23.25	43.42	20.1 7	87.2 0	2.71	0.00	0.00	6.33	9.0 0
117	G11 7	IRGC 600	98.29	29.05	45.14	16.1 0	55.4 1	2.40	0.00	0.00	0.00	9.0 0
118	G11 8	IRGC 605	73.68	20.49	34.84	14.3 6	70.1 8	2.53	0.00	0.00	3.98	9.0 0
119	G11 9	IRGC 610	96.86	26.60	46.11	19.5 1	74.4 4	3.05	0.67	22.24	25.3 7	7.0 0

120	G12 0	IRGC 617	83.72	28.25	42.88	14.6 3	51.9 0	2.57	0.00	0.00	5.29	9.0 0
121	G12 1	IRGC 618	91.53	24.99	56.76	31.7 7	127. 20	2.02	0.00	0.00	2.26	9.0 0
122	G12 2	IRGC 619	74.59	31.54	48.07	16.5 4	52.8 4	2.61	0.00	0.00	5.32	9.0 0
123	G12 3	IRGC 623	81.75	13.08	33.05	19.9 7	152. 69	2.84	0.67	23.40	14.6 6	7.0 0
124	G12 4	IRGC 625	73.22	12.80	16.23	3.43	27.0 1	2.56	1.75	67.75	74.7 5	5.0 0
125	G12 5	IRGC 628	84.80	13.27	30.92	17.6 5	134. 92	2.59	0.61	21.22	19.4 5	7.0 0
126	G12 6	IRGC 631	79.50	17.08	36.71	19.6 3	115. 27	2.51	0.61	22.06	28.9 8	7.0 0
127	G12 7	IRGC 638	78.09	26.61	41.07	14.4 6	54.3 6	2.56	0.61	21.51	42.8 9	7.0 0
128	G12 8	IRGC 646	84.99	27.75	44.53	16.7 8	60.6 9	2.47	1.03	41.07	49.7 5	7.0 0
129	G12 9	IRGC 649	76.90	26.14	32.54	6.40	24.4 5	2.05	1.61	78.79	83.7 5	3.0 0
130	G13 0	IRGC 652	96.44	32.58	38.86	6.29	19.2 8	2.60	1.75	67.09	59.7 5	5.0 0
131	G13 1	IRGC 653	53.93	20.48	39.94	19.4 6	95.0 2	2.00	0.00	0.00	2.37	7.0 0
132	G13 2	IRGC 662	98.84	22.87	34.49	11.6 2	51.2 6	2.46	0.61	22.57	28.1 4	7.0 0
133	G13 3	IRGC 663	98.18	27.78	37.54	9.76	35.1 8	2.43	0.57	24.70	23.9 8	7.0 0
134	G13 4	IRGC 673	76.12	31.16	45.63	14.4 8	46.6 4	2.07	0.51	24.18	33.4 3	7.0 0
135	G13 5	IRGC 675	80.67	27.90	31.80	3.91	14.0 1	2.04	1.80	88.12	83.7 5	3.0 0
136	G13 6	IRGC 676	95.68	27.09	40.42	13.3 3	49.3 5	2.90	0.67	22.76	30.5 9	7.0 0
137	G13 7	IRGC 682	93.98	29.19	44.15	14.9 6	51.5 3	2.86	0.00	0.00	8.73	7.0 0
138	G13 8	IRGC 683	88.36	19.74	36.94	17.2 1	87.2 1	2.45	0.61	22.77	23.6 5	7.0 0
139	G13 9	IRGC 684	95.76	24.40	35.04	10.6 4	43.6 2	2.92	0.00	0.00	5.33	9.0 0
140	G14 0	IRGC 685	72.28	26.75	48.33	21.5 8	80.8 3	3.02	0.67	21.18	45.7 8	7.0 0
141	G14 1	IRGC 693	83.05	16.75	34.98	18.2 3	109. 15	2.54	0.61	21.75	15.5 6	7.0 0
142	G14 2	IRGC 694	63.83	24.30	53.54	29.2 5	121. 15	2.51	0.57	25.45	43.4 9	7.0 0
143	G14 3	IRGC 701	82.34	21.06	30.91	9.85	46.8 0	3.08	0.67	21.54	22.6 7	7.0 0
144	G14 4	IRGC 704	93.46	26.31	37.44	11.1 3	42.3 7	2.63	0.00	0.00	2.79	9.0 0
145	G14 5	IRGC 706	75.88	25.59	30.70	5.11	20.1 5	2.07	1.80	87.00	87.5 0	3.0 0
146	G14 6	IRGC 707	91.35	22.93	36.75	13.8 2	60.3 8	2.62	0.57	25.08	29.5 1	7.0 0

147	G14 7	IRGC 708	84.96	21.77	35.06	13.2 9	61.0 7	2.07	0.00	0.00	1.17	9.0 0
148	G14 8	IRGC 709	92.26	26.77	37.71	10.9 4	40.8 6	2.05	0.00	0.00	9.40	9.0 0
149	G14 9	IRGC 711	62.01	25.68	48.16	22.4 8	87.5 7	2.03	0.00	0.00	6.97	9.0 0
150	G15 0	IRGC 712	89.67	20.84	31.49	10.6 6	51.0 4	2.00	0.00	0.00	1.48	9.0 0
151	G15 1	IRGC 726	93.84	17.44	37.16	19.7 2	113. 89	2.50	0.00	0.00	9.22	9.0 0
152	G15 2	IRGC 729	76.67	15.48	31.69	16.2 2	105. 31	2.09	0.00	0.00	2.26	9.0 0
153	G15 3	IRGC 730	82.44	14.10	25.10	11.0 0	78.2 1	2.61	0.00	0.00	2.55	9.0 0
154	G15 4	IRGC 731	84.16	24.92	49.39	24.4 8	98.5 8	2.45	0.00	0.00	0.00	9.0 0
155	G15 5	IRGC 742	97.28	19.31	35.93	16.6 2	86.1 3	2.64	0.57	24.08	28.3 1	7.0 0
156	G15 6	IRGC 743	97.21	28.63	50.42	21.8 0	76.2 0	2.76	0.67	23.83	40.0 5	7.0 0
157	G15 7	IRGC 746	60.39	21.46	36.37	14.9 1	69.7 6	2.70	0.57	24.06	17.4 2	7.0 0
158	G15 8	IRGC 750	80.10	25.85	36.31	10.4 7	40.7 5	2.08	0.51	24.09	12.7 6	7.0 0
159	G15 9	IRGC 752	96.03	24.76	38.38	13.6 2	55.2 3	2.62	0.00	0.00	2.41	9.0 0
160	G16 0	IRGC 756	78.70	24.73	37.24	12.5 1	50.6 1	2.04	0.51	24.69	34.5 3	7.0 0
161	G16 1	IRGC 757	75.47	27.11	44.85	17.7 4	65.6 7	2.00	0.00	0.00	2.70	9.0 0
162	G16 2	IRGC 759	79.46	24.63	38.92	14.3 0	58.1 9	2.15	0.51	24.16	38.4 4	7.0 0
163	G16 3	IRGC 762	95.83	25.46	37.03	11.5 7	45.5 2	2.56	0.00	0.00	2.45	9.0 0
164	G16 4	IRGC 764	72.21	16.16	26.38	10.2 2	63.8 7	2.93	0.67	22.94	36.2 2	7.0 0
165	G16 5	IRGC 765	82.33	28.66	45.97	17.3 1	60.3 9	2.00	0.51	25.50	19.4 7	7.0 0
166	G16 6	IRGC 767	83.52	21.22	41.43	20.2 1	95.8 9	2.99	0.00	0.00	7.19	9.0 0
167	G16 7	IRGC 771	69.98	23.12	41.05	17.9 4	78.3 7	2.53	0.28	10.78	19.7 0	7.0 0
168	G16 8	IRGC 772	78.21	23.97	43.72	19.7 5	82.4 7	2.11	0.00	0.00	7.94	9.0 0
169	G16 9	IRGC 773	99.17	15.99	21.21	5.22	32.6 7	2.10	1.40	66.80	56.2 5	5.0 0
170	G17 0	IRGC 774	90.87	17.08	28.71	11.6 3	68.0 0	2.65	0.00	0.00	7.17	9.0 0
171	G17 1	IRGC 775	98.79	16.14	19.76	3.62	22.4 8	2.55	1.75	68.74	58.5 0	5.0 0
172	G17 2	IRGC 776	79.47	17.70	22.34	4.64	25.8 2	2.09	1.40	67.20	58.7 5	5.0 0
173	G17 3	IRGC 782	81.86	17.54	32.28	14.7 4	84.3 5	2.74	0.00	0.00	7.23	9.0 0

174	G17 4	IRGC 783	93.47	18.68	40.45	21.7 7	117. 16	2.62	0.61	20.94	21.3 3	7.0 0
175	G17 5	IRGC 785	75.11	17.17	21.52	4.35	25.3 2	2.53	2.25	89.11	85.0 0	3.0 0
176	G17 6	IRGC 793	76.14	25.94	31.08	5.15	19.7 5	2.03	1.40	68.84	63.5 0	5.0 0
177	G17 7	IRGC 795	73.95	26.56	48.20	21.6 4	81.4 9	2.55	0.61	21.78	48.4 6	7.0 0
178	G17 8	IRGC 798	97.67	22.27	40.09	17.8 2	80.0 5	2.00	0.51	25.50	41.3 7	7.0 0
179	G17 9	IRGC 803	99.21	13.11	28.02	14.9 2	114. 97	2.22	0.51	23.21	35.1 0	7.0 0
180	G18 0	IRGC 805	82.50	25.84	36.89	11.0 6	42.7 8	3.01	0.67	21.38	35.6 6	7.0 0
181	G18 1	IRGC 809	97.20	25.08	47.06	21.9 8	87.7 1	2.61	0.57	25.12	31.8 4	7.0 0
182	G18 2	IRGC 811	73.19	17.44	45.08	27.6 5	160. 87	2.59	0.15	4.72	8.08	9.0 0
183	G18 3	IRGC 813	47.05	19.58	33.47	13.8 9	70.9 1	2.88	0.00	0.00	1.45	9.0 0
184	G18 4	IRGC 817	85.02	17.56	30.46	12.9 0	73.6 6	2.28	0.51	22.40	24.8 8	7.0 0
185	G18 5	IRGC 823	85.83	21.66	32.79	11.1 3	51.3 9	3.19	0.67	20.96	15.7 9	7.0 0
186	G18 6	IRGC 825	61.25	20.99	33.98	12.9 9	62.0 3	2.07	0.10	4.66	4.47	9.0 0
187	G18 7	IRGC 827	73.09	16.94	27.34	10.4 0	61.3 6	2.00	0.51	25.50	16.4 5	7.0 0
188	G18 8	IRGC 829	93.68	23.82	34.33	10.5 1	44.1 4	2.56	0.00	0.00	5.04	9.0 0
189	G18 9	IRGC 833	86.84	31.59	54.72	23.1 3	73.2 9	2.60	0.00	0.00	0.00	9.0 0
190	G19 0	IRGC 841	79.91	28.41	33.77	5.36	18.8 3	2.39	2.25	93.63	85.0 0	3.0 0
191	G19 1	IRGC 864	95.60	31.78	52.14	20.3 6	64.0 5	2.50	0.28	10.99	21.4 4	7.0 0
192	G19 2	IRGC 865	75.63	15.69	27.91	12.2 3	78.2 2	2.57	0.90	35.90	29.2 6	7.0 0
193	G19 3	IRGC 872	89.69	18.20	30.64	12.4 4	68.4 8	3.03	0.67	21.28	29.6 3	7.0 0
194	G19 4	IRGC 873	48.55	21.49	29.29	7.81	36.6 3	3.17	2.10	66.40	72.2 5	5.0 0
195	G19 5	IRGC 876	92.12	13.40	24.26	10.8 6	83.0 7	2.50	0.00	0.00	6.51	9.0 0
196	G19 6	IRGC 881	88.41	31.50	53.56	22.0 6	70.2 4	3.12	0.00	0.00	2.58	9.0 0
197	G19 7	IRGC 893	97.13	16.08	25.17	9.10	56.7 1	2.00	0.51	25.50	24.5 9	7.0 0
198	G19 8	IRGC 896	84.17	26.97	42.45	15.4 8	57.4 2	2.49	0.00	0.00	1.40	9.0 0
199	G19 9	IRGC 901	98.05	29.81	52.34	22.5 4	75.6 0	2.52	0.61	22.26	39.0 0	7.0 0
200	G20 0	IRGC 909	73.08	27.93	42.95	15.0 2	53.7 5	2.38	0.57	25.98	42.7 8	7.0 0

201	G20 1	IRGC 911	97.60	25.39	39.02	13.6 3	54.2 0	2.44	0.00	0.00	7.63	9.0 0
202	G20 2	IRGC 912	94.84	30.08	41.73	11.6 5	38.7 5	3.04	0.15	4.74	7.03	9.0 0
203	G20 3	IRGC 913	66.37	19.15	30.80	11.6 5	61.2 0	2.98	0.15	5.04	7.54	9.0 0
204	G20 4	IRGC 915	88.26	28.40	44.27	15.8 7	56.7 8	2.91	1.00	34.38	18.4 6	7.0 0
205	G20 5	IRGC 917	90.07	17.90	25.11	7.22	40.3 8	2.00	0.22	11.00	37.2 5	7.0 0
206	G20 6	IRGC 919	87.90	20.47	38.29	17.8 2	87.1 2	3.03	1.00	33.02	25.5 6	7.0 0
207	G20 7	IRGC 921	98.01	17.34	26.20	8.86	51.2 4	2.42	0.61	23.15	25.6 8	7.0 0
208	G20 8	IRGC 924	76.20	19.02	29.13	10.1 1	53.4 6	2.12	0.22	10.40	27.0 6	7.0 0
209	G20 9	IRGC 927	87.59	26.94	37.29	10.3 5	38.4 7	2.45	0.57	25.67	25.0 2	7.0 0
210	G21 0	IRGC 935	82.46	30.54	43.76	13.2 2	43.2 7	2.88	0.30	10.45	1.04	9.0 0
211	G21 1	IRGC 937	85.00	27.68	42.39	14.7 2	53.2 3	2.82	0.00	0.00	3.87	9.0 0
212	G21 2	IRGC 943	78.32	18.92	35.81	16.9 0	89.4 1	2.65	0.90	34.55	18.3 8	7.0 0
213	G21 3	IRGC 947	73.10	27.18	38.86	11.6 8	43.0 5	2.51	0.00	0.00	6.94	9.0 0
214	G21 4	IRGC 962	97.41	16.89	27.30	10.4 2	61.8 9	2.00	0.00	0.00	1.06	9.0 0
215	G21 5	IRGC 964	83.82	28.00	40.33	12.3 3	44.0 3	2.12	0.00	0.00	8.41	9.0 0
216	G21 6	IRGC 966	77.17	19.23	29.44	10.2 2	53.2 5	2.63	0.00	0.00	0.00	9.0 0
217	G21 7	IRGC 967	82.62	16.13	21.16	5.03	31.1 9	2.62	1.75	67.45	58.0 0	5.0 0
218	G21 8	IRGC 968	78.63	16.02	23.06	7.04	44.0 1	2.37	0.90	38.20	12.5 1	7.0 0
219	G21 9	IRGC 970	88.37	25.62	37.86	12.2 4	48.0 2	2.56	0.00	0.00	4.66	9.0 0
220	G22 0	IRGC 971	77.48	20.27	30.73	10.4 6	51.6 2	2.42	0.00	0.00	6.76	9.0 0
221	G22 1	IRGC 976	90.03	17.04	28.09	11.0 5	65.0 6	3.03	0.50	15.96	3.61	9.0 0
222	G22 2	IRGC 977	84.68	9.90	21.67	11.7 7	119. 01	2.83	0.00	0.00	1.46	9.0 0
223	G22 3	IRGC 979	90.12	12.20	24.09	11.8 9	97.4 7	3.16	0.00	0.00	1.49	9.0 0
224	G22 4	IRGC 980	96.49	21.33	35.94	14.6 1	68.4 8	2.58	0.57	25.21	41.4 9	7.0 0
225	G22 5	IRGC 981	90.87	20.11	33.58	13.4 7	67.0 7	3.25	0.00	0.00	1.04	9.0 0
226	G22 6	IRGC 982	84.14	17.13	36.95	19.8 3	115. 53	2.57	0.00	0.00	3.99	9.0 0
227	G22 7	IRGC 1000	86.20	13.06	33.26	20.2 0	155. 37	2.00	0.11	5.50	2.50	9.0 0

228	G22 8	IRGC 1019	87.74	15.41	35.98	20.5 7	134. 14	2.46	0.00	0.00	5.00	9.0 0
229	G22 9	IRGC 1020	65.50	16.41	36.90	20.4 9	124. 74	2.75	0.00	0.00	2.18	9.0 0
230	G23 0	IRGC 1022	91.21	17.12	32.99	15.8 7	92.6 7	2.22	0.22	9.92	33.6 9	7.0 0
231	G23 1	IRGC 1029	77.24	17.81	42.89	25.0 8	140. 93	2.65	0.00	0.00	4.29	9.0 0
232	G23 2	IRGC 1031	85.63	14.03	27.99	13.9 6	99.6 5	2.49	0.11	5.50	10.3 7	7.0 0
233	G23 3	IRGC 1032	90.27	13.00	43.96	30.9 7	239. 32	3.13	0.00	0.00	1.24	9.0 0
234	G23 4	IRGC 1042	84.09	29.93	45.72	15.8 0	52.9 0	2.36	0.00	0.00	5.31	9.0 0
235	G23 5	IRGC 1046	92.27	11.02	31.78	20.7 6	188. 22	3.23	0.00	0.00	1.02	9.0 0
236	G23 6	IRGC 1049	91.14	27.04	44.11	17.0 7	63.1 3	3.07	0.33	10.81	46.0 4	7.0 0
237	G23 7	IRGC 1055	96.77	21.92	36.39	14.4 7	66.0 8	3.10	0.00	0.00	5.00	9.0 0
238	G23 8	IRGC 1057	92.77	23.75	40.47	16.7 2	70.5 6	2.79	0.00	0.00	7.43	9.0 0
239	G23 9	IRGC 1066	73.79	13.96	28.74	14.7 8	106. 65	3.15	0.00	0.00	8.37	9.0 0
240	G24 0	IRGC 1069	97.85	28.84	45.79	16.9 5	58.9 0	2.72	0.00	0.00	5.73	9.0 0
241	G24 1	IRGC 1070	92.21	13.29	25.82	12.5 3	95.5 6	3.20	0.00	0.00	2.35	9.0 0
242	G24 2	IRGC 1073	90.62	18.21	30.57	12.3 6	68.0 0	2.38	0.00	0.00	7.64	9.0 0
243	G24 3	IRGC 1077	81.24	22.02	37.33	15.3 1	69.6 4	2.44	0.00	0.00	7.03	9.0 0
244	G24 4	IRGC 1080	93.40	14.58	34.32	19.7 4	137. 57	2.36	0.61	23.86	14.1 7	7.0 0
245	G24 5	IRGC 1083	82.91	16.93	39.10	22.1 7	131. 54	2.98	0.00	0.00	1.15	9.0 0
246	G24 6	IRGC 1084	75.86	26.24	44.28	18.0 4	68.9 1	2.80	0.00	0.00	6.28	9.0 0
247	G24 7	IRGC 1085	88.42	27.61	44.04	16.4 3	59.4 5	2.72	0.00	0.00	5.91	9.0 0
248	G24 8	IRGC 1086	97.32	27.95	47.49	19.5 4	70.2 2	2.70	0.50	15.22	6.45	9.0 0
249	G24 9	IRGC 1088	96.46	28.99	42.85	13.8 6	48.0 6	2.80	0.00	0.00	5.50	9.0 0
250	G25 0	IRGC 1090	95.77	25.79	47.37	21.5 9	83.9 8	3.10	0.00	0.00	2.21	9.0 0
251	G25 1	FR13A	91.38	14.37	16.79	2.42	16.8 8	2.42	2.50	102.8 6	100. 00	1.0 0
252	G25 2	Swarna Sub1	95.99	14.34	17.08	2.74	19.0 9	2.85	3.00	105.4 3	96.0 0	1.0 0
253	G25 3	IR64	98.50	14.38	35.89	21.5 1	150. 76	2.93	0.00	0.00	0.00	7.0 0
254	G25 4	Jaya	99.32	15.91	32.00	16.1 0	101. 20	3.56	0.00	0.00	0.00	7.0 0

Table 4: Principal component analysis in MGIDI analysis.

Sl.no	PC	Eigen values	Variance(%)	Cum. Variance (%)
1	PC1	4.06	67.6	67.6
2	PC2	1.09	18.2	85.8
3	PC3	0.73	12.2	98.0
4	PC4	0.09	1.46	99.4
5	PC5	0.02	0.34	99.8
6	PC6	0.01	0.24	100

Table 5: Variability parameters of submergence tolerance related traits for 28 genotypes

Sl. no	Trait	PV	GV	EV	PCV%	GCV%	ECV%	H2(Bs)	GA	GA% mean
1	Germination Percentage	252.57	250.96	0.61	19.48	19.46	0.95	0.99	32.59	40.04
2	Plant height before submergence (14 DAS)	20.59	19.52	1.07	26.69	25.99	6.09	0.94	8.86	52.12
3	Plant height after submergence (14 DAD)	37.49	36.15	1.34	27.74	27.24	5.24	0.96	12.16	55.10
4	Shoot elongation	11.08	10.78	0.30	65.62	64.72	10.87	0.97	6.67	131.48
5	Shoot elongation percentage	441.20	417.97	23.22	68.48	66.65	15.71	0.94	40.99	133.64
6	Number of leaves before submergence (14DAS)	0.20	0.033	0.16	14.47	5.85	13.23	0.16	0.15	4.88
7	Number of leaves after submergence (14DAD)	0.64	0.50	0.14	35.03	30.99	16.32	0.78	1.29	56.49
8	Regeneration percentage of leaves	573.15	548.35	24.80	32.10	31.40	6.67	0.95	47.18	63.26
9	Survival Percentage	585.74	552.12	33.62	34.72	33.70	8.31	0.94	46.99	67.41
10	Chlorophyll content before submergence stress (14DAS)	0.0349	0.0345	0.0004	7.25	7.20	0.81	0.98	0.38	14.76
11	Chlorophyll content after submergence (7DAD)	0.311	0.310	0.0003	33.99	33.97	1.08	0.99	1.14	69.96
12	Chlorophyll reduction percentage	428.56	427.24	1.32	57.29	57.20	3.18	0.99	42.51	117.65
13	Starch content before submergence stress (14DAS)	12.999	12.996	0.0038	16.547	16.544	0.284	0.99	7.42	34.07
14	Starch content after submergence stress (7DAD)	22.128	22.127	0.0014	31.23	31.22	0.25	0.99	9.68	64.33

15	Starch reduction percentage	314.93	314.86	0.068	58.07	58.07	0.85	0.99	36.54	119.61
16	Total soluble sugars before submergence stress (14DAS)	15.73	15.72	0.013	17.588	17.581	0.52	0.99	8.16	36.20
17	Total soluble sugars after submergence stress (7DAD)	36.384	36.380	0.033	38.10	38.10	0.36	0.99	12.42	78.48
18	Total soluble sugar reduction percentage	480.73	480.46	0.26	71.30	71.28	1.68	0.99	45.14	146.80
19	Total fresh weight before submergence (14DAS)	0.071	0.056	0.014	21.99	19.61	9.93	0.79	0.43	36.03
20	Total fresh weight after submergence (7DAD)	0.0512	0.0510	0.002	16.98	16.94	0.96	0.99	0.46	34.84
21	Total dry weight before submergence (14DAS)	0.0049	0.0047	0.0001	24.68	24.43	3.19	0.97	0.14	49.82
22	Total dry weight after submergence (7DAD)	0.0030	0.0028	0.0002	17.94	17.33	4.44	0.93	0.10	34.50

Table 6: Eigen values

Prin_comp	eigenvalue	percentage of variance	cumulative percentage of variance
PC1	9.626	43.753	43.753
PC2	3.723	16.925	60.678
PC3	2.517	11.441	72.118
PC4	1.34	6.089	78.207
PC5	0.863	3.924	82.131
PC6	0.844	3.838	85.969
PC7	0.725	3.297	89.266
PC8	0.715	3.248	92.514
PC9	0.534	2.428	94.942
PC10	0.501	2.279	97.221
PC11	0.223	1.015	98.236
PC12	0.176	0.8	99.036
PC13	0.115	0.521	99.557
PC14	0.049	0.221	99.778
PC15	0.034	0.153	99.932
PC16	0.009	0.04	99.972
PC17	0.003	0.012	99.984
PC18	0.002	0.009	99.993
PC19	0.001	0.005	99.998
PC20	0	0.001	99.999

PC21	0	0.001	100
PC22	0	0	100

Table 7: Percent contribution of variables on PCs

Trait	Variables	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8
Germination Percentage	GP	1.161	2.3	0.27	22.223	0.105	11.229	40.114	7.224
Plant height before submergence (14 DAS)	PHB	0.02	10.138	16.089	0.412	6.343	3.507	2.946	4.161
Plant height after submergence (14 DAD)	PHA	1.788	10.295	12.006	0.968	4.714	1.643	2.713	1.659
Shoot elongation	SE	6.997	2.483	0.858	7.156	0.329	0.034	0.488	0.159
Shoot elongation percentage	SEP	7.759	0.346	0.368	6.72	0.087	0.723	0.004	1.002
Number of leaves before submergence (14DAS)	NLB	0.295	0.596	13.111	6.127	54.203	1.223	0.053	3.856
Number of leaves after submergence (14DAD)	NLA	8.606	0.014	3.175	0.04	7.658	0.055	0.422	0.097
Regeneration percentage of leaves	RPL	9.859	0.057	0.407	0.886	0.016	0.009	0.248	0.014
Survival Percentage	SP	9.917	0.161	0.001	0.093	0.175	0.42	0.383	0.01
Chlorophyll content before submergence (14DAS)	ChlB	0.602	5.019	7.076	4.23	4.763	32.042	8.913	6.88
Chlorophyll content after submergence (7DAD)	ChIA	7.643	2.916	1.381	0	1.93	0.475	0.128	3.635
Chlorophyll reduction percentage	ChIRP	8.448	1.468	0.499	0.233	0.856	0.749	0.677	2.33
Starch content before submergence (14DAS)	StaB	0.018	0.972	20.392	9.851	0.002	9.283	7.081	12.621
Starch content after submergence (7DAD)	StaA	6.9	0.164	4.057	1.268	4.303	0.368	1.767	15.419

Starch reduction percentage	StaRP	8.156	0.038	0.216	1.16	4.37	3.792	0.076	3.984
Total soluble sugars before submergence (14DAS)	TSSB	0.6	6.691	0.623	26.592	0.782	0.272	27.121	3.977
Total soluble sugars after submergence (7DAD)	TSSA	7.472	3.667	0.034	5.676	0.004	0.266	3.525	1.104
Total soluble sugar reduction percentage	TSSRP	9.127	0.683	0.228	0.06	0.218	0.005	0.027	0.003
Total fresh weight before submergence (14DAS)	TFWB	1.481	16.37	1.201	0.163	2.09	12.764	0.062	4.437
Total fresh weight after submergence (7DAD)	TFWA	0.241	17.516	0.11	4.043	4.188	13.017	2.952	0.178
Total dry weight before submergence (14DAS)	TDWB	2.13	16.515	1.23	1.985	0.374	2.231	0.301	0.738
Total dry weight after submergence (7DAD)	TDWA	0.779	1.592	16.667	0.113	2.491	5.892	0	26.511

Table 8: Correlation between variables and PCs

Trait	Variables	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8
Germination Percentage	GP	0.334	0.293	-0.082	-0.546	0.03	0.308	-0.539	0.227
Plant height before submergence (14 DAS)	PHB	-0.044	0.614	0.636	-0.074	-0.234	0.172	0.146	-0.172
Plant height after submergence (14 DAD)	PHA	0.415	0.619	0.55	0.114	-0.202	0.118	0.14	-0.109
Shoot elongation	SE	0.821	0.304	0.147	0.31	-0.053	-0.017	0.059	0.034
Shoot elongation percentage	SEP	0.864	0.113	-0.096	0.3	0.027	-0.078	0.006	0.085
Number of leaves before submergence (14DAS)	NLB	0.169	-0.149	0.574	0.286	0.684	0.102	-0.02	0.166
Number of leaves after submergence (14DAD)	NLA	-0.91	-0.023	0.283	-0.023	0.257	0.021	0.055	0.026
Regeneration percentage of leaves	RPL	-0.974	0.046	0.101	-0.109	0.012	-0.009	0.042	-0.01

Survival Percentage	SP	- 0.977	0.077	0.005	- 0.035	0.039	0.06	0.05 3	0.009
Chlorophyll content before submergence (14DAS)	ChlB	0.241	0.432	- 0.422	- 0.238	0.203	0.52	0.25 4	-0.222
Chlorophyll content after submergence (7DAD)	ChlA	- 0.858	0.329	- 0.186	0.003	0.129	0.063	- 0.03	-0.161
Chlorophyll reduction percentage	ChlR P	0.902	- 0.234	0.112	- 0.056	- 0.086	0.08	0.07	0.129
Starch content before submergence (14DAS)	StaB	- 0.042	0.19	- 0.716	0.363	- 0.004	0.28	0.22 7	0.3
Starch content after submergence (7DAD)	StaA	- 0.815	0.078	-0.32	0.13	- 0.193	0.056	0.11 3	0.332
Starch reduction percentage	StaR P	0.886	0.038	- 0.074	0.125	0.194	0.179	- 0.02 3	-0.169
Total soluble sugars before submergence (14DAS)	TSSB	-0.24	0.499	- 0.125	0.597	- 0.082	0.048	- 0.44 4	-0.169
Total soluble sugars after submergence (7DAD)	TSSA	- 0.848	0.369	- 0.029	0.276	0.006	0.047	- 0.16	-0.089
Total soluble sugar reduction percentage	TSSR P	0.937	- 0.159	- 0.076	- 0.028	- 0.043	-0.007	- 0.01 4	-0.005
Total fresh weight before submergence (14DAS)	TFWB	0.378	0.781	- 0.174	- 0.047	0.134	-0.328	0.02 1	0.178
Total fresh weight after submergence (7DAD)	TFWA	- 0.152	0.808	- 0.053	- 0.233	0.19	-0.332	0.14 6	0.036
Total dry weight before submergence (14DAS)	TDW B	0.453	0.784	- 0.176	- 0.163	0.057	-0.137	- 0.04 7	0.073
Total dry weight after submergence (7DAD)	TDW A	- 0.274	0.243	0.648	0.039	- 0.147	0.223	0.00 1	0.435