

Supplementary Table S1. List of 204 germplasms used in the experiment. A total of 204 *Vigna radiata* accessions including 127 Indian varieties, 58 Odisha landraces, 15 recombinant Inbred lines (RIL) along with 4 high yielding released varieties (OBGG-52, KAMDEV, IPM-02-3, IPM-02-14) with their codes are listed

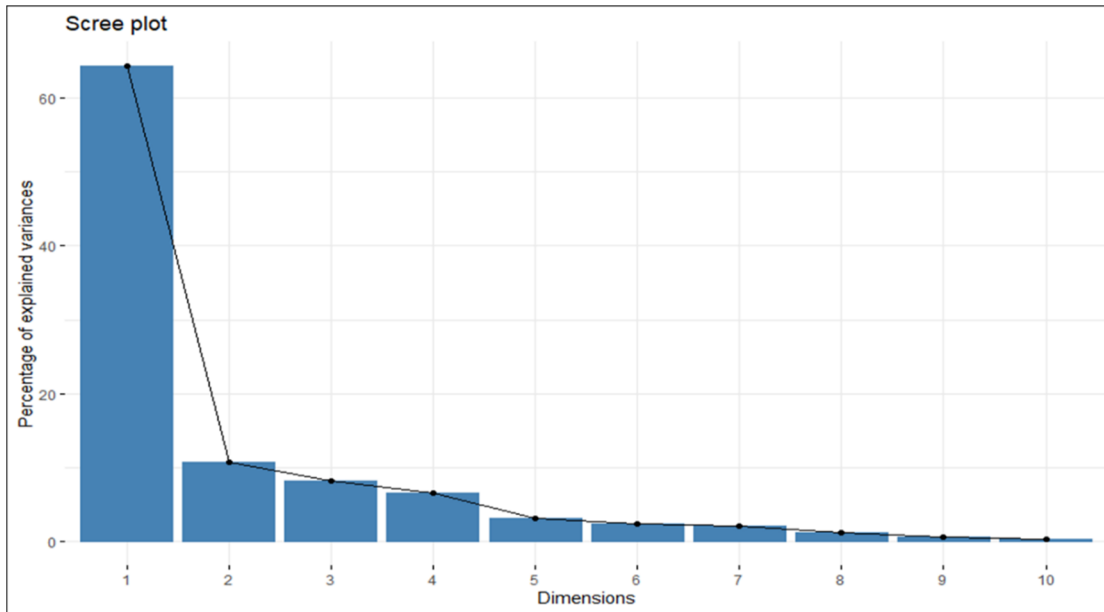
SI NO	<i>Vigna radiata</i> Germplasm Name	SI NO	<i>Vigna radiata</i> Germplasm Name
G1	ADT3	G103	SML1901
G2	AKM12-24	G104	SML668
G3	AKM8802	G105	SVM6133
G4	ANGUL MUNG	G106	TARM1
G5	ASHAMUNG	G107	TM96-2
G6	AVMU16100	G108	TMB134
G7	AVMU1678	G109	TRCM351-2-1
G8	AVMU1680	G110	USAM1771
G9	AVMU1682	G111	V1000-318-AG
G10	AVMU1683	G112	V1000-319-AG
G11	AVMU1684	G113	V1001400-AG
G12	AVMU1688	G114	VC3960-88
G13	AVMU1691	G115	VC6153-13-20P
G14	AVMU1695	G116	VC6368-46-40-1
G15	AVMU1698	G117	VC6372(45-8-1)
G16	AVMU1699	G118	VG15-29
G17	BANSAPAL	G119	VG16-064
G18	BC693367	G120	VGG14-1
G19	BGS9	G121	VGG15-30
G20	BM-2012-9	G122	VGG16-029
G21	C693367	G123	VGG16-036
G22	C693369	G124	VGG16-055
G23	COGG13-39	G125	VGG16-058
G24	COGG912	G126	CPR BAM GP 258
G25	DGG8	G127	CPR BAM GP 262
G26	DGVV18	G128	CPR BAM GP 267
G27	EC693356	G129	CPR BAM GP 268
G28	GANAGA1	G130	CPR BAM GP 273
G29	GGG-1	G131	CPR BAM GP 280
G30	GKM2016-1	G132	CPR BAM GP 283
G31	HUM0936	G133	CPR BAM GP 287
G32	HUM12	G134	CPR BAM GP 289
G33	HUM2	G135	CPR BAM GP 290
G34	HUM6	G136	CPR BAM GP 294
G35	IGKM6-26-5	G137	CPR BAM GP 295
G36	IPM 205-7	G138	CPR BAM GP 297
G37	IPM02-17	G139	CPR BAM GP 299
G38	IPM312-20	G140	CPR BAM GP 301
G39	IPM312-9	G141	CPR BAM GP 304
G40	IPM409-4	G142	CPR BAM GP 305
G41	IPM410-3	G143	CPR BAM GP 306
G42	IPM410-9	G144	CPR BAM GP 312
G43	IPM512-1	G145	CPR BAM GP 321
G44	IPM-99-125	G146	CPR BAM GP 324

G45	JAUM0936	G147	CPR BAM GP 329
G46	JHAIN MUNG GREEN	G148	CPR BAM GP 331
G47	KM2355	G149	CPR BAM GP 333
G48	KM5-18-2	G150	CPR BAM GP 334
G49	KPS1	G151	CPR BAM GP 335
G50	KPS2	G152	CPR BAM GP 337
G51	LGG450	G153	CPR BAM GP 339
G52	LGG595	G154	CPR BAM GP 342
G53	LGG807	G155	CPR BAM GP 344
G54	MDGVV16	G156	CPR BAM GP 345
G55	MGG373	G157	CPR BAM GP 347
G56	MGG385	G158	CPR BAM GP 348
G57	MH1315	G159	CPR BAM GP 349
G58	MH1323	G160	CPR BAM GP 351
G59	MH318	G161	CPR BAM GP 353
G60	MH421	G162	CPR BAM GP 354
G61	MK15-513	G163	CPR BAM GP 359
G62	ML1115	G164	KVK BANJANGAR-1
G63	ML1907	G165	KVK BARAGARH-3-
G64	ML2056	G166	KVK BOLANGIRI-1
G65	ML2479	G167	KVK BOUDH-2
G66	ML818	G168	KVK DHENKANAL-1
G67	NARENDRA MUNG1	G169	KVK JAGATHSIGHPUR-1
G68	NAYAGARAH LOCAL GREEN	G170	KVK JAIPUR-1
G69	NBPGR150	G171	KVK KENDRAPADA-1
G70	NDMK-16-324	G172	KVK NAYAGARH-1
G71	NM94	G173	KVK NAYAGARH-6
G72	NVL855	G174	KVK PURI -4
G73	OBGG102	G175	KVK PURI-2
G74	OBGG56	G176	KVK PURI-P68
G75	PANT MUNG4	G177	KVK SAMBALPUR 2
G76	PANT MUNG8	G178	KVK SAMBALPUR 3
G77	PAU911	G179	KVK SUNDERGARH-II-2
G78	PDM11	G180	KVK-JHARSUGUDA-1
G79	PDM139	G181	KVK-MAYURABHANJA-11-1
G80	PM11-25	G182	SUNDERGARH-11-3
G81	PM14-11	G183	VBNGG2
G82	PM14-3	G184	COPER GOAN
G83	PUSA M1772	G185	CPR BAM GP 302
G84	PUSA RATNA	G186	RIL 6
G85	PUSA VISHAL	G187	RIL 10
G86	PUSA105	G188	RIL 19
G87	PUSA1641	G189	RIL 25
G88	PUSA1672	G190	RIL 26
G89	PUSA1841	G191	RIL 27
G90	PUSA1841	G192	RIL 28
G91	PUSA9072	G193	RIL 33
G92	PUSA9531	G194	RIL 34

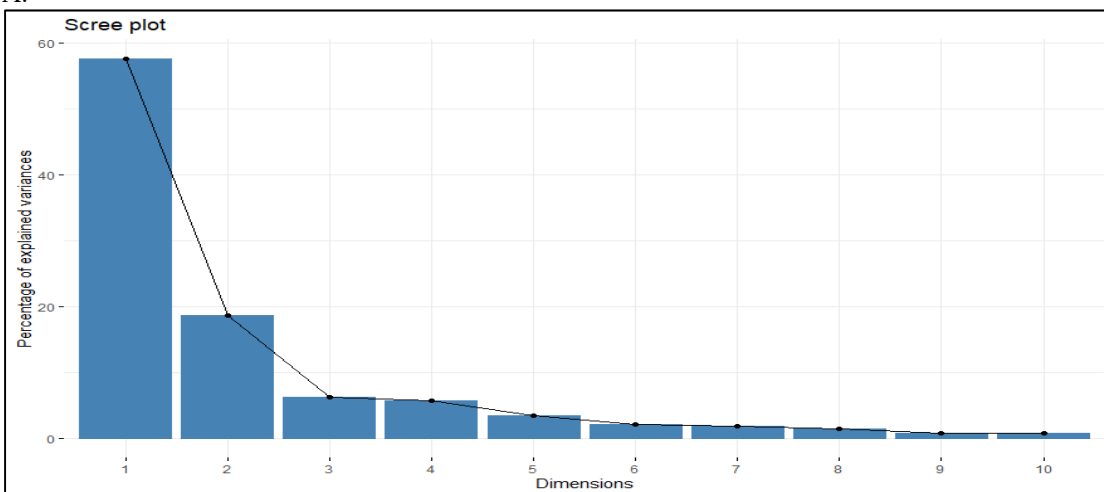
G93	PUSA-BM-1	G195	RIL 37
G94	RMB12-07	G196	RIL 38
G95	RMG1087	G197	RIL 42
G96	RMG1092	G198	RIL 45
G97	RMG1097	G199	RIL 50
G98	RMG344	G200	RIL 56
G99	RMG62	C1	OBGG-52
G100	SKNM1502	C2	KAMDEV
G101	SKNM1504	C3	IPM-02-3
G102	SML1815	C4	IPM-02-14

Supplementary Table S2. The Formulas used for computing germination and stress parameters. NS: control condition, S: Cold condition, Y: yield, X:

Parameter category	Parameter Name	Calculation	Reference
Germination parameters	Germination rate index (GRI)	$GRI = G_1/1 + G_2/2 + \dots + G_x/x$ G ₁ , G ₂ ... G _x represents the percentage of germination in first, second and xth day after sowing respectively	Almudaris and Samuel[30]
	Mean germination time (MGT)	$MGT = \sum (n_i/d_i)$ n _i : number of germinated seeds, d _i : day of counting	Ellis and Roberts [60]
	Coefficient of velocity of germination	Coefficient of velocity (CV) = (number of germinated seeds per day) $CV_g = \sum N_i / 100 \times \sum (T_i \times N_i)$	Kader and Jutzi[61]
	Mean germination rate (MGR)	$1/(MGT)$	Ranalet <i>al.</i> [62]
	Timson's germination index	Timson germination index (TGI) = $\sum G/T$, where G is the percentage of seed germinated per day, and T is the germination period	Ajmal Khan & Ungar [31]
Stress indices	Promptness Index (PI)	$nd_2 (1.00) + nd_4 (0.75) + nd_6 (0.50) + nd_8 (0.25)$	Sammar Raza [32]
	Stress susceptibility index (SSI)	$\{1 - (Y_s/Y_{NS})\} / \{1 - (X_s/X_{NS})\}$	Fisher and Maurer [34]
	Tolerance index (TOL)	$Y_{NS} - Y_s$	Rosielle and Hamblin [35]
	Mean productivity (MP)	$(Y_s + Y_{NS})/2$	Rosielle and Hamblin [35]
	Geometric mean productivity (GMP)	$\sqrt{(Y_{NS} \times Y_s)}$	Fernandez[36]
	Stress Tolerance Index (STI)	$(Y_s \times Y_{NS})/X^2_{NS}$	Fernandez [36]
	Plant height stress index	[plant height of stressed plant/plant height of control plant] × 100	Nawas et al. [33]

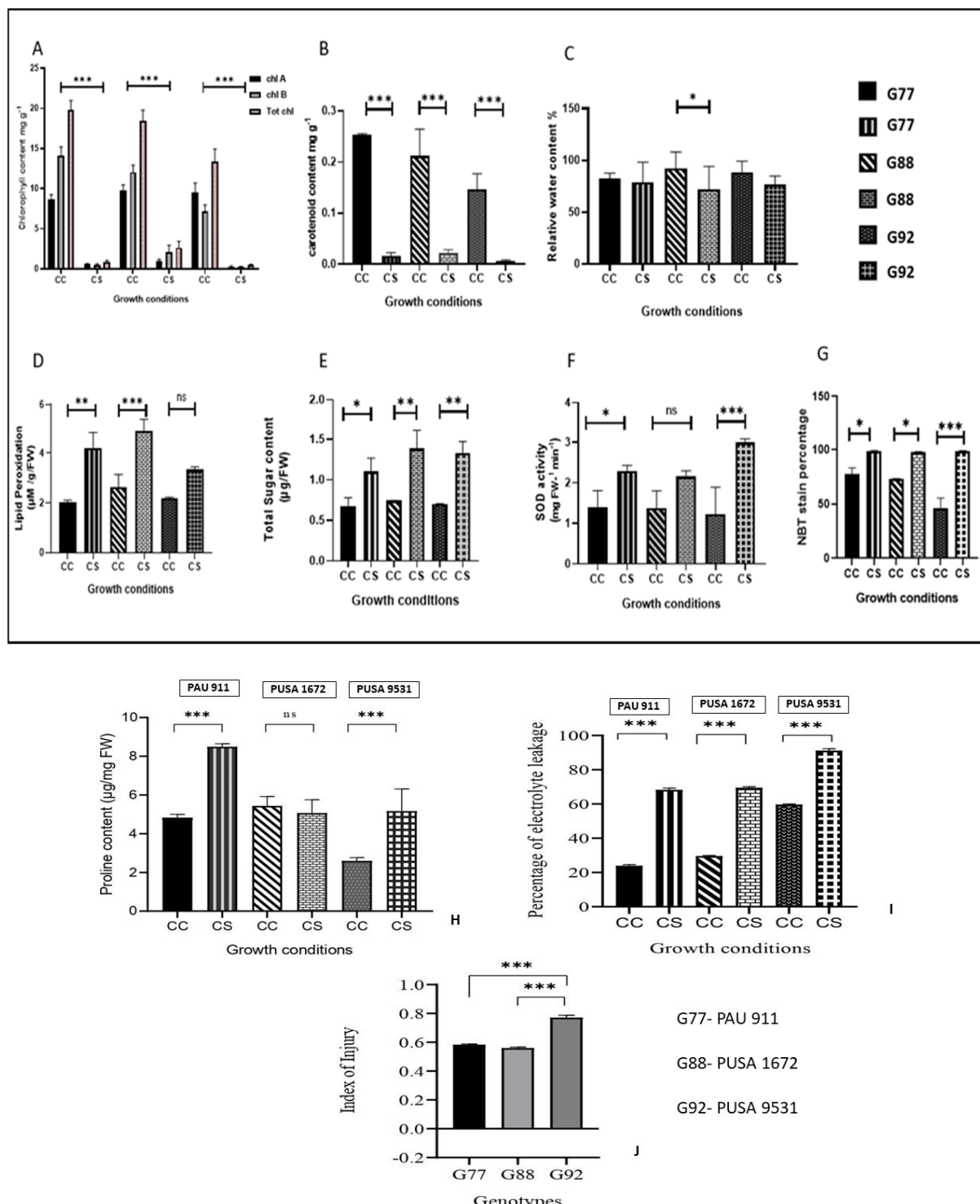


A.



B.

Supplementary Figure S1. Scree plot displaying the variation of each principal component captured from the data taken at control conditions (A) and Cold stress (B). Dim indicates Dimensions/Principal components. PC1/Dim1 explains 64.4% and PC2/Dim2 explains 10.8% of the variance in data.



Supplementary Figure S2. Biochemical analysis of cold stress response in selected *V. radiata* genotypes. Biochemical parameters such as (A) Chlorophyll content, (B) Carotenoid content, (C) Relative water content, (D) Lipid peroxidation-Malondialdehyde (MDA), (E) Total sugar content, (F) SOD enzyme activity (G) O₂⁻ Superoxide content, (H) Proline content, (I) Percentage of electrolyte leakage and (J) Index of injury were assayed in seedlings after germination and growth at 10°C for 8 days. Data represented were mean of 10 measurements for each with 3 biological replicates. Statistical significance using one-way ANOVA indicated as *** for p<0.0001, ** for p<0.001 and * for p<0.01.