

PROGRESS REPORT 3 OF
PROJECT NO: 0-106(B5)IC
GROUNDNUT PHYSIOLOGY

Screening of groundnut genotypes for drought tolerance

Post-rainy season
1987/88

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During 1987-1988 postrainy season we screened 144 groundnut genotypes for tolerance to drought in the field. Among these, 124 genotypes belonged to vars fastigiata and vulgaris of sub species fastigiata (Spanish and valencia types) (Expt. A) and the rest 20, belonged to var hypogaea of subspecies hypogaea, (Virginia bunch types) (Expt.B).

Among 124 spanish and valencia lines 58 genotypes were breeding lines and the rest 66 were germplasm accessions. Among 24 virginia bunches, 13 were breeding lines, and 7 were progenies derived from wild species.

Land preparation and crop management

This experiment was conducted at the ICRISAT center during 1986-87 post-rainy season on an alfisol. The field (RP 2A) was disc ploughed and a basal dose of Diammonium phosphate (18N : 46 P₂O₅) at the rate of 100 kg ha⁻¹ was incorporated into the soil at the time of land preparation. The field was harrowed and prepared into broad beds of 1.2 m width with 0.3 m wide furrows between beds.

Before sowing, seeds were treated with Thiram and Captan each at the rate of 3 g kg⁻¹ seed to prevent seedling diseases. The entries were sown in paired rows of 12 m length each with a

spacing of 30 cm between rows and 10 cm between plants within a row. Thus each plot of 12 m length consisted of 8 beds perpendicular to the sprinkler line.

The crop was regularly irrigated at 10-day intervals until 40 days after sowing to favour crop establishment, after which the treatments were introduced. Plant protection against pests and diseases was provided as and when required and the crop was maintained weed-free throughout the season. Days to first flower appearance and 50% flowering (50% of plants to flower) were recorded (Table 1a & b). Appearance of first flower occurred between 37 to 44 DAS in Expt 'A' and 38 to 49 DAS in Expt 'B' while 50% occurred between 42 to 57 DAS in Expt 'A' and 45 to 53 DAS in Expt 'B'.

Statistical design and Treatments

The genotypes in Expt 'A' and 'B' were sown in two separate blocks due to their differences in duration, hence considered as two different experiments. Genotypes within each block were randomized as RBD.

There were two drought treatments, which were different in timing and duration of drought imposed.

These two treatments were replicated three times. The schedule of the timing and duration of droughts in the 3 treatments was as follows:

<u>Expt. A</u> (bunch types)	Treatment period Days after sowing	Duration(Days)
T1	40 - 129	89
T2	93 - 129	36
<u>Expt. B</u> (Virginia buch genotypes)		
T1	40-130	90
T2	93-130	37

Drought intensities

Eight levels of irrigation (intensities) were applied during the period of each treatment using a line source sprinkler system (Hanks et al., 1976).

The sprinkler head had dual nozzles of 1/8" and 5/32" aperture size and had an output of about 40 l min⁻¹ when operated at 1.3 Mpa. The line source sprinkler system was operated during periods when the wind velocity was minimal (less than 3 km hr⁻¹), usually at nights.

The water applied during each irrigation was measured by placing catchcans perpendicular to the sprinkler line in each of the 8 beds at 3 different locations in each replication. The volume of water collected in each of the catchcans was measured and averaged over 3 locations to estimate the water applied to each bed in a given replication. The amount of water applied for each bed is accumulated over the effective duration of the treatment.

The cumulative amount of water applied along with the seen meteorological data during the period of treatments are presented in Table 2.

Harvesting

Bunch genotypes were harvested on 20th April 1988 (129 DAS) by which time about 70% of pods in the non-stress plots (Bed 1) had matured, while Virginia types were harvested on 22nd April 1988 (131 DAS). Pods of several Virginia types were still immature by that time, but the experiment was harvested to accommodate closed season policy at this site.

Yield measurements

The bulk vegetative weights of each genotype across 8 beds were weighed in the field and dry weights of these were calculated using the oven dry/fresh weight ratios of representative samples taken at a rate of 1:8. The air-dried pod weights were recorded for each genotype separately in each bed.

Statistical analysis

The drought intensities within each treatment are expressed as % water deficit which was calculated using the formula:

$$\% \text{ Water deficit} = \frac{X1 - X2}{X1} \times 100$$

where

X1 = Cumulative pan (class "A") evaporation which occurred only during the period of treatment.

X2 = Cumulative amount of water applied for the period of treatment.

In this analysis the response of genotypes to variation in applied water was obtained by regressing total biomass m^{-2} and total pod weight m^{-2} with the variable water deficit in the respective plots. Since the water applied at a given intensity varied in 3 replications within a treatment, the regression analysis was done treating replicate values as individual data points. Thus, regression analysis for each genotype contained 24 (8 intensities x 3 replications) data values. In this report the regression coefficients for total biomass and total pod weight for each genotype are presented in Tables 3 to 10. The mean of the regression coefficients of all entries in each experiment

are presented at the bottom of every page for easy comparison. The mean regression equations were derived by regressing the mean of all the entries within each water level against the respective percent water deficit.

Comments relating to tolerance or susceptibility of a genotype to drought have been based on the performance of the genotype across all drought intensities relative to the regression derived from the mean of the group in each replication. Each genotype is rated as 'S' (susceptible), 'T' (Tolerant) or '-' not different from mean response, considering its performance in individual replication.

If a genotype is superior to the mean response (across all water deficits) in all the three replications, then it is rated as 'T'.

Comments confined to one or two replicates may be modified in future based on positional effects using the systematic check variety and/or the lattice design.

Genotypes with above average performance in all the three replications in the specified drought treatments are listed in the Table 11.

Reference:

Hanks, R.J., J. Keller, V.P. Rasmussen, and S.D. Wilson, 1976.
Line source sprinkler for continuous variable irrigation-crop
production studies. Soil sci. soc. Am. Proc. 40: 426-429.

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- § = When F ratio of the Regression is not significant, mean and BE of mean of the cultivar across 8 levels of water stress (3 replications) is provided.
- T/S = Lines selected for either drought tolerance (T) or susceptibility (S) based on total biomass or total pod productivity in 8 levels of water stress in all replications.
- 2T or 2S = Tolerant or susceptible in two replicates only.
- % VAR = The difference between residual and total mean squares expressed as a percentage of the total mean square.

Table 1a: Days to first flower appearance and days to 50% flowering (50% plants to flower) for 124 erect bunch genotypes. (Each value is average of 3 reps).

ENTRY	Days after sowing	
	1st flower appearance	50% flowering
ICG-221	40	45
ICG-1326	39	44
ICG-1697	40	44
ICG-1736	39	43
ICG-1751	39	44
ICG-1757	38	43
ICG-1772	39	45
ICG-1778	40	44
ICG-1826	40	45
ICG-1859	40	45
ICG-1908	38	43
ICG-1919	42	46
ICG-1928	39	44
ICG-1992	39	45
ICG-1994	40	45
ICG-1995	40	45
ICG-1996	40	45
ICG-2716	41	45
ICG-2951	41	45
ICG-2964	39	45
ICG-2992	41	46
ICG-3076	40	46
ICG-3093	40	44
ICG-3101	43	47
ICG-3104	40	44
ICG-3119	42	46
ICG-3143	39	44
ICG-3164	40	44
ICG-3171	39	43
ICG-3172	41	45
ICG-3179	39	44
ICG-3187	40	45
ICG-3203	40	45
ICG-3433	39	44
ICG-4589	41	45
ICG-4593	39	45
ICG-4664	38	43
ICG-4705	40	45
ICG-4750	38	43
ICG-5033	37	42
ICG-5575	39	44
ICG-6006	41	45

ENTRY	Days after sowing	
	1st flower appearance	50% flowering
ICG-7355	39	45
ICG-7388	38	43
ICG-7408	38	43
ICG-7499	39	44
ICG-7512	40	44
ICG-7812	39	43
ICG-7827	40	45
ICG-8048	38	44
ICG-8223	40	45
ICG-8230	40	45
ICG-8364	40	45
ICG-8477	39	43
ICG-8568	40	46
ICG-8581	41	45
ICG-8599	39	43
ICG-8702	40	44
ICG-8852	38	43
ICG-8857	38	43
ICG-9399	38	44
ICG-9510	41	45
ICG-9832	39	45
ICG-10081	40	46
ICG-10086	39	44
ICG-10094	40	45
ICGV-86008	41	46
ICGV-86009	41	46
ICGV-86010	44	50
ICGV-86011	41	45
ICGV-86012	41	46
ICGV-86013	42	46
ICGV-86014	40	46
ICGV-86015	42	46
ICGV-86016	40	45
ICGV-86027	43	48
ICGV-86028	42	47
ICGV-86029	42	47
ICGV-86031	41	46
ICGV-86042	37	43
ICGV-86045	39	45
ICGV-86055	39	43
ICGV-86056	38	43
ICGV-86074	39	44
ICGV-86094	42	45

Days after sowing		
ENTRY	1st flower appearance	50% flowering
ICGV-86124	39	44
ICGV-86127	40	47
ICGV-86162	40	46
ICGV-86187	40	45
ICGV-86187	40	45
ICGV-86196	41	45
ICGV-86197	44	46
ICGV-86203	39	44
ICGV-86234	40	45
ICGV-86236	40	45
ICGV-86240	42	45
ICGV-86270	39	44
ICGV-86309	42	46
ICGV-86315	41	46
ICGV-86551	40	45
ICGV-86552	40	45
ICGV-86553	41	46
ICGV-86635	40	44
ICGV-86707	43	50
ICGV-86793	41	48
ICGV-86798	43	49
ICGV-86804	44	47
ICGV-86829	42	46
ICGV-86830	43	46
ICGV-86832	41	47
ICGV-86833	43	47
ICGV-86841	40	45
ICGV-86843	44	48
ICGV-86854	41	46
ICGV-87119	41	46
ICGV-87123	41	46
ICGV-87124	42	46
ICGV-87125	41	45
ICGV-87128	41	46
ICGV-87145	42	47
ICGV-87148	39	44
ICGV-87160	38	43
ICGV-87187	41	46
ICGV-87191	41	46
Mean	40	45

Table 1b: Days to first flower appearance and days to 50% flowering (50% plants to flower) for 20 virginia bunch genotypes. (Each value is average of 3 reps.)

Entry	Days after sowing	
	1st flower appearance	50% flowering
ICGV 86004	44	51
ICGV 86005	46	53
ICGV 86018	44	50
ICGV 86030	45	52
ICGV 86033	47	52
ICGV 86034	49	52
ICGV 86548	38	45
ICGV 86549	45	48
ICGV 86555	48	50
ICGV 86558	46	54
ICGV 86564	43	51
ICGV 87121	45	52
ICGV 87137	45	49
ICGV 87141	45	51
ICGV 88240	46	52
ICGV 88241	45	50
ICGV 88242	44	49
ICGV 88243	44	52
ICGV 88244	43	49
ICGV 88245	44	51
Mean	45	50

Table 2: Cumulative water (cm) applied in different treatments during period of treatment.

Side A:

Bed	T1			T2		
	R1	R2	R3	R1	R2	R3
1	45.8	36.1	42.7	42.3	46.3	46.4
2	50.7	41.6	46.1	45.2	52.4	48.9
3	55.5	47.1	53.1	51.7	57.3	53.9
4	62.0	55.9	59.7	54.8	66.4	62.2
5	72.0	68.2	70.7	67.6	75.4	72.7
6	84.3	80.6	82.9	80.6	87.1	84.3
7	93.8	91.6	92.1	89.5	94.2	92.9
8	98.5	97.2	98.0	96.4	98.6	97.9

Side B:

1	45.9	35.9	44.3	37.9	47.5	38.9
2	49.9	40.3	47.8	45.1	52.5	46.2
3	54.4	46.3	52.3	51.2	58.3	56.1
4	61.1	56.9	61.8	62.2	66.1	64.1
5	70.0	70.4	71.5	75.1	76.2	73.8
6	81.7	82.4	82.6	86.5	85.3	83.5
7	91.7	91.8	91.9	94.5	92.6	91.3
8	97.8	97.6	97.9	98.8	97.5	96.0

Meteorological data:

	T1	T2
Rain (cm)	0.055	0.015
Evap (mm)	700.4	357.3
Max. temp (oC)	33.9	36.6
Max. temp (oC)	19.1	21.6
Wind vel. (KPH)	8.6	8.8
Solar Rad. (MJ m ⁻² day ⁻¹)	19.2	21.1
RH (% at 07.00)	77.4	63.5
RH (% at 14.00)	27.1	23.2

N.B: The rainfall and evaporation data are totals and not means.

Table 3. Regression co-efficients of total biomass of bunch genotypes (g/m^2) on water deficit applied from flowering to maturity (40-129 DAS) during 1987-88 postrainy season, ICRISAT Center.

Genotype	Constant (g m^{-2})	S.E.	Slope (g m^{-2} % water deficit ⁻¹)	S.E.	XVAR	Comments
ICG 221	1757	90.7	-15.9	1.29	86.9	-
ICG 1326	2245	70.2	-21.4	0.99	95.3	-
ICG 1697	2241	201.0	-19.5	2.85	66.8	2T
ICG 1736	2005	142.0	-18.5	2.01	78.6	-
ICG 1751	2043	120.0	-20.0	1.70	85.8	2T
ICG 1757	1625	99.8	-14.0	1.42	80.9	-
ICG 1772	2093	89.5	-20.1	1.25	92.2	-
ICG 1778	1758	148.0	-16.9	2.09	73.8	2S
ICG 1826	1878	86.3	-18.1	1.23	90.4	-
ICG 1859	1738	110.0	-16.2	1.56	82.3	-
ICG 1908	1008	97.3	-7.1	1.37	53.3	S
ICG 1919	2355	93.9	-22.2	1.32	92.4	T
ICG 1928	2256	174.0	-21.1	2.46	76.1	-
ICG 1992	2059	100.0	-18.6	1.42	88.3	-
ICG 1994	1633	134.0	-14.7	1.91	71.8	-
ICG 1995	1988	104.0	-18.7	1.46	87.6	-
ICG 1996	1699	91.3	-16.7	1.30	87.7	S
ICG 2716	2716	126.0	-26.3	1.78	90.5	-
ICG 2951	2028	84.4	-18.2	1.19	91.1	-
ICG 2964	1449	113.0	-12.8	1.60	73.3	2S
ICG 2992	2040	125.0	-19.6	1.78	84.1	-
ICG 3076	2019	92.9	-18.2	1.32	89.2	-
ICG 3093	1855	82.2	-17.4	1.16	90.7	-
ICG 3101	2071	114.0	-19.1	1.60	86.1	-
ICG 3104	1878	115.0	-16.9	1.61	82.6	-
ICG 3119	2010	128.0	-19.6	1.80	83.6	-
ICG 3143	2191	127.0	-21.1	1.80	85.5	-
ICG 3164	2004	104.0	-19.7	1.47	88.7	-
ICG 3171	2083	101.0	-20.3	1.44	89.5	-
ICG 3172	1791	99.4	-17.2	1.41	86.7	S
ICG 3179	2026	95.1	-18.0	1.35	88.5	-
ICG 3187	2155	122.0	-18.9	1.73	84.3	-
ICG 3203	2092	116.0	-19.6	1.64	86.1	-
Mean	1886	59.3	-17.5	0.84	90.3	

Table:3

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	XVAR	Comments
ICG 3433	2280	91.4	-21.0	1.29	92.1	-
ICG 4589	2114	134.0	-19.8	1.91	82.3	-
ICG 4593	2042	95.9	-19.7	1.37	90.1	-
ICG 4664	2274	119.0	-20.6	1.73	86.5	-
ICG 4705	2061	148.0	-18.4	2.11	78.1	-
ICG 4750	2116	93.9	-20.0	1.33	90.8	-
ICG 5033	936	75.8	-8.6	1.08	73.3	S
ICG 5575	2095	77.9	-18.2	1.08	92.8	2T
ICG 6006	2152	105.0	-20.6	1.49	89.3	-
ICG 7355	2034	102.0	-19.5	1.44	88.9	S
ICG 7388	2088	121.0	-19.1	1.71	84.4	-
ICG 7408	1909	110.0	-16.8	1.56	83.5	2T
ICG 7499	2065	96.9	-18.9	1.37	89.2	-
ICG 7512	2002	82.5	-18.6	1.16	91.7	-
ICG 7812	1933	69.4	-16.7	0.98	92.6	-
ICG 7827	2012	127.0	-18.6	1.82	82.6	-
ICG 8048	1994	119.0	-18.8	1.68	84.4	-
ICG 8223	1942	101.0	-17.8	1.43	87.0	-
ICG 8230	1782	97.8	-16.6	1.38	86.2	-
ICG 8364	1959	99.0	-18.7	1.41	88.4	-
ICG 8477	2245	94.4	-21.3	1.37	91.7	-
ICG 8568	1858	88.9	-16.1	1.26	87.7	-
ICG 8581	1992	111.0	-19.6	1.57	87.2	S
ICG 8599	2132	132.0	-20.2	1.87	83.6	-
ICG 8702	1633	91.1	-15.4	1.29	86.1	-
ICG 8852	1877	107.0	-17.7	1.51	85.6	-
ICG 8857	2066	127.0	-18.8	1.81	83.0	-
ICG 9399	1875	91.5	-18.8	1.29	90.1	2S
ICG 9510	1903	78.2	-17.7	1.10	91.8	-
ICG 9832	1710	64.3	-15.7	0.91	92.9	2S
ICG 10081	1898	121.0	-16.7	1.71	80.4	-
ICG 10086	1927	112.0	-18.9	1.58	86.0	2S
ICG 10094	2029	73.4	-18.8	1.04	93.5	-
ICGV 86008	1736	122.0	-16.8	1.74	80.2	S
ICGV 86009	2173	132.0	-21.1	1.87	84.6	-
ICGV 86010	2276	146.0	-22.1	2.04	84.2	2T
ICGV 86011	2185	106.0	-20.6	1.49	89.3	-
ICGV 86012	2174	114.0	-20.3	1.61	87.3	-
ICGV 86013	1992	139.0	-18.9	1.97	79.9	-
ICGV 86014	2390	137.0	-22.2	1.94	85.0	-
Mean	1886	59.3	-17.5	0.84	90.3	

Table:3

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	XVAR	Comments
ICGV 86015	2106	130.0	-19.9	1.84	83.5	-
ICGV 86016	1640	96.0	-14.3	1.35	82.8	-
ICGV 86027	2375	129.0	-23.5	1.83	87.7	-
ICGV 86028	2227	106.0	-21.3	1.50	89.8	-
ICGV 86029	2483	97.7	-23.0	1.38	92.3	-
ICGV 86031	2352	118.0	-21.6	1.67	87.9	2T
ICGV 86042	1897	76.3	-17.7	1.08	92.1	-
ICGV 86045	1802	72.9	-16.4	1.03	91.7	-
ICGV 86031	2352	118.0	-21.6	1.67	87.9	2T
ICGV 86042	1897	76.3	-17.7	1.08	92.1	-
ICGV 86045	1802	72.9	-16.4	1.03	91.7	-
ICGV 86055	2008	100.0	-19.5	1.42	89.1	-
ICGV 86056	1464	79.4	-13.7	1.13	86.6	S
ICGV 86074	2054	98.4	-19.8	1.40	89.6	-
ICGV 86094	1472	116.0	-13.6	1.65	74.6	2S
ICGV 86124	2133	109.0	-19.3	1.53	87.4	-
ICGV 86127	1416	105.0	-13.2	1.48	77.4	S
ICGV 86162	1851	70.0	-16.5	0.99	92.3	-
ICGV 86187	1303	115.0	-12.7	1.63	72.2	S
ICGV 86187	2048	188.0	-18.7	2.66	68.8	-
ICGV 86196	1659	103.0	-15.0	1.46	82.0	-
ICGV 86197	1314	101.0	-12.2	1.43	75.7	S
ICGV 86203	1789	106.0	-17.3	1.51	85.0	-
ICGV 86234	1154	128.0	-10.5	1.82	58.4	S
ICGV 86236	2312	119.0	-22.4	1.68	88.6	T
ICGV 86240	1541	113.0	-13.8	1.59	76.5	S
ICGV 86270	1630	170.0	-15.8	2.43	65.2	S
ICGV 86309	2196	130.0	-19.7	1.83	83.4	-
ICGV 86315	2655	131.0	-26.2	1.86	89.5	2T
ICGV 86551	2662	112.0	-24.2	1.61	91.1	2T
ICGV 86552	2558	78.8	-23.7	1.12	95.1	-
ICGV 86553	2108	135.0	-20.4	1.91	83.2	-
ICGV 86635	2371	126.0	-22.0	1.77	86.9	T
ICGV 86707	2439	94.6	-22.9	1.33	92.8	2T
ICGV 86793	1757	161.0	-15.1	2.28	65.3	-
ICGV 86798	1244	87.8	-11.1	1.24	77.8	S
ICGV 86804	1552	122.0	-14.6	1.74	75.2	-
ICGV 86829	1173	102.0	-10.6	1.44	69.9	S
ICGV 86830	1480	92.6	-12.8	1.31	80.5	S
ICGV 86832	1370	117.0	-12.7	1.67	72.1	S
ICGV 86833	1809	125.0	-17.7	1.77	81.2	S
Mean	1886	59.3	-17.5	0.84	90.3	

Table:3

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² x water deficit ⁻¹)	S.E.	XVAR	Comments
ICGV 86841	1545	152.0	-14.4	2.16	65.6	S
ICGV 86843	1615	118.0	-15.2	1.64	79.5	2S
ICGV 86854	1264	102.0	-11.3	1.44	72.5	S
ICGV 87119	2052	95.3	-18.0	1.33	89.3	2T
ICGV 87123	2244	128.0	-21.2	1.81	85.6	-
ICGV 87124	1920	67.0	-18.1	0.95	94.0	-
ICGV 87125	2233	127.0	-21.2	1.80	85.7	-
ICGV 87128	2124	133.0	-19.9	1.88	83.0	-
ICGV 87145	2051	114.0	-19.4	1.61	86.3	2S
ICGV 87148	2155	92.9	-18.8	1.33	90.1	2T
ICGV 87160	2501	133.0	-23.1	1.87	87.0	2T
ICGV 87187	2354	83.6	-21.5	1.18	93.5	T
ICGV 87191	2081	118.0	-19.5	1.67	85.5	-
Mean	1886	59.3	-17.5	0.84	90.3	

Table 4. Regression coefficients of pod yield of bunch genotypes (g.m²) on water deficit applied from flowering to maturity (40-129 DAS) during 1987-88 postrainy season, ICRISAT center.

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	XVAR	Comments
ICG 221	727	46.4	-7.5	0.66	85.1	-
ICG 1326	818	24.3	-8.2	0.54	96.1	-
ICG 1697	725	73.5	7.0	1.04	65.8	-
ICG 1736	696	56.7	-6.8	0.80	75.9	-
ICG 1751	698	46.2	-7.4	0.65	85.0	-
ICG 1757	575	50.4	5.5	0.72	71.8	-
ICG 1772	801	47.0	-8.4	0.66	88.2	-
ICG 1778	575	75.5	-5.9	1.06	56.7	2S
ICG 1826	691	51.2	-7.2	0.73	80.9	-
ICG 1859	583	61.6	-5.7	0.88	64.9	2S
ICG 1908	753	35.9	2.9	0.50	59.7	S
ICG 1919	885	57.6	9.1	0.81	84.7	-
ICG 1928	719	80.0	7.2	1.15	63.5	2S
ICG 1992	776	29.4	7.7	0.42	93.7	-
ICG 1994	618	69.0	6.1	0.98	62.5	2S
ICG 1995	700	51.3	7.1	0.72	80.9	-
ICG 1996	577	35.7	5.9	0.51	85.6	2S
ICG 2716	881	50.7	9.4	0.71	88.4	-
ICG 2951	751	50.3	7.4	0.43	93.0	-
ICG 2964	571	51.2	-5.8	0.73	73.2	2S
ICG 2992	689	62.5	7.1	0.89	73.5	-
ICG 3076	811	41.2	-8.0	0.58	89.1	-
ICG 3093	706	50.9	7.3	0.72	81.8	-
ICG 3101	706	50.2	7.2	0.71	81.9	-
ICG 3104	793	38.7	7.8	0.54	90.0	-
ICG 3119	677	61.0	-6.7	0.86	72.6	-
ICG 3143	783	52.7	-8.1	0.75	83.5	-
ICG 3164	684	49.0	-7.1	0.69	82.1	-
ICG 3171	746	41.8	7.7	0.60	88.0	-
ICG 3172	664	53.2	-7.0	0.75	79.1	S
ICG 3179	753	47.2	-7.5	0.67	84.6	-
ICG 3187	803	40.8	-7.9	0.58	89.5	-
ICG 3203	612	50.4	-6.0	0.72	75.5	-
Mean	687	27.9	-6.9	0.59	86.9	

Table:4

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	%VAR	Comments	
ICG	3433	890	31.7	-9.0	0.45	94.7	-
ICG	4589	771	56.2	-7.6	0.80	79.8	-
ICG	4593	640	40.8	-6.5	0.58	84.4	-
ICG	4664	737	51.2	-7.8	0.74	83.3	-
ICG	4705	717	61.6	-6.7	0.87	72.3	2T
ICG	4750	677	56.9	-6.7	0.81	74.9	-
ICG	5033	282	19.7	-2.6	0.28	79.4	S
ICG	5575	774	36.6	-7.5	0.51	90.8	2T
ICG	6006	720	45.2	-7.2	0.64	85.0	-
ICG	7355	706	53.8	-7.0	0.76	78.9	2S
ICG	7388	679	64.2	-6.4	0.91	68.2	2T
ICG	7408	691	45.7	-6.8	0.65	82.7	-
ICG	7499	704	44.4	-7.3	0.63	85.4	-
ICG	7512	756	51.5	-8.1	0.73	84.3	-
ICG	7812	738	27.2	-7.0	0.39	93.5	-
ICG	7827	656	42.4	-7.0	0.61	85.7	2S
ICG	8048	627	53.0	-6.1	0.75	74.5	-
ICG	8223	733	50.4	-7.5	0.71	82.7	-
ICG	8230	642	44.6	-6.1	0.63	80.5	-
ICG	8364	662	40.8	-6.9	0.58	86.0	2S
ICG	8477	785	57.7	-8.4	0.83	82.2	-
ICG	8568	774	44.6	-7.5	0.63	85.9	-
ICG	8581	688	49.8	-7.2	0.70	81.9	S
ICG	8599	775	45.9	-7.8	0.65	86.5	-
ICG	8702	610	44.0	-5.9	0.62	79.9	-
ICG	8852	640	53.8	-6.8	0.76	77.8	-
ICG	8857	702	54.7	-6.6	0.78	76.5	2T
ICG	9399	582	50.8	-6.2	0.72	76.5	2S
ICG	9510	717	39.4	-7.6	0.56	89.1	-
ICG	9832	627	37.9	-6.4	0.54	86.2	-
ICG	10081	694	37.7	-6.8	0.53	87.5	-
ICG	10086	703	47.8	-7.4	0.68	83.8	2S
ICG	10094	764	48.0	-8.0	0.68	85.7	-
ICGV	86008	569	54.8	-5.7	0.78	70.2	2S
ICGV	86009	748	53.3	-7.7	0.76	82.0	-
ICGV	86010	651	71.5	-6.9	1.00	68.2	-
ICGV	86011	705	54.4	-7.6	0.77	81.0	2S
ICGV	86012	801	58.5	-8.1	0.83	80.5	-
ICGV	86013	658	72.5	-7.0	1.03	66.8	2S
ICGV	86014	919	36.7	-9.0	0.52	93.0	2T
Mean	687	27.9	-6.9	0.39	86.9		

Table:4

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	XVAR	Comments
ICGV 86015	748	57.0	-7.4	0.81	78.6	-
ICGV 86016	621	53.7	-5.9	0.76	72.4	-
ICGV 86027	687	53.6	-7.3	0.76	80.1	2S
ICGV 86028	709	50.7	-7.7	0.72	83.3	-
ICGV 86029	797	40.3	-8.5	0.57	90.6	-
ICGV 86031	813	25.2	-8.4	0.36	96.1	-
ICGV 86042	767	46.1	-7.8	0.65	86.4	-
ICGV 86045	699	35.6	-7.1	0.50	89.6	-
ICGV 86055	738	60.3	-7.5	0.86	77.0	-
ICGV 86056	602	48.4	-6.3	0.69	78.4	S
ICGV 86074	763	60.4	-7.8	0.86	78.2	-
ICGV 86094	505	58.2	-5.1	0.82	62.3	2S
ICGV 86124	812	50.5	-8.4	0.71	85.9	-
ICGV 86127	459	42.8	-5.0	0.60	75.1	S
ICGV 86162	742	20.9	-7.0	0.30	96.1	2T
ICGV 86187	404	53.6	-4.0	0.76	53.7	S
ICGV 86187	654	85.3	-6.4	1.21	54.3	-
ICGV 86196	599	45.8	-5.7	0.65	76.7	-
ICGV 86197	410	37.3	-3.9	0.53	70.4	S
ICGV 86203	626	54.3	-6.4	0.77	74.9	-
ICGV 86234	399	52.3	-3.7	0.74	51.2	S
ICGV 86236	771	57.3	-8.2	0.81	81.7	-
ICGV 86240	558	49.8	-5.3	0.70	71.4	2S
ICGV 86270	570	67.4	-5.8	0.95	61.6	2S
ICGV 86309	893	52.9	-8.7	0.75	85.5	-
ICGV 86315	770	48.4	-8.1	0.69	85.8	-
ICGV 86551	909	34.0	-9.2	0.48	94.1	-
ICGV 86552	911	32.7	-9.3	0.46	94.6	-
ICGV 86557	706	52.2	-7.4	0.74	81.4	S
ICGV 86635	811	49.8	-8.2	0.70	85.6	-
ICGV 86707	708	50.0	-7.7	0.70	83.9	S
ICGV 86793	658	56.4	-6.1	0.80	71.9	-
ICGV 86798	419	33.2	-4.1	0.47	77.1	S
ICGV 86804	501	55.7	-5.3	0.79	65.7	S
ICGV 86829	448	34.9	-4.7	0.50	80.1	S
ICGV 86830	559	31.8	-5.6	0.45	87.0	S
ICGV 86832	419	59.9	-3.9	0.86	48.0	S
ICGV 86833	601	45.2	-6.1	0.64	79.7	S
Mean	687	27.9	-6.9	0.39	86.9	

Table:4

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	XVAR	Comments
ICGV 86841	492	67.5	-4.9	0.96	52.5	2S
ICGV 86843	502	41.5	-5.1	0.58	76.5	2S
ICGV 86854	424	49.3	-4.0	0.70	58.5	2S
ICGV 87119	800	29.0	-7.8	0.41	94.4	-
ICGV 87123	790	53.1	-8.3	0.75	84.1	-
ICGV 87124	709	41.3	-7.5	0.59	87.8	S
ICGV 87125	793	50.8	-8.3	0.72	85.2	-
ICGV 87128	742	51.9	-7.3	0.73	81.4	-
ICGV 87145	671	68.4	-7.2	0.96	70.9	2S
ICGV 87148	863	42.0	-8.3	0.60	89.6	2T
ICGV 87160	949	44.3	-9.7	0.62	91.4	2T
ICGV 87187	923	34.7	-9.2	0.49	93.9	2T
ICGV 87191	754	46.5	-7.6	0.66	85.5	-
Mean	687	27.9	-6.9	0.39	86.9	

Table 5. Regression coefficients of Total biomass (Bunch genotypes) (g/m^2) on water deficit applied from pod set to maturity (90-120 DAS) during 1987-88 post-rainy season, ICRISAT center.

Genotype	Constant ($g\ m^{-2}$)	S.E.	Slope ($g\ m^{-2}$ % water deficit $^{-1}$)	S.E.	%VAR	Comments
ICG 221	1831	155.0	-11.8	2.22	56.6	2T
ICG 1326	1777	128.0	13.0	1.87	70.6	-
ICG 1697	2602	149.0	-20.3	2.22	80.5	T
ICG 1736	1730	120.0	11.5	1.64	67.9	-
ICG 1751	1679	125.0	10.2	1.72	59.7	2T
ICG 1757	1634	109.0	-11.6	1.50	71.8	-
ICG 1772	1866	110.0	-13.2	1.54	76.1	2T
ICG 1778	1812	127.0	-12.7	1.76	69.0	-
ICG 1826	1685	122.0	11.3	1.69	65.5	-
ICG 1859	1735	124.0	-11.4	1.70	66.0	-
ICG 1908	815	155.0	5.1	1.88	22.2	S
ICG 1919	1526	111.0	-9.7	1.55	62.7	-
ICG 1928	1716	92.0	11.9	1.26	79.6	-
ICG 1992	1814	119.0	12.5	1.64	71.6	-
ICG 1994	1602	120.0	-10.9	1.69	65.0	-
ICG 1995	1577	106.0	10.4	1.48	67.9	-
ICG 1996	1690	74.1	-11.9	1.01	85.7	-
ICG 2716	2280	210.0	17.9	2.98	62.6	2T
ICG 2951	1589	106.0	9.8	1.48	65.4	-
ICG 2964	1909	125.0	13.4	1.68	73.3	-
ICG 2992	1640	124.0	11.0	1.70	64.1	-
ICG 3076	1440	168.0	-8.8	2.30	37.2	-
ICG 3093	1762	127.0	-11.7	1.73	66.0	-
ICG 3101	1893	116.0	-13.8	1.60	77.1	-
ICG 3104	1981	126.0	13.6	1.73	72.7	2T
ICG 3119	1784	185.0	-12.0	2.54	48.2	-
ICG 3143	1952	111.0	-14.5	1.55	79.0	-
ICG 3164	1639	108.0	-9.8	1.51	64.3	-
ICG 3171	2062	156.0	-15.3	2.14	68.7	2T
ICG 3172	1812	177.0	-12.3	2.48	51.0	2S
ICG 3179	1863	79.2	-12.4	1.11	84.6	T
ICG 3187	1774	149.0	11.8	2.05	58.7	-
ICG 3203	1591	210.0	-10.2	2.94	32.4	-
Mean	1684	61.3	-11.49	0.85	79.6	

Table 5

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	%VAR	Comments
ICG 3433	1693	188.0	-10.2	2.58	39.0	2T
ICG 4589	1738	103.0	-12.4	1.41	78.8	-
ICG 4593	1647	165.0	-10.4	2.27	46.8	2T
ICG 4664	2067	108.0	-14.7	1.50	80.7	2T
ICG 4705	1712	134.0	-11.4	1.83	62.3	-
ICG 4750	2050	157.0	-12.9	2.16	60.3	T
ICG 5033	576	75.7	-3.1	1.04	25.6	S
ICG 5575	1883	173.0	-13.0	2.42	54.9	2T
ICG 6006	2090	198.0	-15.1	2.64	60.3	T
ICG 7355	2001	138.0	-14.1	1.90	70.4	2T
ICG 7388	1836	140.0	-13.2	1.95	67.1	-
ICG 7408	1558	224.0	-9.5	3.14	26.2	-
ICG 7499	1799	105.0	-13.4	1.44	78.9	-
ICG 7512	1714	141.0	-12.7	1.94	64.9	2S
ICG 7812	1844	84.4	-13.5	1.18	85.0	2T
ICG 7827	1805	135.0	-12.2	1.96	65.3	-
ICG 8048	1968	133.0	-14.4	1.83	72.7	2T
ICG 8223	1860	164.0	-13.1	2.29	58.0	-
ICG 8230	1749	116.0	-11.2	1.60	67.9	T
ICG 8364	1829	109.0	-12.8	1.52	75.4	-
ICG 8477	2017	153.0	-14.6	2.14	66.7	2T
ICG 8568	1632	96.7	-11.0	1.32	74.9	-
ICG 8581	1832	98.3	-13.0	1.37	79.6	2T
ICG 8599	1772	171.0	-12.4	2.38	53.3	-
ICG 8702	1625	82.7	-11.9	1.13	82.8	2S
ICG 8852	1904	136.0	-13.3	1.86	68.9	-
ICG 8857	1567	133.0	-9.2	1.85	50.9	2T
ICG 9399	1719	122.0	-11.3	1.67	66.2	-
ICG 9510	1625	147.0	-12.0	2.02	60.1	2S
ICG 9832	1464	134.0	-10.2	1.86	55.8	S
ICG 10081	1408	169.0	-8.3	2.31	34.6	-
ICG 10086	1551	106.0	-10.4	1.48	68.3	-
ICG 10094	1374	135.0	-8.1	1.89	43.1	-
ICGV 86008	1581	137.0	-11.7	1.84	65.6	S
ICGV 86009	1822	96.1	-12.8	1.34	79.9	-
ICGV 86010	2077	112.0	-15.1	1.54	80.6	2T
ICGV 86011	1932	141.0	-13.0	1.94	65.9	2T
ICGV 86012	1878	84.8	-12.6	1.18	83.3	2T
ICGV 86013	2005	143.0	-13.9	1.98	67.9	2T
ICGV 86014	1637	141.0	-9.5	1.95	50.3	2T
Mean	1684	61.3	-11.49	0.85	79.6	

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Table 5

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	%VAR	Comments
ICGV 86015	1402	158.0	-8.1	2.20	35.6	-
ICGV 86016	1641	139.0	-10.1	1.92	53.7	T
ICGV 86027	1947	109.0	-13.7	1.48	80.4	-
ICGV 86028	1988	68.9	-14.4	0.94	91.1	-
ICGV 86029	2482	176.0	-17.2	2.42	68.3	T
ICGV 86031	2056	124.0	-13.7	1.71	73.7	T
ICGV 86042	1768	102.0	-11.1	1.41	73.0	2T
ICGV 86045	1596	122.0	-10.3	1.68	61.8	-
ICGV 86055	1357	133.0	-9.0	1.85	50.0	S
ICGV 86056	1506	194.0	-11.3	2.65	45.1	S
ICGV 86074	1665	94.8	-11.4	1.32	76.4	
ICGV 86094	1463	129.0	-9.5	1.77	55.0	S
ICGV 86124	1784	109.0	-11.6	1.51	71.6	2T
ICGV 86127	1561	133.0	-11.5	1.86	62.0	2S
ICGV 86162	1850	126.0	-13.6	1.77	71.8	-
ICGV 86187	1390	159.0	-11.0	2.19	51.5	S
ICGV 86187	2017	153.0	-14.2	2.11	67.1	2T
ICGV 86196	1338	93.3	-8.9	1.30	66.7	S
ICGV 86197	1078	131.0	-6.3	1.83	32.5	S
ICGV 86203	1626	114.0	-10.1	1.57	64.1	-
ICGV 86234	990	126.0	-6.4	1.73	38.1	S
ICGV 86236	2365	118.0	-17.2	1.62	83.0	T
ICGV 86240	1447	144.0	-9.8	2.02	49.7	S
ICGV 86270	1240	69.2	-8.4	0.96	76.9	S
ICGV 86309	1821	115.0	-11.4	1.58	69.2	2T
ICGV 86315	1774	135.0	-12.1	1.89	63.8	-
ICGV 86551	2219	142.0	-17.0	2.04	75.1	T
ICGV 86552	2340	155.0	-16.3	2.12	71.8	T
ICGV 86553	1821	143.0	-13.6	1.99	66.7	-
ICGV 86635	2174	219.0	-15.8	3.05	53.1	T
ICGV 86707	1854	108.0	-13.3	1.49	78.3	-
ICGV 86793	1134	142.0	-7.1	1.93	39.2	S
ICGV 86798	1211	170.0	-8.0	2.37	31.5	S
ICGV 86804	1363	168.0	-9.6	2.30	42.2	S
ICGV 86829	1459	167.0	-11.0	2.28	49.6	S
ICGV 86830	1440	137.0	-10.8	1.89	58.1	S
ICGV 86832	1007	109.0	-5.8	1.49	41.0	S
ICGV 86833	1355	125.0	-10.1	1.72	61.8	S
Mean	1684	61.7	-11.49	0.85	79.5	

Table:5

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	ZVAR	Comments
ICGV 86841	1747	122.0	-12.4	1.71	69.1	-
ICGV 86843	850	134.0	-3.8	1.86	12.7	S
ICGV 86854	948	124.0	-5.9	1.74	31.4	S
ICGV 87119	1874	152.0	-12.1	2.13	57.8	T
ICGV 87123	1743	127.0	-10.2	1.73	62.0	T
ICGV 87124	1598	87.2	-9.9	1.25	74.6	-
ICGV 87125	1461	237.0	-9.5	3.23	27.1	-
ICGV 87128	1814	244.0	-12.0	3.40	33.3	2T
ICGV 87145	2084	102.0	-14.4	1.38	83.8	T
ICGV 87148	1729	127.0	-11.6	1.74	65.6	2T
ICGV 87160	1947	119.0	-14.2	1.66	75.9	2T
ICGV 87187	1576	205.0	-8.6	2.86	26.2	-
ICGV 87191	1731	121.0	-11.6	1.66	67.8	-
Mean	1684	61.3	-11.49	0.85	79.5	

Table 6. Regression coefficients of pod yield of bunch genotype (g/m²) on water deficit applied from pod set to maturity (93-12 DAS) during 1987-88 post-rainy season, ICRISAT center.

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	%VAR	Comments
ICG 221	724	74.5	-5.1	1.07	51.8	-
ICG 1326	708	59.3	-5.4	0.87	66.0	-
ICG 1697	989	61.7	-8.4	0.92	80.8	T
ICG 1736	639	53.8	-4.0	0.74	55.8	-
ICG 1751	659	42.4	-4.2	0.58	69.1	2T
ICG 1757	645	54.2	4.7	0.75	63.4	-
ICG 1772	726	50.2	5.3	0.70	70.9	2T
ICG 1778	696	39.0	3.3	0.54	80.8	-
ICG 1826	670	51.8	-4.7	0.72	65.2	-
ICG 1859	693	47.8	6.7	0.60	73.0	2T
ICG 1908	329	72.7	2.4	1.01	17.7	S
ICG 1919	627	57.4	4.5	0.80	57.9	-
ICG 1928	582	29.9	5.2	0.41	87.7	-
ICG 1992	605	65.9	4.0	0.90	45.6	-
ICG 1994	671	61.6	-4.9	0.86	59.2	-
ICG 1995	608	51.0	4.1	0.45	80.3	-
ICG 1996	712	39.1	5.4	0.54	81.8	-
ICG 2716	762	112.0	6.8	1.59	45.6	2T
ICG 2951	621	36.2	4.0	0.51	72.2	-
ICG 2964	732	45.9	-5.6	0.63	77.8	-
ICG 2992	671	59.2	5.0	0.81	62.2	-
ICG 3076	562	92.6	-3.7	1.28	24.6	-
ICG 3093	661	52.3	4.4	0.51	76.8	-
ICG 3101	720	47.1	5.6	0.60	80.2	-
ICG 3104	797	61.5	5.6	0.84	65.5	T
ICG 3119	613	88.6	4.1	1.22	51.4	2T
ICG 3147	818	53.7	6.3	0.75	75.8	-
ICG 3164	638	51.2	-3.6	0.72	52.2	-
ICG 3171	757	87.4	-5.5	1.20	46.6	2T
ICG 3172	632	61.1	-4.3	0.86	51.7	2S
ICG 3179	710	36.1	5.0	0.50	81.1	T
ICG 3187	586	80.8	-3.8	1.11	32.0	-
ICG 3203	503	73.3	-3.1	1.03	26.7	-
Mean	647	24.2	-4.69	0.33	80.7	

Table:6

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	%VAR	Comments
ICG 3433	653	90.4	-4.5	1.24	34.8	-
ICG 4589	725	49.0	-5.4	0.67	73.9	-
ICG 4593	614	66.9	-4.2	0.92	46.9	-
ICG 4664	651	43.8	-4.5	0.61	70.5	-
ICG 4705	702	65.1	-5.2	0.89	59.7	-
ICG 4750	799	71.5	-5.1	0.98	53.4	T
ICG 5033	180	40.9	-0.8	0.56	5.1	S
ICG 5575	645	75.9	-4.3	1.06	40.7	-
ICG 6006	687	71.5	-4.6	0.98	48.5	-
ICG 7355	762	50.9	-5.3	0.70	71.4	2T
ICG 7388	643	68.1	-4.7	0.95	51.9	-
ICG 7408	503	79.5	-2.6	1.11	16.9	-
ICG 7499	659	43.2	-5.3	0.59	77.4	-
ICG 7512	676	67.7	-5.3	0.93	57.7	-
ICG 7812	668	55.7	-4.7	0.78	60.8	2T
ICG 7827	649	55.8	-4.7	0.81	61.8	-
ICG 8048	736	68.0	-5.7	0.93	61.8	-
ICG 8223	660	85.0	-4.6	1.18	38.4	-
ICG 8230	664	56.7	-4.1	0.78	54.2	T
ICG 8364	692	44.6	-5.1	0.62	74.4	-
ICG 8477	720	54.1	-5.4	0.76	68.8	-
ICG 8568	702	50.2	-5.3	0.69	71.8	-
ICG 8581	726	48.9	-5.6	0.68	64.8	-
ICG 8599	640	56.9	-5.0	0.81	62.3	2S
ICG 8702	669	32.9	-5.2	0.45	84.8	2S
ICG 8852	725	50.1	-5.4	0.69	72.6	2T
ICG 8857	621	57.9	-3.9	0.81	48.6	2T
ICG 9399	542	47.9	-3.4	0.65	53.1	-
ICG 9510	608	54.2	-4.9	0.74	65.2	2S
ICG 9832	594	57.2	-4.3	0.80	55.6	2S
ICG 10081	457	79.3	-2.4	1.09	14.6	-
ICG 10086	647	64.9	-4.8	0.90	54.5	-
ICG 10094	543	61.8	-3.6	0.86	41.8	2S
ICGV 86008	612	60.5	-4.8	0.83	59.4	S
ICGV 86009	719	53.1	-5.8	0.74	72.8	-
ICGV 86010	804	43.9	-6.5	0.60	83.7	-
ICGV 86011	722	51.2	-5.5	0.70	72.4	-
ICGV 86012	762	41.6	-5.6	0.58	80.3	2T
ICGV 86013	838	46.9	-6.6	0.65	81.8	2T
ICGV 86014	674	45.5	-4.4	0.63	67.8	-
Mean	647	24.2	-4.69	0.33	80.7	

Table:6

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	%VAR	Comments
ICGV 86015	536	72.0	-3.1	1.00	27.5	-
ICGV 86016	646	65.4	-3.9	0.90	43.6	T
ICGV 86027	651	63.9	-4.9	0.88	57.2	-
ICGV 86028	788	39.7	-6.4	0.54	85.8	-
ICGV 86029	866	83.2	-6.8	1.15	60.2	2T
ICGV 86031	780	48.0	-5.7	0.66	76.4	-
ICGV 86042	783	40.5	-5.4	0.56	80.6	2T
ICGV 86045	628	45.0	-4.3	0.62	67.7	-
ICGV 86055	562	67.9	-3.9	0.95	41.9	-
ICGV 86056	584	72.7	-4.2	1.08	39.2	2T
ICGV 86074	711	45.8	-5.1	0.64	73.6	-
ICGV 86094	570	44.6	-3.6	0.61	60.7	2S
ICGV 86124	737	33.8	-5.5	0.47	85.6	-
ICGV 86127	590	52.8	-5.0	0.74	67.0	S
ICGV 86162	778	59.7	-5.8	0.83	67.5	-
ICGV 86187	565	70.7	-4.6	0.97	49.3	S
ICGV 86187	794	74.1	-6.1	1.02	61.5	2T
ICGV 86196	522	50.6	-3.9	0.70	56.8	S
ICGV 86197	799	67.1	-2.4	0.94	20.9	S
ICGV 86207	674	56.9	-4.7	0.78	60.6	-
ICGV 86274	773	62.1	-2.5	0.87	25.4	S
ICGV 86236	945	77.9	-7.4	1.07	67.8	T
ICGV 86240	576	56.2	-4.1	0.78	53.7	-
ICGV 86270	482	25.0	-3.6	0.35	82.2	S
ICGV 86309	751	66.8	-5.1	0.92	57.2	2T
ICGV 86315	579	43.9	-4.3	0.61	68.6	2S
ICGV 86551	797	69.1	-6.7	0.96	67.5	-
ICGV 86552	868	51.1	-6.9	0.70	80.8	-
ICGV 86553	697	50.1	-5.8	0.70	75.2	-
ICGV 86635	658	66.1	-4.5	0.92	50.2	2T
ICGV 86707	573	53.7	-4.6	0.74	63.5	2S
ICGV 86793	416	54.0	-2.6	0.75	34.3	S
ICGV 86798	787	61.2	-2.5	0.86	24.7	S
ICGV 86804	503	53.0	-3.9	0.73	56.0	S
ICGV 86829	580	52.6	-4.6	0.74	63.3	2S
ICGV 86830	534	54.2	-4.2	0.75	57.1	S
ICGV 86832	369	44.0	-2.3	0.61	37.4	S
ICGV 86833	510	65.5	-3.9	0.91	44.2	S
Mean	647	24.2	-4.69	0.33	80.7	

Table:6

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	ZVAR	Comm
ICGV 86841	649	50.2	-5.0	0.70	68.4	2S
ICGV 86843	330	55.6	-1.8	0.77	16.6	S
ICGV 86854	389	58.3	-2.6	0.81	29.8	S
ICGV 87119	759	48.6	-5.4	0.68	73.3	T
ICGV 87123	641	53.1	-3.7	0.74	51.8	T
ICGV 87124	670	41.6	-4.8	0.58	75.2	-
ICGV 87125	528	92.0	-3.4	1.29	21.5	-
ICGV 87128	650	89.6	-4.3	1.25	32.2	2T
ICGV 87145	802	47.5	-6.3	0.66	79.6	-
ICGV 87148	676	54.0	-4.8	0.74	64.1	2T
ICGV 87160	725	50.0	-5.2	0.70	70.7	-
ICGV 87187	577	68.0	-3.4	0.95	35.1	2T
ICGV 87191	698	56.3	-5.4	0.77	67.9	-
Mean	647	24.2	-4.69	0.33	80.7	

Table 7. Regression coefficients of Total biomass (g/m²) of virginia bunch genotypes on water deficit applied from flowering to maturity (40-130 DAS).

Genotype	Constant (g m ⁻²)	S.E.	Slope (g m ⁻² % water deficit ⁻¹)	S.E.	XVAR	Comments
ICGV 86004	2756.00	149.00	-25.91	2.08	87.5	-
ICGV 86005	1969.00	177.00	-16.18	2.56	65.0	-
ICGV 86018	1147.00	186.00	-12.01	2.68	46.4	S
ICGV 86030	2562.00	126.00	-23.61	1.77	88.5	-
ICGV 86033	2282.00	169.00	-20.57	2.41	75.8	-
ICGV 86034	2301.00	167.00	-20.33	2.31	78.4	-
ICGV 86548	1981.00	138.00	-17.49	2.01	77.2	-
ICGV 86549	2287.00	125.00	-20.55	1.80	85.5	-
ICGV 86555	1452.00	156.00	13.14	1.91	66.9	S
ICGV 86558	2451.00	211.00	-23.51	2.99	72.6	-
ICGV 86564	2241.00	120.00	-20.79	1.69	86.7	-
ICGV 87121	2177.00	122.00	-17.58	1.71	82.6	T
ICGV 87137	1793.50	92.60	15.79	1.31	86.3	-
ICGV 87141	2273.00	103.00	-20.81	1.45	89.9	-
ICGV 88240	692.00	113.00	6.39	1.61	39.1	+
ICGV 88241	2041.00	215.00	-19.66	3.03	64.1	-
ICGV 88242	2160.00	181.00	-18.84	2.57	69.6	-
ICGV 88243	2297.00	119.00	22.44	1.68	88.5	S
ICGV 88244	1958.00	196.00	17.80	2.81	63.9	2S
ICGV 88245	2377.70	98.10	-23.05	1.38	92.4	-
Mean	2111.90	80.5	19.13	1.14	81.5	

+ Poor germination, excluded for the mean.

Table 8. Regression coefficients of pod yield (g/m^2) of virginia bunch genotypes on water deficit applied from flowering to maturity (40-120 DAS).

Genotype	Constant ($g\ m^{-2}$)	S.E. %	Slope ($g\ m^{-2}$)	S.E. water	%VAR	Comments deficit ⁻¹)
ICGV 86004	905.70	78.50	-9.81	1.11	77.1	S
ICGV 86005	736.00	52.00	-7.62	0.74	82.1	-
ICGV 86018	376.60	44.10	-4.19	0.64	65.8	S
ICGV 86030	705.40	54.60	-7.57	0.77	80.6	2S
ICGV 86033	675.50	50.70	-7.11	0.72	80.7	2S
ICGV 86034	638.00	36.30	-6.32	0.51	87.4	-
ICGV 86548	732.30	37.60	-7.57	0.53	89.7	-
ICGV 86549	876.20	44.70	-8.67	0.63	89.1	T
ICGV 86555	441.70	30.90	-4.76	0.43	83.8	S
ICGV 86558	625.10	57.10	-6.57	0.81	73.9	2S
ICGV 86564	569.00	44.80	-6.15	0.63	80.3	2S
ICGV 87121	852.50	45.80	-8.38	0.65	87.8	T
ICGV 87137	712.20	39.10	-6.95	0.55	87.3	-
ICGV 87141	901.00	41.50	-9.37	0.59	91.7	2T
ICGV 88240	226.70	36.70	-2.29	0.52	44.2	+
ICGV 88241	642.50	51.20	-6.70	0.72	78.8	S
ICGV 88242	714.30	53.50	-7.57	0.76	81.0	-
ICGV 88243	709.90	54.40	-7.45	0.77	80.0	2S
ICGV 88244	575.50	34.90	-5.79	0.50	85.8	-
ICGV 88245	585.60	35.80	-6.20	0.50	86.8	S
MEAN	684.60	22.50	-7.11	0.32	79.5	

+ Poor germination, excluded for the mean.

Table 9. Regression coefficients of Total biomass (g/m²) of Virginia bunch genotypes on water deficit applied from pod set to maturity.

Genotype	Constant (g m ⁻²)	S.E. %	Slope (g m ⁻²)	S.E. water	XVAR	Comments deficit ⁻¹)
ICGV 86004	2288.00	195.00	-15.79	2.68	59.5	T
ICGV 86005	1755.00	194.00	-9.89	2.66	35.8	T
ICGV 86018	636.00	299.00	-2.47	4.21	8	
ICGV 86030	2194.00	319.00	-13.18	4.38	25.9	T
ICGV 86033	2071.00	172.00	-13.95	2.36	59.6	2T
ICGV 86034	1606.00	131.00	-9.96	1.83	55.5	-
ICGV 86548	1881.00	247.00	-10.93	3.56	28.7	T
ICGV 86549	2017.00	207.00	-10.96	2.89	36.7	T
ICGV 86555	1980.00	142.00	-16.59	1.99	74.9	S
ICGV 86558	1621.00	146.00	-11.33	2.01	57.4	2S
ICGV 86564	1524.00	157.00	-7.99	2.15	35.8	-
ICGV 87121	1823.00	133.00	-11.25	1.83	61.6	2T
ICGV 87137	1790.00	145.00	-11.70	2.06	58.7	T
ICGV 87141	1643.00	142.00	-10.92	1.95	57.0	-
ICGV 88240	1043.00	323.00	8.71	4.27	11.9	+
ICGV 88241	984.00	233.00	-5.26	3.19	7.0	S
ICGV 88242	2146.00	205.00	-14.28	2.86	50.9	T
ICGV 88243	2140.00	162.00	-16.25	2.26	68.7	2T
ICGV 88244	1633.00	157.00	-10.36	2.18	48.3	-
ICGV 88245	1898.00	147.00	-13.93	2.06	67.1	-
Mean	1828.00	100.00	-12.59	1.39	54.0	

+ Poor germination, excluded for the mean.

Table 10. Regression coefficients of pod yield (g/m^2) of virginia bunch genotypes on water deficits applied from pod set to maturity (93-133 DAS).

Genotype	Constant (g m^{-2})	S.E. %	Slope (g m^{-2})	S.E. water	%VAR	Comments deficit $^{-1}$)
ICGV 86004	820.00	103.00	-6.87	1.41	49.6	T
ICGV 86005	675.10	94.50	-5.25	1.29	40.2	2T
ICGV 86018	255.10	89.40	-1.91	1.26	5.6	S
ICGV 86030	793.30	85.80	-6.90	1.18	59.1	2T
ICGV 86033	630.30	56.70	-5.14	0.78	64.9	-
ICGV 86034	540.00	59.50	-4.57	0.83	56.1	2S
ICGV 86548	782.00	121.00	-6.17	1.69	35.0	T
ICGV 86549	842.20	57.60	-6.33	0.80	72.6	T
ICGV 86555	626.80	48.10	-6.07	0.67	77.8	S
ICGV 86558	544.80	68.90	-4.87	0.94	52.6	S
ICGV 86564	544.80	69.30	-4.76	0.95	51.2	2S
ICGV 87121	794.00	53.40	-6.11	0.73	74.8	2T
ICGV 87137	814.40	86.50	-6.86	1.23	57.9	T
ICGV 87141	687.00	62.70	-5.36	0.86	62.2	2T
ICGV 88240	339.00	106.00	-3.01	1.46	12.5	*
ICGV 88241	342.00	82.40	-2.48	1.13	14.2	S
ICGV 88242	865.30	77.90	-7.60	1.09	67.6	-
ICGV 88243	817.60	48.70	-7.44	0.68	83.7	-
ICGV 88244	573.30	73.50	-4.81	1.02	47.8	-
ICGV 88245	406.40	48.00	-3.24	0.67	50.2	-
MEAN	653.5	37.60	-5.43	0.52		

* Poor germination, excluded for the mean.

Table 11. List of groundnut genotypes with above average performance in two drought treatments, ICRISAT Center.

Postrainy season 1987-88
Experiment 'A'

T1		T2	
TB	TP	TB	TP
ICG 1919	-	ICG 1697	ICG 1697
ICGV 86236	-	ICG 3179	ICG 3104
ICGV 86635	-	ICG 4750	ICG 3179
ICGV 87187	-	ICG 6006	ICG 4750
	-	ICG 8230	ICG 8230
	-	ICGV 86016	ICGV 86016
	-	ICGV 86029	ICGV 86236
	-	ICGV 86031	ICGV 87119
	-	ICGV 86236	ICGV 87123
	-	ICGV 86551	
	-	ICGV 86552	
	-	ICGV 86635	
	-	ICGV 87119	
	-	ICGV 87123	
	-	ICGV 87145	

TB: Genotypes which produced significantly higher total dry matter at all levels of water deficits, in the three replications compared to the mean of all entries.

TP: Genotypes which produced significantly higher pod yields at all levels of water deficits, in the three replications compared to the mean of all entries.

Table 12. List of groundnut genotypes with above average performance in two drought treatments, ICRISAT Center.

Postrainy season 1987-88
Experiment 'B'

T1		T2	
TB	TP	TB	TP
ICGV 87121 /	ICGV 86549	ICGV 86004 /	ICGV 86004 /
	ICGV 87121 /	ICGV 86005	ICGV 86548 /
		ICGV 86030	ICGV 86549 /
		ICGV 86548 /	ICGV 87137 /
		ICGV 86549 /	
		ICGV 87137 /	
		ICGV 88242	

TB: Genotypes which produced significantly higher total dry matter at all levels of water deficits, in the three replications compared to the mean of all entries.

TP: Genotypes which produced significantly higher pod yields at all levels of water deficits, in the three replications compared to the mean of all entries.