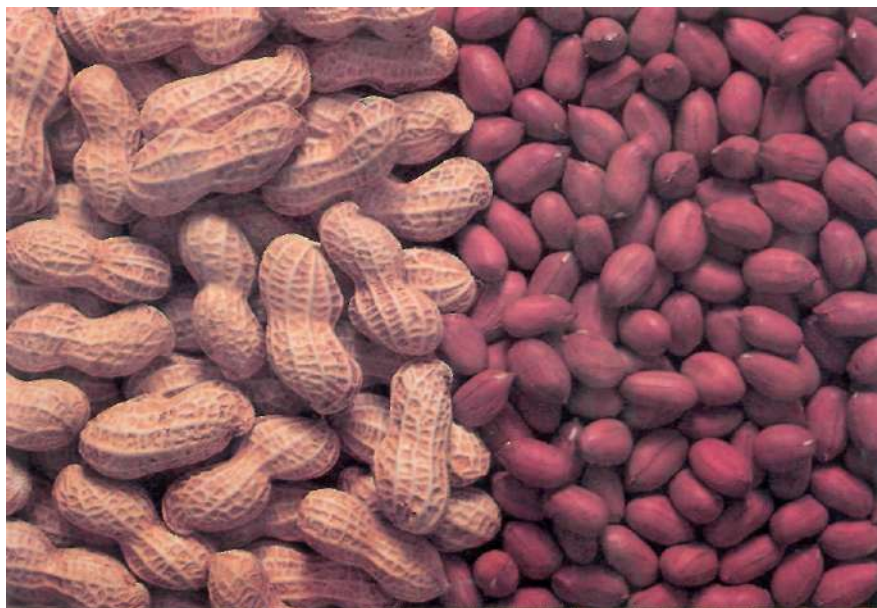

Groundnut Elite Germplasm

ICGV-SM 83708

- Widely adapted, high-yielding, alternately branched breeding line suitable for red skin and confectionery trades
- Released in 1990 as CG 7 in Malawi and in 1991 as MG V 4 in Zambia
- Matures in about 135 days in Zambia and Malawi
- 100-seed mass of 61-64 g
- Shelling turnover of 68-72%



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Plant Material Description no. 51

International Crops Research Institute for the Semi-Arid Tropics
Patancheru 502 324, Andhra Pradesh, India

Purpose of Description

ICGV-SM 83708 is a high-yielding, elite breeding line released in 1990 as CG 7 in Malawi and in 1991 as MG 4 in Zambia. It has also performed very well in Zimbabwe, and in areas of moderate rainfall in West Africa.

It is suitable for red skin and confectionery trades, as it has red seed, uniform seed size, and is easy to blanch.

Origin and Development

ICGV-SM 83708 (also known as ICGMS 42) originated from a single plant selection made in the F₂ generation of a cross between USA 20 and TMV 10 in 1977/78 at ICRISAT Asia Center, Patancheru, India. The plant was progeny-rowed in the next generation and the selected phenotypically similar plants were bulked at harvest. This bulk was advanced to subsequent generations by bulking the phenotypically similar plants at harvest until the bulk was stabilized. The pedigree of ICGV-SM 83708 is (USA 20 x TMV 10) F₂-P₃-B₁-B₁-B₁-B₁-B₁-B₁-B₁.

ICGV-SM 83708 was introduced in the Southern African Development Community (SADC)/ICRISAT Groundnut Project, Malawi, in 1982 as an advanced breeding line. After initial evaluation in the 1982/83 season in Malawi, it was included in the regional groundnut varietal trial of the SADC region in 1983/84 as ICGMS 42. Subsequently, it was designated ICRISAT-SM 83708. After extensive evaluation in regional, national, and on-farm trials, it was released in Zambia and Malawi.

Performance

ICGV-SM 83708 was tested against local cultivars, Chalimbana, Chitembana, Mani Pintar, and Mawanga in different yield trials during the 1983/84-1991/92 seasons in Malawi. It produced an average pod yield of 3.35 t ha⁻¹ compared with 2.48 t of Chalimbana in 14 trials, 2.39 t compared with 2.16 t of Mawanga in 10 trials, 1.96 t compared with 1.64 t of Chitembana in 5 trials, and 2.61 t compared with 2.25 t of Mani Pintar in 6 trials. Pod yield advantage in ICGV-SM 83708 over these cultivars ranged from 11 to 35%. In Zambia ICGV-SM 83708 was tested against Makulu Red for 5 seasons (1983/84, 1985/86 to 1988/89) in 10 trials. It gave, on average, 10% greater pod yield than Makulu Red which produced 1.75 t pod ha⁻¹. Pod and seed yields of ICGV-SM 83708 and local control cultivars in regional yield trials conducted during 1983/84 to 1991/92 are given in Table 1.

Plant Characters

ICGV-SM 83708 belongs to the Virginia botanical group (*Arachis hypogaea* subsp. *hypogaea*) and has erect to decumbent-3 growth habit, alternate flowering, medium-sized dark green elliptic leaves.

Table 1. Pod and seed yields (t ha⁻¹) of ICGV-SM 83708 (ICGMS 42) and local cultivars in various regional groundnut varietal trials, 1983/84 – 1991/92.

Year	Variety	Malawi				Zambia			
		Chitedze		Meru		Msekera		Golden Valley	
		Pod	Seed	Pod	Seed	Pod	Seed	Pod	Seed
1983/84	ICGMS 42	2.65	1.99	2.49	1.81	2.53	1.80	1.38	0.81
	Control	2.38	1.76	2.49	1.67	2.56	1.73	1.03	0.45
	SE	±0.090	-	±0.197	±0.138	±0.131	±0.096	±0.132	±0.071
	Trial mean (16 entries)	1.63	-	2.19	1.46	1.93	1.34	1.14	0.66
	CV (%)	11	-	18	19	14	14	23	22
	Control	Mani Pintar		Mani Pintar		Makulu Red		Makulu Red	
1984/85	ICGMS 42	3.20	2.40	-	-	2.43	1.75	2.63	1.68
	Control	2.93	2.17	-	-	2.89	2.07	2.68	1.66
	SE	±0.109	-	-	-	±0.112	±0.074	±0.135	±0.131
	Trial mean (16 entries)	2.07	-	-	-	1.98	1.31	2.13	1.37
	CV (%)	11	-	-	-	11	11	12	19
	Control	Chitembana		Local		Local		Local	
1985/86	ICGMS 42	3.73	2.80	-	-	3.22	2.30	2.29	1.30
	Control	3.01	2.14	-	-	3.03	2.07	1.98	0.99
	SE	±0.049	-	-	-	±0.098	±0.069	±0.124	±0.096
	Trial mean (16 entries)	2.45	1.78	-	-	2.01	1.35	1.67	0.99
	CV (%)	4	-	-	-	10	10	15	20
	Control	Chitembana		Makulu Red		Makulu Red		Makulu Red	
1986/87	ICGMS 42	2.61	2.04	1.80	1.27	2.69	1.76	-	-
	Control	2.34	1.66	1.38	0.78	2.34	1.39	-	-
	SE	±0.084	±0.062	±0.194	±0.123	±0.082	±0.072	-	-
	Trial mean (16 entries)	2.32	1.73	1.38	0.79	1.93	1.14	-	-
	CV (%)	7	7	28	31	8	13	-	-
	Control	Mawanga		Mani Pintar		Makulu Red		-	
1987/88	ICGMS 42	2.43	1.84	1.41	1.06	2.38	1.63	-	-
	Control	2.06	1.52	0.60	0.35	2.30	1.49	-	-
	SE	±0.107	±0.074	±0.157	±0.139	-	±0.069	-	-
	Trial mean (16 entries)	2.20	1.56	1.23	0.83	2.04	1.35	-	-
	CV (%)	10	10	26	35	-	10	-	-
	Control	Mani Pintar		Chitembana		Makulu Red		-	
1988/89	ICGMS 42	3.97	3.00	-	-	0.95	0.57	-	-
	Control	3.00	2.16	-	-	0.95	0.67	-	-
	SE	-	±0.092	-	-	-	±0.087	-	-
	Trial mean (16 entries)	-	2.21	-	-	-	0.65	-	-
	CV (%)	-	8	-	-	-	28	-	-
	Control	Mani Pintar		Makulu Red		Makulu Red		-	
1991/92	ICGMS 42	3.43	2.29	-	-	2.47	1.73	-	-
	Control	2.63	1.66	-	-	2.17	1.47	-	-
	SE	-	-	-	-	±0.172	±0.121	-	-
	Trial mean (16 entries)	-	-	-	-	2.54	1.67	-	-
	CV (%)	-	-	-	-	14	14	-	-
	Control	Chalimbana		MGS 2		MGS 2		-	

Pod/Seed Characters

ICGV-SM 83708 has mainly 2-seeded pods which are characterized by a slight beak, moderate to deep constriction, moderate reticulation, and absent to slight ridges. One- and three-seeded pods occur occasionally. The pod length averages 41 mm and the pod breadth averages 14 mm. Its average shelling turnover varies between 68 and 74% and average 100-seed mass between 61 and 64 g depending upon the location. The seeds of ICGV-SM 83708 are red and uniform in size and shape; very few seeds have flat end surfaces. They blanch easily unlike Chalimbana. Its oil content in Malawi averages 47%. The oleic to linoleic acid ratio of ICGV-SM 83708 (1.88) is superior to that of Chalimbana (1.20), Chitembana (1.64), Mani Pintar (1.43), and Mawanga (1.58).

Reaction to Diseases and Insect Pests

ICGV-SM 83708 is as susceptible to early leaf spot and rosette disease of groundnut as Chalimbana in Malawi and Makulu Red in Zambia. It is also susceptible to rust and late leaf spot, reacting similarly to these diseases as Kadiri 3 in India. Its reaction to insect pests is not known in Malawi and Zambia but in India, its susceptibility to jassid and leafminer is similar to that of Kadiri 3.



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Plant Material Descriptions

from the

International Crops Research Institute for the Semi-Arid Tropics

Brief descriptions of crop genotypes identified or developed by ICRISAT, including:

- germplasm accessions with important agronomic or resistance attributes;
- breeding materials, both segregating and stabilized, with unique character combinations;
- cultivars that have been released for cultivation.

These descriptions announce the availability of plant material, primarily for the benefit of the Institute's cooperators. Their purpose is to facilitate the identification of cultivars and breeding lines and to promote their wide utilization. Requests for seed should be addressed to the Director General, ICRISAT, or to appropriate seed suppliers. Materials for research are sent by ICRISAT to cooperators and other users free of charge.