Groundnut Elite Germplasm ICGV 87157 [ICG (FDRS) 4]

- **A high-yielding breeding line resistant to rust and tolerant of late leaf spot**
- **Matures in 110** days **in the rainy season in India**
- **Shows less bud necrosis disease incidence under field conditions than the popular Indian cultivars, JL 24 and Kadiri 3**
- **Tolerant of stem and pod rot *(Sclerotium rolfsii)***
- **Less susceptible to attack by leaf miner and leaf hopper compared to JL 24**
- **Shows good recovery from mid-season drought**
- **Average shelling turnover 64%**
- **Average oil content 48%**

ICRISAT

Plant Material Description no. 29

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

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Purpose of Description

ICGV 87157 [ICG (FDRS)4] is a high-yielding breeding line possessing resistance to/ tolerance of multiple diseases and insect pests of groundnut. It is being used extensively as a parent in hybridization by many national programs.

Origin and Development

ICGV 87157 was bred at ICRISAT Center, India. It originated from a single plant selection made in an F_3 population of a cross between a Spanish variety, Argentine, and a rust and late leaf spot resistant parent, PI 259747, in the foliar diseases screening nursery. The single plant progeny was further advanced following bulk selection in the disease nursery. It is adapted to low-input rainfed areas where rust and late leaf spot diseases are a problem.

Performance

ICGV 87157 was tested during 1983 to 1985 for pod yield in the All India Coordinated Research Project on Oilseeds (AICORPO) trials. It consistently outyielded the popular Indian cultivars, JL 24, TMV 2, and J 11. Outside India, it outyielded local cultivars in Swaziland, Malawi, Myanmar, and the Philippines (Table 1), and showed better stability of performance in international trials conducted at seven locations.

ICGV 87157 is resistant to rust and tolerant of late leaf spot (Table 2). It has maintained its rust resistance superiority over the local cultivars in India, Thailand, Bangladesh, Republic of Guinea, and the Philippines. Similarly, it showed higher levels of tolerance of late leaf spot in India, Guinea, Sudan, and Myanmar.

In addition, ICGV 87157 also possesses resistance to/tolerance of other diseases (bud necrosis, and stem and pod rots caused by *Sclerotium rolfsii)* and insect pests (groundnut leaf miner and leaf hopper) (Table 3).

It shows better recovery for pod yield and total biomass from mid-season drought compared to the mean values of 121 erect bunch varieties tested in a line-source sprinkler screening technique at ICRISAT Center.

Plant Characters

ICGV 87157 belongs to the Spanish type (natal cultivar group) and has an erect growth habit, sequential flowering, and medium to medium-large elliptic light green leaves. It has four primary branches. Secondary branches are absent. It matures in about 110 days in the rainy season, and has a shelling turnover of 64%.

Pod/Seed Characters

ICGV 87157 has moderately reticulated pods with slight to prominent ridges. The pods are stubby and mostly two-seeded. The seeds are tan-colored, with a 100-seed mass of 42 g. They contain an average 48% oil and 25% protein.

Table 1. Pod yield of ICGV 87157 and local groundnut varieties in various countries.

Country	Pod yield (t ha^{-1})		% improvement over the local variety
	ICGV 87157	Local variety	
India[1]	2.10	1.70 (JL 24)[3]	23.5
Swaziland	2.40	1.6 (Natal Common)	50.0
Malawi	1.20	0.97 (Malimba)	23.7
Myanmar[2]	1.08	0.61 (Japanese Small)	77.0
Philippines	2.70	1.45 (BPI Pn-9)	86.2

1. Based on data from seven locations.
2. Based on data from two locations.
3. Names in the parentheses refer to local varieties.

Table 2. Reaction of ICGV 87157 and local groundnut varieties to rust and late leaf spot diseases.

Variety	Disease[1]	Country						
		India	Rep. of Guinea	Myanmar	Philip-pines	Sudan	Thai-land	Bangla-desh
ICGV 87157	Rust	2.7[2]	4.2[4]	–[7]	1.0	-	2.5	2.0
	Late leaf spot	5.23	3.1	6.4[5]	4.7	2.1	4.3	9.0
Local	Rust	7.5	7.4	-	1.3	-	4.7	4.0
	Late leaf spot	7.6 (JL 24)[6]	5.6	6.6 (Japanese Small)	4.0 (BPI Pn-9)	3.8 (Kiriz)	5.2 (Tainan 9)	9.0 (Dacca 1)

1. Scored on a 1-9 scale, where 1 = no disease, and 9 = 50-100% foliage destroyed.
2. Mean of five locations in India.
3. Mean of six locations in India.
4. Mean of 2 years' data.
5. Mean of two locations.
6. Names in parentheses refer to local varieties.
7. - Not reported.

Table 3. Reactions of ICGV 87157 and some Indian cultivars to other diseases and insect pests.

Variety	Bud necrosis disease (%)[1]		*Sclerotium- rolfsii* (%)[2]		Leaf miner (score[3])	Leaf hopper (score[4])
	Loc. 1	Loc. 2	Stem rot	Pod rot		
ICGV 87157	10.2	16.7	8.0	40.8	7.5	6.2
Controls						
JL 24	50.8	38.1	-	-	8.7	7.2
Kadiri 3	-[5]	19.7	7.0	64.4	-	-
Gangapuri	-	–	18.0	76.2	-	-
TMV 2	–	35.0	-	-	-	-

1. Loc. 1: ICRISAT Center, 1987/88 postrainy season; Loc. 2: Palem, A.P. 1986 rainy season. Disease expressed as a percentage of infected plants.
2. Evaluated at ICRISAT Center, 1987/88 postrainy season. Stem rot expressed as a percentage of infected plants and pod rot as a percentage of infected pods.
3. Mean of four trials; scored on a 1-9 scale where 1 = no damage and 9 = 100% foliage dried.
4. Mean of two trials; scored on a 1-9 scale where 1 = no yellowing and 9 = 90-100% yellowed leaves.
5. - = Scores not available from the same trial(s).

Plant Material Descriptions from ICRISAT

Leaflets in this series provide 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; and
- 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 lines and promote their wide utilization. Requests should be addressed to the Director General, ICRISAT, or to appropriate seed suppliers. Stocks for research use issued by ICRISAT are sent to cooperators and other users free of charge.

ICRISAT is a nonprofit, scientific, research and training institute receiving support from donors through the Consultative Group on International Agricultural Research. Its major mandate is to serve as a world center for the improvement of grain yield and quality of sorghum, millet, chickpea, pigeonpea, and groundnut, and to act as a world repository for the genetic resources of these crops. The plant materials announced in these leaflets are end-products of this work, which is aimed at enhancing the agricultural productivity of resource-poor farmers throughout the semi-arid tropics.

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