

Groundnut Cultivar Nyanda (ICGV 93437) Released in Zimbabwe

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Purpose of description

The government of Zimbabwe in 2000 released the groundnut (*Arachis hypogaea*) variety ICGV 93437 as Nyanda for commercial cultivation in the country. Cultivar Nyanda significantly out-yielded the popular cultivar Falcon by 13.5%. It matures earlier than Falcon by six days and is almost similar to Falcon in shelling outturn and seed size.

Origin and development

Cultivar Nyanda (ICGV 93437) is an early-maturing,

high-yielding, Spanish (*A. hypogaea* subsp *fastigiata* var *vulgaris*) breeding line developed at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India during 1990s. It was derived from a cross between two early-maturing advanced breeding lines, ICGV 86063 and ICGV 86065, developed at ICRISAT, Patancheru. The full pedigree and selection history of ICGV 93437 is:

ICGV 86063 × ICGV 86065 F₂-P₃₀-B₁-B₁-B₁
(P refers to plant selection and B to bulk.)

ICGV 86063 originated from Ah 65 × Chico cross and ICGV 86065 from Var. 2-5 × Robut 33-1 cross. Ah 65 and Chico are Spanish germplasm lines from USA, the latter being early-maturing (Bailey and Hammons 1975). Var. 2-5 and Robut 33-1 (also known as Kadiri 3) are Indian cultivars, the former being Spanish and the latter Virginia (*A. hypogaea* subsp *hypogaea* var *hypogaea*) bunch type.

Agronomic performance

Yield trials including the breeding line ICGV 93437 and two controls, JL 24, an early-maturing and high-yielding Indian cultivar, and Chico, an early-maturing germplasm

Table 1. Pod yield of groundnut cultivar ICGV 93437 under 1240°Cd crop duration in the rainy season (R) and postrainy season (PR) during 1993–96 at ICRISAT, Patancheru, India.

Cultivar	Pod yield (t ha ⁻¹)					Increase (%) over control	
	R 1993	R 1995	PR 1993/94	PR 1995/96	Mean	JL 24	Chico
ICGV 93437	1.62	1.29	0.99	2.38	1.57	29.8	48.1
JL 24 (control)	1.31	0.77	0.50	2.27	1.21		
Chico (control)	0.71	0.76	0.36	2.40	1.06		
SE±	0.083	0.062	0.065	0.057			
Trial mean	1.20	1.09	0.95	2.52			
CV (%)	12	10	12	4			

Table 2. Pod yield of groundnut cultivar ICGV 93437 under 1470°Cd crop duration in the rainy season (R) and postrainy season (PR) during 1994–96 at ICRISAT, Patancheru, India.

Cultivar	Pod yield (t ha ⁻¹)					Increase (%) over control	
	R 1994	R 1995	PR 1994/95	PR 1995/96	Mean	JL 24	Chico
ICGV 93437	1.26	1.62	2.07	2.97	1.98	13.1	47.8
JL 24 (control)	1.33	1.08	2.00	2.58	1.75		
Chico (control)	0.57	0.73	1.24	2.83	1.34		
SE±	0.058	0.064	0.069	0.087			
Trial mean	1.43	1.21	2.31	2.96			
CV (%)	7	9	5	5			

Table 3. Performance of ICGV 93437 and control cultivar Falcon in Zimbabwe, 1996–2001.

Cultivar	Days to maturity ¹	Pod yield ² (t ha ⁻¹)	Increase (%) over Falcon	Shelling outturn ¹ (%)	100-seed mass ¹ (g)
ICGV 93437	115	1.76	13.5	73	28
Falcon	121	1.55		72	29

1. Mean based on 42 trials.

2. Mean based on 51 trials.

Table 4. Morphological, agronomical and seed quality traits of groundnut cultivar ICGV 93437.

Trait	Description
Cultivar group	Spanish
Growth habit	Erect
Branching pattern	Sequential
Stem pigmentation	Green
Leaf characters	
Size	Large
Shape	Wide elliptic
Color	Green
Flower color	
Standard	Orange-yellow
Crescent	Yellow
Wing petal	Yellow
Pod characters	
Pod beak	Slight
Pod constriction	Slight
Pod reticulation	Slight
Pod ridge	Slight
Seeds per pod	2-1-3
Pod length ¹ (mm)	25.1
Pod breadth ¹ (mm)	12.1
Shelling outturn ² (%)	71
Seed characters	
Seed length ¹ (mm)	12.5
Seed breadth ¹ (mm)	9.1
100-seed mass ² (g)	33
Seed color	Tan
Seed quality characters	
Oil ² (%)	45.7
Protein ³ (%)	23.5
Maturity ⁴ (days)	90

1. Kadoma Research Center, Zimbabwe, 1999/2000.

2. Average of 4 seasons at 1470°Cd at ICRISAT, Patancheru, India.

3. Average of 3 seasons at 1470°Cd at ICRISAT, Patancheru, India.

4. Recorded on rainy season crop at ICRISAT, Patancheru, India.

line from USA were conducted at ICRISAT, Patancheru during 1993–96, in two rainy and two postrainy seasons. The trials were sown in Alfisol fields, in triple lattice design, in 6 m² plots under broad-bed and furrow system. A fertilizer dose of 60 kg P₂O₅ and 400 kg gypsum ha⁻¹ were applied and the crops were raised under full irrigation and plant protection care.

The trials were harvested when the crop accumulated 1240°Cd (degree days) [equivalent to 75 days after sowing (DAS) at ICRISAT, Patancheru rainy season] and 1470°Cd (equivalent to 90 DAS at ICRISAT, Patancheru, rainy season]. At 1240°Cd harvest, ICGV 93437 produced 2.38 t ha⁻¹ pod yield (Table 1). This represents 29.8% increase over JL 24 and 48.1% over Chico. Similarly at 1470°Cd harvest, ICGV 93437 produced 13.1% higher yield compared to JL 24 and 47.8% compared to Chico (Table 2).

On comparing the pod yield performance of the groundnut varieties under 1240°Cd and 1470°Cd harvests, gain was 26.11% for ICGV 93437, 44.62% for JL 24 and 26.41% for Chico (Tables 1 and 2) indicating that optimum growth period of ICGV 93437 is about 90 days at ICRISAT, Patancheru in the rainy season.

ICGV 93437 was tested in 51 yield trials in Zimbabwe during 1996–2001. It out-yielded the popular check cultivar Falcon by 13.5% (Table 3). On average, ICGV 93437 matured six days earlier compared to the control cultivar. ICGV 93437 had 73% shelling outturn and 100-seed mass of 28 g, which were almost similar to the cultivar Falcon.

Plant characters

The cultivar Nyanda could be classified as Spanish type botanically. It has erect growth habit, sequential branching pattern and green plant color. More details of morphological, agronomical and seed quality traits are given in Table 4.

Availability of seeds

The breeder and foundation seeds of cultivar Nyanda are maintained by Seed Co Limited, Rattray Arnold Research Station, PO Box CH 142, Chisipite, Harare, Zimbabwe. Small quantity of seeds of this variety for

research purpose can also be obtained from ICRISAT genebank, Patancheru, India under the 'Material Transfer Agreement'.

Reference

Bailey WK and Hammons RO. 1975. Registration of Chico germplasm. *Crop Science* 15:105.