

Multi-purpose Groundnut

*Replaces a 60-year old variety; brings hope
to poor Indian farmers*



INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS
Science with a human face

Introduction

Groundnut (*Arachis hypogaea* L.), also known as peanut, is a legume that ranks 6th among the oilseed crops and 13th among the food crops of the world. In addition to providing high quality edible oil (48–50%), easily digestible protein (26–28%), and nearly half of the 13 essential vitamins and 7 of the 20 essential minerals necessary for normal human growth and maintenance, it produces high quality fodder for livestock. Groundnut plays a significant role in the livelihoods of smallholder farmers. So what more could they wish for when a variety grown by farmers in India for more than 60 years is replaced by a better variety (labeled ICGV 91114 at ICRISAT)?

Background

Anantapur is a drought-prone district in the rain shadow area of Andhra Pradesh state (AP), India. Despite frequent droughts and crop failures, over 70% of the cultivated area of the district (0.8–1.0 million ha) is sown to groundnut each year. Smallholdings (< 3.0 ha) dominate (60%) the district. It is the largest groundnut-growing district in the world.



Groundnut grows even in this inhospitable soil of Anantapur.



The seed size is very attractive to farmers.

The soils in the district are predominantly light textured, gravelly, shallow alfisols with depths varying between 30 cm and 60 cm. These soils hold plant-available water ranging from 40 mm to 70 mm in the soil profile and are low in nutrients. The annual rainfall is low, highly variable and erratic in distribution. The average annual rainfall in the district is 522 mm as against the state average of 926 mm. The district experiences prolonged dry spells of 45–50 days with an average of 36 rainy days in the rainy season.

During the 1960s, cereal crops such as sorghum, finger millets and others (50% area) dominated the agriculture scenario here, and groundnut (20% area) was a relatively minor crop. Poor rains, prolonged dry spells and frequent crop failures, reversed the cropping pattern. Today, over 70% of the cultivated area is sown to groundnut due to its ability to survive long dry spells and also for its cash value. Further, it is a valuable source of fodder for livestock during dry years or in case of crop failures.

Despite many improved groundnut varieties released in AP during the last 20 years, old varieties TMV 2 (80% area, released in 1940), JL 24 (15–20% area, released in 1978) and Pollachi Red (a landrace) continued to dominate. New varieties fell short of farmers' expectations, their seeds were not available, processors were reluctant to adapt their machinery to new varieties and there was consequent price discrimination.

Enter ICGV 91114

Groundnut variety ICGV 91114 was bred and developed at ICRISAT Headquarters, India. It was derived following the bulk pedigree method from the ICGV 86055 x ICGV 86533 cross. ICGV 91114 has the following features:



Groundnut is used in a variety of food preparations.

- High-yielding
- Matures in 90-95 days in the *kharif* (rainy season)
- Tolerant of mid-season and end-of-season drought
- Average shelling turnover 75%
- Oil content 48%, protein content 27%
- Better digestibility and palatability of haulms

ICGV 91114 was approved for release in AP by the Andhra Pradesh State Seed Sub-Committee in 2006 and was notified in The Gazette of India in July 2007. It was subsequently released as *Devi* (alluding to a Goddess in Hindi) in Orissa.

In Anantapur district, where ICGV 91114 is now replacing TMV 2, our collaborator, Accion Fraterna, has named it *Anantha Jyothi* (meaning Endless Light in Telugu).

Performance

On-station trials: In various on-station trials at ICRISAT-Patancheru (1992–1994), Orissa University of Agriculture and Technology, Bhubaneswar (2005–2006) and at the Agricultural Research Station (UAS, Bangalore), Chintamani (2005–2006), the pod yield superiority of ICGV 91114 over TMV 2/ local variety ranged between 16 and 40%.

Haulm quality: In controlled feeding trials of Deccani sheep with 15 groundnut varieties at ICRISAT-Patancheru, ICGV 91114 resulted in higher live weight gain day⁻¹ and nitrogen accretion, indicating better digestibility of its haulms than the other varieties released for AP.

On-farm trials: In farmer participatory on-farm trials conducted during the *kharif* in Anantapur during 2002–2006, ICGV 91114 maintained its pod yield superiority over TMV 2. A similar trend was observed for haulm yield. Further, feeding of ICGV

91114 fodder to milch cattle resulted in increased milk yields of 11% per day (Table 1). During 2004/05 – 2006/07 in Orissa, it yielded more than local controls in rice fallows in the *rabi* (postrainy) season.

Due to its early and uniform maturity, attractive pod and seed shape, and high shelling turnover, ICGV 91114 is also becoming popular among farmers in many other parts of India (Gujarat, Maharashtra, Karnataka and Jharkand states).

A private seed company, Akshay Seed Tech Co., in Saurashtra, Gujarat, is marketing ICGV 91114 as 'Akshay Prabhat' in Gujarat and Maharashtra (the word Prabhat means Morning or Dawning in Hindi).

Table 1. On-farm advantage of improved food-feed groundnut cultivar over local cultivar in three villages of Anantapur during rainy season, 2005

Variety	Pod yield (kg ha ⁻¹)	Haulm yield (kg ha ⁻¹)	Milk (kg day ⁻¹)
ICGV 91114 (Improved)	2570	3080	4.36
TMV 2 (Local)	2240	2640	3.92
Superiority over local cultivar (%)	15	17	11



ICGV 91114 produces a higher pod yield than TMV2.

Conclusion

What farmers prefer in a groundnut variety are high pod yield, high shelling turnover, early maturity, good seed size, high haulm yield and resistance to

drought and disease. ICGV 91114 meets all these preferences. It is no wonder that this is the most popular dual-purpose groundnut being cultivated in India today.



Not just the seed, but the high haulm yield (fodder) ensures that farmers will earn a profitable income with ICGV 91114.

About ICRISAT



ICRISAT
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The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a non-profit, non-political organization that does innovative agricultural research and capacity building for sustainable development with a wide array of partners across the globe. ICRISAT's mission is to help empower 644 million poor people to overcome hunger, poverty and a degraded environment in the dry tropics through better agriculture. ICRISAT belongs to the Alliance of Centers of the Consultative Group on International Agricultural Research (CGIAR).

Company Information

ICRISAT-Patancheru (Headquarters)

Patancheru 502 324
Andhra Pradesh, India
Tel +91 40 30713071
Fax +91 40 30713074
icrisat@cgiar.org

ICRISAT-Bamako

BP 320
Bamako, Mali
Tel +223 20 223375
Fax +223 20 228683
icrisat-w-mali@cgiar.org

ICRISAT-Liaison Office

CG Centers Block
NASC Complex
Dev Prakash Shastri Marg
New Delhi 110 012, India
Tel +91 11 32472306 to 08
Fax +91 11 25841294

ICRISAT-Bulawayo

Matopos Research Station
PO Box 776,
Bulawayo, Zimbabwe
Tel +263 83 8311 to 15
Fax +263 83 8253/8307
icrisatzw@cgiar.org

ICRISAT-Nairobi (Regional hub ESA)

PO Box 39063, Nairobi, Kenya
Tel +254 20 7224550
Fax +254 20 7224001
icrisat-nairobi@cgiar.org

ICRISAT-Lilongwe

Chitedze Agricultural Research Station
PO Box 1096
Lilongwe, Malawi
Tel +265 1 707297/071/067/057
Fax +265 1 707298
icrisat-malawi@cgiar.org

ICRISAT-Niamey (Regional hub WCA)

BP 12404, Niamey, Niger (Via Paris)
Tel +227 20722529, 20722725
Fax +227 20734329
icrisatnc@cgiar.org

ICRISAT-Maputo

c/o IIAM, Av. das FPLM No 2698
Caixa Postal 1906
Maputo, Mozambique
Tel +258 21 461657
Fax +258 21 461581
icrisatmoz@panintra.com

www.icrisat.org