

# A superior kabuli gram variety for peninsular and central India

Jagdish Kumar<sup>1</sup>, A Satyanarayana<sup>2</sup>, B V Rao<sup>3</sup>, K B Wanjari<sup>4</sup> and R L Pandey<sup>5</sup>

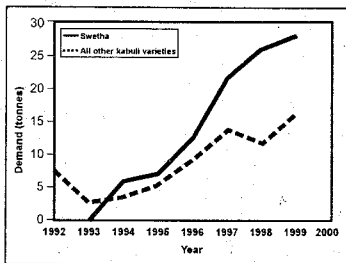
International Crops Research Institute for the Semi-Arid Tropics, Patancheru, Andhra Pradesh 502 324

*The ICCV 2, an extra-short-duration and fusarium wilt-resistant variety has extended kabuli gram cultivation to central and peninsular India for the first time. Its early growth vigour, flexible time of planting, suitability to rainfed and irrigated conditions and premium price have made kabuli gram a cash crop in these regions.*

**C**HICKPEA (gram) is the most important pulse crop of India. It has two main types – *desi* and kabuli. The former generally has small angular brown (or other colours) seeds. The latter type is generally large, owl's head-shaped and cream-coloured seeds. About 90% of India's production of gram is of *desi* type. The kabuli type has premium price because of consumer preference as it is used as whole-seed in culinary preparations. Kabuli gram is cultivated in north and north-western parts of the country during the winter (*rabi*) season.

## CONSTRAINTS FOR KABULI GRAM CULTIVATION FOR CENTRAL AND PENINSULAR INDIA

- Long-duration maturity of traditional kabuli gram varieties
- Susceptibility to fusarium wilt and root-rot
- Lack of drought- and heat-tolerance among the available varieties



All-India breeder seed demand for kabuli variety Swetha (ICCV 2) and all other kabuli varieties of chickpea

- ies
- Susceptibility to *Helicoverpa* pod borer

Peninsular India is characterized by short and mild winter, with temperatures rising sharply during February itself. Hence, kabuli type could not be cultivated south of Kolkata–Ahmedabad latitude. In peninsular India gram is grown in the post-rainy season on black soils on residual and receding soil moisture. During the podding period, the crop is exposed to drought-stress which restricts flowering period and hastens maturity, resulting in poor yields. However, with the development of extra-short-duration gram like ICCV 2, the kabuli gram is gaining popularity in south India.

## SWETHA (KABULI GRAM VARIETY ICCV 2)

Gram variety ICCV 2 is the first extra-short-duration kabuli line with fusarium wilt resistance, suitable for peninsular and central Indian environments, where kabulis could not be grown earlier. It was named Swetha, and released for general cultivation by the Government of Andhra Pradesh in September 1989. The ICCV 2 was developed using pedigree methods at ICRISAT through *desi*-kabuli introgression programme involving multiple crossing. The pedigree of the variety is  $F_3$  [(K 850 × GW 5/7) × P 458] ×  $F_3$  (L 550 × Guamuchil) 2.

The ICCV 2 matures 2 weeks earlier than the early-maturing local *desi* type Annigeri, and 4 weeks earlier than North Indian kabuli cultivar, L 550 (Table 1). It performed well both on research stations and in farmers' fields in Andhra Pradesh, Karnataka, Maharashtra, Orissa and Tamil Nadu (Table 2). The ICRISAT and ANGRAU have helped in bringing out kabuli gram to this area where kabulis could not be grown earlier.

At ICRISAT Centre under rainfed conditions, it matures in 80–90 days. It has been possible to grow 2 crops in the same field between October and March. With water and fertilizer inputs

<sup>1</sup> Senior Scientist, <sup>2</sup> Scientific Officer, <sup>3</sup> Regional Agricultural Research Station, Acharya N G Ranga Agricultural University, Lam, Guntur, Andhra Pradesh, <sup>4</sup> Dr Punjabrao Deshmukh Agricultural University, Akola, Maharashtra, <sup>5</sup> Indira Gandhi Krishi Vishwa Vidyalyaya, Raipur, Madhya Pradesh

it yielded up to 3.3 tonnes/ha in farmers' field in Maharashtra.

By virtue of its shorter growing period ICCV 2 escapes terminal drought-stress and heat-stress and fits well in different cropping systems as it is also less sensitive to photo-period

**Table 1.** Agronomic traits of ICCV 2 at ICRISAT, Patancheru

| Variety  | Days to 50% flowering | Days to maturity | 100-seed mass (g) |
|----------|-----------------------|------------------|-------------------|
| ICCV 2   | 33                    | 82               | 24.0              |
| L 550    | 59                    | 116              | 21.0              |
| Annigeri | 52                    | 100              | 20.1              |

**Table 2.** Seed yield (tonnes/ha) of ICCV 2 in farmers' fields in different states of peninsular India during 1986-89

| Variety  | Madhya Pradesh (15) | Andhra Pradesh (19) | Maharashtra (21) | Karnataka (2) | Orissa (2) | Tamil Nadu (1) | Average (45) |
|----------|---------------------|---------------------|------------------|---------------|------------|----------------|--------------|
| ICCV 2   | 0.83                | 1.07                | 1.24             | 1.29          | 0.92       | 0.42           | 1.06         |
| Annigeri |                     | 0.83                | 0.75             | 0.99          | 0.66       | 0.50           | 0.79         |
| JG 74    | 1.02                |                     |                  |               |            |                | 1.02         |

\* Figures in parentheses indicate number of locations.

variation. With such a stable variety available in kabuli type, its adoption is on the increase from 4.05% (1992) to 17.34% (1995), in Andhra Pradesh with highest adoption in Kurnool district (22.28%).

The shortcomings of ICCV 2 are

that like other varieties it also requires protection from *Helicoverpa* pod borer. However, it is possible to harvest good yields if 2-3 timely sprays of an insecticide are given. It is thus able to escape damage as it matures faster than other varieties.

#### SUMMARY

The ICCV 2 has become a national check for the kabuli types and is in great demand for cultivation. Since 1995 it is topping the breeder seed requirement for kabulis in the country.

## TO CONTRIBUTORS

Articles relating to agriculture and animal husbandry are invited for publication in INDIAN FARMING. Articles should be in popular vein, in language easily understandable to the layman. Emphasis should be on proven results, practices and ideas which the farmer can easily adopt. Illustrated articles are particularly welcomed. Illustrations should be sent properly packed, without being folded, to prevent damage in transit.

—Editor