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# Genetic Stock

## Puckered-Leaf Groundnut

### Mutant ICGL 6

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- Isolated from normal-leaved groundnut genotype OG 66-6-1
- Belongs to subsp. *fastigiata* var. *vulgaris*
- Has puckered leaves with a yellow stripe along their margins
- Mutant's puckered leaf character controlled by two genes,  $nl_1nl_1NL_2NL_2$



ICRISAT

Plant Material Description no. 36

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## Purpose of Description

ICGL 6 has distinctive leaf characteristics. Most of its leaves are puckered (partially crinkled) with a yellow stripe along their margins. A few of the older leaves are phenotypically normal. Variants such as ICGL 6 are useful markers in genetic studies.

## Origin and Development

ICGL 6 was isolated from a normal-leaved groundnut genotype OG 66-6-1 belonging to *Arachis hypogaea* subsp. *fastigiata* var. *vulgaris*. A single plant with abnormally puckered leaves was observed in a population of OG 66-6-1 grown in the 1979/80 poststray season at ICRI SAT Center. The plant was harvested and progeny rowed. Subsequently plants with puckered leaves were reselected in successive selfed generations, until their leaf phenotype was stabilized.

## Plant Characters

ICGL 6 has a compact, erect growth habit. Its main axis is approximately 11 cm high and its canopy 13 cm wide. It has 4-8 primary, and 0-5 secondary branches. With the exception of a few older leaves, which are phenotypically normal, all the other leaves are green and puckered with a yellow stripe along their margins. The puckered-leaf symptoms start appearing in small to medium-sized elliptical leaves emerging one week after seedling emergence. ICGL 6 flowers sequentially. The flowers have orange standard, and yellow wing petals.

## Pod/Seed Characters

ICGL 6 has mainly 2-seeded smooth pods, with slight-to-moderate beaks. The pods are constricted, and reticulated. It has a 58% shelling outturn. The seeds have tan colored testas, with a 100-seed mass of 24 g. Their average oil content is 48%, and average protein content 25%.

## Genetics of Puckered Leaves

The genetics of puckered leaves were studied in two reciprocal crosses between the mutant and two normal-leaved cultivars, J 11 and MK 374. Segregation for leaf phenotype in the F<sub>2</sub> generation was in the ratio of 13 normal:3 puckered-leaved. The expression of leaf phenotype in the genotypes included in this study is controlled by two genes, designated NI<sub>1</sub> and NI<sub>2</sub>, which interact in an epistatic manner. The presence of the NI<sub>1</sub> gene in a recessive homozygous condition, and the NI<sub>2</sub> in either homozygous or heterozygous condition is essential for the expression of puckered leaves. All other combinations have normal leaves in the F<sub>2</sub> generation. The F<sub>2</sub> ratio was further supported by the segregation pattern observed in backcross generations of these crosses. The genotype of the puckered-leaf characteristic in the mutant is designated as n<sub>1</sub>n<sub>1</sub>NI<sub>2</sub>NI<sub>2</sub> (Dwivedi and Nigam, 1989).

## Reference

Dwivedi, S.L., and S.N. Nigam. 1989. Inheritance of a puckered leaf mutant in groundnut (*Arachis hypogaea* L.). Current Science 58: 1149-1150.



## **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.