

# Leaf variants in pigeon pea *Cajanus cajan* (L.) Millsp.

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Four leaf shape mutants in *Cajanus cajan* (L.) Millsp. are described, two of them new to literature. The mutants were observed in the world germplasm collection grown near Hyderabad, India.

## INTRODUCTION

A NUMBER OF leaf mutants in pigeon pea, *Cajanus cajan* (L.) Millsp., have been reported. The first to record an obcordate mutant was the Deputy Director of Agriculture of the erstwhile Hyderabad State, in 1936. The specimens (from Sangareddi) are preserved in the Kew Herbarium with copies of the correspondence pertaining to them. It was suggested that this mutant be designated 'Nizam tur'. SINGH *et al.* (1942) found a mutant in Gorakhpur (Uttar Pradesh) having obcordate leaflets which also had free and filiform keel petals, symmetrical wings and light yellow coloured petals. He described it erroneously as a new species, *Cajanus obcordifolia* Singh. Another mutant having obcordate leaflets with united keel petals was reported by KAJJARI (1956) at Annigeri (Karnataka). PATIL (1959) observed an obcordate leaflet plant at Niphad (Maharashtra) in which one of the wing petals protruded beyond the standard at bud stage. 'Round' and 'tiny' leaf mutants have been recorded by PANDYA *et al.* (1954) at Niphad. DIVAKARAN and RAMBHADRAN (1958) noted oblong-ovate leaflets at Kovilpatti (Tamil Nadu) and an oval-oblong leaf mutant was described by JOGLEKAR and DESHMUKH (1958) from Nagpur.

In the process of recording various morpho-agronomic characters of the world collection of pigeon pea grown during 1974 and 1975 at the ICRISAT Centre near Hyderabad, India, four plants with extraordinary leaf shapes were identified (*Figure 1*). The plants were selfed and the selfed seeds were grown during subsequent seasons. The mutants were found to breed true to their types. This report describes the mutants; inheritance is being studied and will be reported later.

Two mutants, 'obcordate' and 'round leaf' (broad-elliptic), were similar to those reported earlier but were obtained from different sources. The 'obcordate' leaf mutant was observed in ICP 5529 (T-105 from Uttar

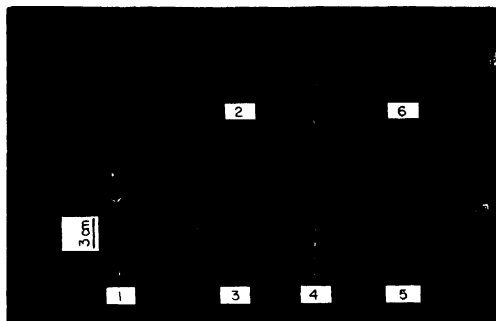


Figure 1. (1) Large normal leaf; (2) small normal leaf; (3) obcordate leaf; (4) sesame leaf; (5) broad-elliptic leaf; (6) minute leaf

Pradesh) while the 'broad-elliptic' variant was noticed in ICP 5357 (field collection P 3328 from Uttar Pradesh). 'Sesame' and 'minute' leaf mutants have not been reported previously. The 'sesame' type was recorded in ICP 1967 (field collection P 741 from Bihar), and a plant with 'minute' leaves was found in ICP 1162 (field collection P 2778 from Andhra Pradesh).

#### DESCRIPTION

##### *Normal leaves*

Petiole 1 to 8 cm; rachis 0.5 to 3.1 cm; petiolules 1 to 4 mm. Stipellae of top leaflet 1 to 4 mm, of side leaflets 1 to 4 mm. Stipules 2 to 6 mm. Leaf area 13.0 to 93.5 cm<sup>2</sup> (average 48 cm<sup>2</sup>, taken from five full grown leaves of 100 cvs). Top leaflet elliptical or ovate-elliptical, sometimes described as lanceolate, 4.5 to 13.7 cm long, 1.4 to 5.7 cm wide; apex acuminate to acute, mucronate; base cuneate. Side leaflets as top leaflets but slightly asymmetrical, always smaller in size, 3.6 to 12.0 cm long, 1.3 to 4.5 cm wide, often unequal to each other.

##### *Obcordate leaves*

Petiole 2.4 to 4.2 cm; rachis 1.0 to 1.4 cm; petiolules 2 to 3 mm. Stipellae: of top leaflet, traces; of side leaflets, 1 to 2 mm. Stipules 3 to 4 mm. Leaf area 32.9 cm<sup>2</sup> (average of 20 full grown leaves). Top leaflet obcordate, 4.8 to 6.3 cm long, 2.8 to 3.2 cm wide; apex more or less deeply emarginate, mucronate; base rounded to rounded-cuneate. Side leaflets asymmetrical, smaller than top leaflet, 3.8 to 5.7 cm long, 2.3 to 3.0 cm wide; apex less emarginate to obtuse or truncate, mucronate; base rounded-acuminate.

It should be noted that in cv. 'N-Black' at Poona rachis length was zero, resulting in digitately placed leaflets (DEOKAR, 1976).

*Broad-elliptic leaves*

Petiole 3.1 to 4.8 cm; rachis 1.2 to 2.2 cm; petiolules 2.0 to 2.5 mm. Stipellae: of top leaflets, traces or up to 1.0 mm; of side leaflets, 1 to 2 mm. Stipules 2 to 3 mm. Leaf area 37.6 cm<sup>2</sup> (average of 20 full grown leaves). Top leaflet broad-elliptical, 5.3 to 7.0 cm long, 3.2 to 4.2 cm wide; apex rounded to acute, mucronate; base rounded. Side leaflets as top leaflet but smaller, 4.4 to 6.4 cm long, 2.4 to 3.5 cm wide, asymmetrical.

This mutant differs from obovate or round leaf mutants and is from a different source.

*Sesame type leaves*

Petiole 1.1 to 2.6 cm; rachis 0.6 to 1.2 cm; petiolules 2 to 3 mm. Stipellae: of top leaflet, absent to traces; of side leaflets, traces to 1.5 mm. Stipules 2 to 3 mm. Leaf area 22.3 cm<sup>2</sup> (average of 20 full grown leaves). Top leaflet very narrow-elliptical, 5.8 to 9.5 cm long, 1.1 to 2.6 cm wide; apex acute-acuminate, mucronate; base rounded-cuneate. Side leaflets as top leaflet but smaller, 4.3 to 8.0 cm long, 1.0 to 1.8 cm wide, and asymmetrical.

Plant habit is short (90 to 120 cm) and compact, giving the appearance with its narrow leaflets of a sesame plant.

*Minute leaves*

Petiole 0.8 to 1.1 cm; rachis 0.5 to 0.7 cm; petiolules 1.2 mm. Stipellae: of top leaflet, traces to 0.5 mm; of side leaflets, 0.5 to 1 mm. Stipules 1 to 2 mm. Leaf area 6.0 cm<sup>2</sup> (average of 25 full grown leaves). Top leaflet elliptical, 2.7 to 3.3 cm long, 1.0 to 1.4 cm wide; apex acuminate to acute, mucronate; base cuneate, somewhat rounded. Side leaflets asymmetrically ovate, smaller than top leaflet, 2.1 to 2.6 cm long, 0.8 to 1.2 cm wide; apex acute or slightly obtuse, mucronate.

This minute differs from the tiny leaf mutant (PANDYA *et al.*, 1954), as internode length is not suppressed, rachis is short to match leaf size only, flowering is not early, nor do leaf colour or epidermis differ from the average normal pigeon pea.

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