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Cajanus platycarpus – an addition to the flora of Akola district, Maharashtra

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ABSTRACT

Occurrence of *Cajanus platycarpus* is reported for the first time as an addition to the flora of Akola district, Maharashtra. Description of the plant, habitat, phenology, distribution of the species, useful traits for biotic and abiotic stress as reported by various authors and need for conservation of the species is highlighted in the paper.

Key words: New Records, Addition, Flora of Akola, Maharashtra

INTRODUCTION

The genus *Cajanus* Adans. is composed of 32-34 taxa and divided into three clades: Indian, Australian, and *Scarabaeoides* (Kassa *et al.*, 2012; Van der Maesen, 1986). No wild conspecific to the cultivated species exists, and thus there are no wild taxa falling within the primary genepool of pigeon pea as defined by Harlan and de Wet (1971). Pigeon pea [*Cajanus cajan* (L.) Millsp.] has a rich gene pool in its various wild species. Many of the wild species from the secondary gene pool are compatible with cultivated pigeon pea and have been successfully used to transfer genes and traits of interest (Saxena *et al*., 1992; Saxena and Kumar, 2003; Mallikarjuna and Saxena, 2005). There are also many wild relatives of pigeon pea that are incompatible with cultivated species but have desirable characteristics that would improve pigeon pea as a crop (Saxena *et al*., 1996; Reddy *et al*., 1996).

Cajanus platycarpus, an incompatible wild species from the tertiary gene pool of pigeon pea (*C. cajan* (L.) Millsp.), has many desirable characteristics for the improvement of cultivated varieties (Mallikarjuna *et al*., 2006). Exploration and collection of germplasm is important for breeding purposes. Hence, an attempt has been made to collect, characterise and conserve the germplasm.

MATERIALS AND METHODS

During the botanical exploration in the district of Akola, the authors came across the species *Cajanus platycarpus.* Garmin GPS 12 Personal Navigator (www.garmin.com) was used for recording the geographic coordinate's 20^{o} 42' 095 latitude and 77^{o} 01' 939 longitude. Herbarium specimens were prepared and matured seeds were collected right at the site of collection. Flora of Maharashtra, District Flora of Akola (Singh and Karthikeyan, 2000) and National Herbarium of Cultivated Plants, ICAR-NBPGR, Pusa campus, New Delhi was used for identification. On detailed morphological and herbarium studies the plants was confirmed as *Cajanus platycarpus*.

RESULTS AND DISCUSSION

Cajanus platycarpus (Bth.) van der Maesen in Agric. Univ. Wageningen Papers 85(4): 160, f. 23. (1985) 1986; Sanj. Legumes of India 102, 1991. *Atylosia platycarpa* Bth. In Miq. Pl. Jungh. 243. 1852; Baker in Hook. F. Fl. Brit. India 2: 216. 1876; Cooke, Fl. Pres. Bombay 1:410. 1958 (repr.). 'Safal-supli'. Fl. Maharashtra Vol.I, 614. 2000.

Distribution: Frequently found along the hedges in Amravati, Chandrapur, Dhule, Nanded, Nasik, Parbhani, Thane and Yavatmal districts of Maharashtra.

Botanical description:

Detail botanical characteristics of *Cajanus platycarpus* are mentioned (Table-1). In general, the plants are slender, climbing or trailing herbs; branches densely clothed, fulvous with brownish short spreading hairs, leaves pinnately 3-foliate, stipulate, stipulate; petioles 2.5-8.0 cm; leaflets 3-6cm long and 2.5 cm broad, orbicular, acute or acuminate, membranous, finely pilose on both sides. Flowers solitary/ axillary or in 2-flowered racemes. Calyx 8-12 mm long, pilose; teeth long, setaceous. Corolla 12-14 mm long, pale yellow, Pods 2.5-4.0 × 1.2-1.4 cm, grey pubescent, linear oblong , flattened, mucronate, pubescent, with transverse depressions between seeds,4-7, rectangular- oblong and seeds dark brown in colour.

Among the *Cajanus* species, *Cajanus platycarpus* is placed in tertiary gene pools based on their crossability with cultivated species and has received considerable attention because of its many desirable traits (Table 2).

These wild ancestors of crop plants are increasingly being used as sources of genetic diversity to breed new crop varieties as we need crops related to changing climates, requiring less fertilizer and few energy inputs and resistant to new pests and diseases (Maxted *et al.* 1997). The future plant breeding will require such broadening of the genetic base if we are to meet the challenges of 21st century (Feldmen and Sears,1981, Gepts 2004). The seed samples of *Cajanus platycarpus* has been conserved the Medium term storage module at ICAR-National Bureau of Plant Genetic Resources, Akola for its utilization in the future crop improvement programmes.

Table-1. Botanical characteristics of *Cajanus platycarpus*

S. No.	Traits	State/Value
Qualitative		
1	Plant pigmentation	Light purple to purple
2	Stem colour	Light purple
3	Leaf colour	Dark green
4	Calyx colour	Light green
4	Corolla colour	Light yellow
5	Anther colour	Yellow
6	Pod colour	Grey
7	Seed colour	Brownish
Quantitative		
1	Plant height (cm)	35.5-104.5
2	Hair length (cm)	0.6
3	No. of lealets	Three
4	No. of branches	3.0
5	No. of sepals	Four
6	Calyx length	1.08
7	Corolla length	1.5
8	Pod length(cm)	3.44
9	Pod width (cm)	1.52
9	No. of seeds/pod	4.8
10	Seed length(mm)	6.18
11	Seed width (mm)	4.11
12	100 seed weight (g)	1.28

Fig. 1 a) Habitat, b) Conserved plants, c) Pods and leaves, d) Dehisced pods e) National Herbarium sample f) Plant morphology (Flower, pod with pubescence and seeds).

Table-2. Useful traits of *Cajanus platycarpus*

Traits	References
Phytophthora blight resistance	Saxena (2005), Mallikarjuna *et al.* (2005).
Sterility mosaic disease resistance	Mallikarjuna *et al.* (2011)
Early flowering	Upadhyaya *et al.* (2013)
High seed protein	Upadhyaya *et al.* (2013)
Cyst nematode resistance	Saxena (2005)
Salt tolerance	Choudhary *et al.* (2011)
Aluminum toxicity resistance	Choudhary *et al.* (2011)
Photoperiod insensitivity	Mudaraddi *et al.* (2013)
Higher number of flowers and pod setting	Mudaraddi *et al.* (2013)

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