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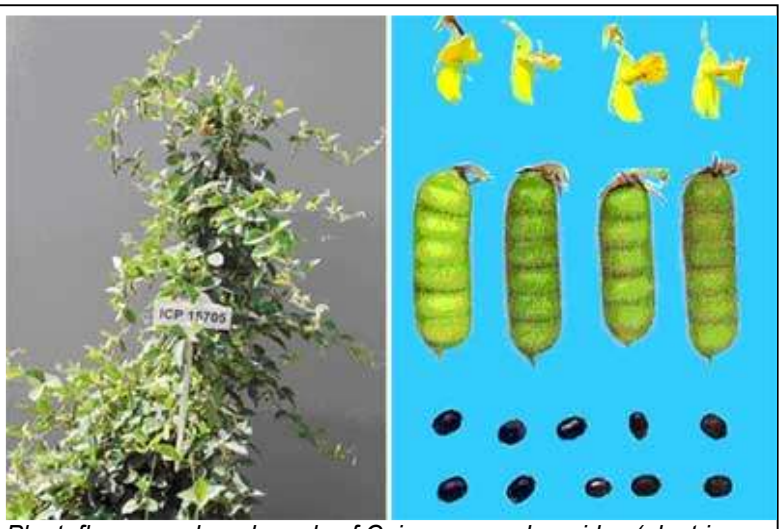
SATrends
ICRISAT's monthly e-newsletter

SATrends Issue 62 **January 2006**

Improving pigeonpea with the wild

In crop improvement, a wild species is valued if it possesses traits of agronomic importance and can be hybridized easily with cultivated species. The genus *Cajanus* has 32 species, of which only pigeonpea, [*Cajanus cajan* (L.) Millsp.] is cultivated. *Cajanus scarabaeoides*, one of the closely related wild species of pigeonpea, has high level of tolerance to drought and resistance to insect-pests.



Plant, flower, pod, and seeds of Cajanus scarabaeoides (plant in field was supported to climb).

C. scarabaeoides is the most widely distributed wild species and occurs naturally in most parts of India, Sri Lanka, Southeast Asia, South Eastern Africa, western coast of Africa and Oceania. Somatic chromosome features of *C. scarabaeoides* are similar to the cultivated pigeonpea.

Some of the *C. scarabaeoides* accessions flower very early (34 days compared to about 60 days in short-duration pigeonpea), have high pod set percentage (74% compared to about 20% in pigeonpea) and multiseeded pods (6.04 seeds compared to about 3.0 in pigeonpea).

Grains of *C. scarabaeoides* are rich in protein (29.3%) and methionine and cystine amino acids (3.06% of protein) compared to 20.5% protein and 2.2% methionine and cystine in pigeonpea. Availability of cytoplasmic-genic male-sterility (CMS) is one of the pre-requisites to utilize heterosis breeding for enhanced crop productivity. In pigeonpea, functional CMS was developed from the cross of *C. scarabaeoides* and cultivated pigeonpea.

A large collection of *C. scarabaeoides* (100 accessions from 8 countries) held at the ICRISAT genebank was recently characterized for nine qualitative and 13 quantitative traits including tolerance to lepidopteron insects. Of these, *C. scarabaeoides* is particularly rich for four traits (early flowering, higher values for seeds pod-1, pods free from insect damage and protein content) that are much sought in pigeonpea cultivars. The accessions scoring top for these traits are ICPs 15695, 15883 (early flowering), ICPs 15914, 15751 (high seed number), ICPs 15719, 15699 (very low insect damage) and ICPs 15711, 15695 (high grain protein content).

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