Registration of ICPL 87154, a Partially Cleistogamous Pigeonpea Breeding Line with Low Natural Out-crossing

ICPL 87154 (Reg. no. GS-8, PI 597941), a pigeonpea [Cajanus cajan (L.) Millsp.] breeding line, was developed at ICRISAT Asia Center, Patancheru, AP, India. This line was released by the ICRISAT Plant Materials Identification Committee in 1993.

The primary gene pool of pigeonpea has typical leguminous flowers, which on average permit about 20% insect-aided natural out-crossing (1). At ICRISAT, a true-breeding mutant (FSL-1) having partially cleistogamous flowers was identified from a breeding line derived from an interspecific cross between pigeonpea (cv. T. 21) and Cajanus lineatus van der Miesen (syn. Atylosia lineata W. & A.) (2). This mutant restricts natural out-crossing to less than 1% but has agronomically undesirable plants and highly shriveled seeds. In 1981, the mutant was crossed to a short-duration cultivar 'Pragati'. In the F2 generation, 36 partially cleistogamous segregants with agronomically desirable seed and plant type were identified for pedigree selection. In 1986, an F3 progeny with selection number ICPL 81513-19-3-B was bulked. In the yield trials conducted at Patancheru from 1987 to 1988, ICPL 87154 produced 1.38 t ha⁻¹ grains, compared with 2.16 t ha⁻¹ for the control, 'Pragati'.

ICPL 87154 is highly stable for floral morphology and low out-crossing over diverse environments (3). In the 1990-1991 season in Sri Lanka, at Maha Illuppallama and Pallekelle, natural out-crossing of ICPL 87154 was less than 1%, compared with 13.3 to 19.6% in the control, 'Pragati'. At Patancheru, 0.4% natural out-crossing was recorded in ICPL 87154, compared with 42.1% in 'Pragati' during 1989. At Patancheru, ICPL 87154 flowers in 80 d and 75% maturity is achieved in 126 d. It has a determinate growth habit, green stems, and large leaves, and averages 130 cm tall. Green pods with brown streaks are borne in clusters. On average, each pod contains 3.9 seeds, which are brown, round, and average, each pod contains 3.9 seeds, which are brown, round, and avera...