

B-67 : SYMBIOTIC PERFORMANCE OF TWO VARIETIES OF COWPEA
(*Vigna unguiculata* (L.) WALP)

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Bombay and Arlington are two cowpea varieties in Sri Lanka. Arlington is more responsive to fertilizer N than Bombay due to its less effective symbiotic association with indigenous bradyrhizobial population in fixing atmospheric N. However, hardly any quantitative information was available on their symbiotic performance under local conditions. Hence, N¹⁵-aided field studies were conducted at Hungama to ascertain the proportion and amount of atmospheric N derived by the above genotypes. *Setaria italica* L. was used as the reference crop. The variety Bombay showed a higher symbiotic potential deriving about 48% of its N yield from the atmosphere, but it was only 18% in Arlington. The amounts of N fixed by Bombay and Arlington were 54 and 18 kg N/ha respectively. Due to less effective N₂ fixation in Arlington, it delivered over 72% of its N content

(68 kg N/ha from soil while it was only 47% (49 kg N/ha) in Bombay. The total dry matter production and N yield in Bombay were 3996 and 111 as against 3855 and 95 kg/ha in Arlington respectively. Studies elsewhere indicate that cowpea could derive over 80% of its N requirement from the atmosphere fixing over 100-150 kg N/ha. Factors such as high diurnal soil temperatures, water stress, deficiencies of micro

nutrients such as Mo, Co, B etc. and incompatibility of native bradyrhizobial population with the genotypes in question may have constrained their symbiotic performance.