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Impact of elevated CO₂ on growth and physiological parameters of groundnut (*Arachis hypogea*.L) cultivars

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Five groundnut (*Arachis hypogea*.L) cultivars- JL-24, ICGV91114, Narayani, Abhaya and Dharani were evaluated under ambient (390 ppm) and elevated (550 ppm) CO₂ in OTCs during 2013 Kharif. Observations were recorded on leaf area, biomass accumulation at flowering (30 DAS) and pegging stages (45 DAS) and photosynthetic rate (Anet), stomatal conductance (gs) and transpiration rate (Tr) on pegging stage (39 DAS). Elevated CO₂ enhanced the total biomass of all the genotypes at both sampling points. Improvement in total biomass due to elevated CO₂ was higher (34%) with ICGV 91114 and Narayani at 30 DAS, with JL-24 at 45 DAS. At 550 ppm CO₂, Dharani recorded highest root length, shoot length and leaf area at 30 DAS and JL-24 at 45 DAS. The response of leaf biomass and specific leaf weight of ICGV 91114 at elevated CO₂ was highest at 30 DAS. The allocation of biomass was not similar with all genotypes, at elevated CO₂ more biomass was allocated to stem in JL-24 whereas to roots in ICGV 91114 and not influenced in Dharani. The Anet increased with enhanced CO₂ in all the genotypes ranging from 21% (Abhaya) to 42% (Narayani) where as reduced g_s and Tr was recorded with Abhaya and Dharani. JL-24 had the highest *per se* value for leaf level intrinsic WUE at 550ppm with 41% advantage due to enhanced CO₂ condition. It is evident that the response of groundnut crop to elevated CO₂ is cultivar, growth stage and component specific.

Biography

Sunitha Vaidya completed M.Sc. (Biosciences specialization in Biotechnology) and MPhil (Biosciences) from Sri SathyaSai Institute of Higher Learning, Puttaparthi, India. She had received Smt. Eshwaramma Gold medal for excellence in MPhil in 2010 and currently pursuing Ph.D. (Botany) in Central Research Institute for Dry Land Agriculture (CRIDA), Hyderabad registered under Osmania University.

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