

Thematic Area: Abiotic Stresses: Physiology, Genetic Improvement and Management

Genetic variation in leaf senescence indices of chickpea in response to soil moisture deficit

Author¹, Author², Author¹, Author³, and Author^{1,4}

¹ICAR-Indian Institute of Pulses Research, Kanpur- 208024, Uttar Pradesh, India

²ICAR-Indian Institute of Vegetable Research, Varanasi- 221305, Uttar Pradesh, India

³ICAR-National Institute for Abiotic Stress Management, Pune-413115, Maharashtra, India

⁴Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur, Kharagpur 721 302, West Bengal, India

Corresponding author: xxxxxxxx@gmail.com

Identification and characterization of stress inductive plant functional traits is crucial under the climate change scenario. Manifestation of some of the traits such as leaf senescence are due to environmental stress as well as plant developmental process/ In this context, an experiment was conducted during winter 2015-2016 to evaluate the genotypic variations for leaf senescence traits in chickpea under drought condition. A set of 90 chickpea genotypes was selected for the study. Parameters like days to initiation of senescence (DTIS), leaf senescence duration (LSD), days to 50% flowering, days to maturity (DTM) were recorded and their association with grain yield was derived. The trait DTIS was used to determine the earliness or delay in senescence and LSR was used to characterize the pace of senescence. The observation on leaf senescence pattern was performed in each genotype at the two-day interval by the visual scoring method. Based on the maturity group we have classified the genotypes in two groups namely early-matured (< 110 days rather 100±10) and late-matured (> 110 rather 120±10days). Results revealed that grain yield of chickpea was adversely affected by duration of leaf senescence irrespective duration of maturity though it was more conspicuous in long duration genotypes. In addition, significant positive correlation between grain yield and [DTIS/DTM] was observed for both early ($r = 0.363$; $p < 0.01$) and late matured ($r = 0.492$; $p < 0.01$) genotypes. Hence, the delayed and rapid senescence at the end of crop cycle may serve as selection traits for genetic improvement of drought tolerance in chickpea.

Keywords: Chickpea; Drought tolerance; Senescence duration; Grain filling; Stay green; Grain yield