

ABSTRACT:

Early maturity strategies in chickpea: pyramiding key genetic traits
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Chickpea (*Cicer arietinum* L.) is a highly indeterminate species which continues to grow and produce pods through fall, especially in cooler and wetter seasons. This exposes the crop to frost damage resulting in reduced yield and quality. We hypothesized that earliness could be induced through some strategic traits including double podding, reduced internode length and early flowering. The objective of this study was, therefore, to determine the individual and combined effects of these traits on earliness in chickpea. Four single crosses were made: two with the early flowering parent, and one each with the double podding and short internode length parents. Segregating populations of F₂–F₄ generations were evaluated along with their parents in greenhouse and field trials. Significant genetic variability was observed for days to maturity of lower pods and percent pod maturity at four months after planting. In general, each trait had some effect on earliness, though the magnitude differed, and combining them into a single genotype may help to achieve the desired earliness in chickpea. The F₂ population from the multiple cross (gene pyramiding) showed a wide range in maturity. Several had nearly complete maturity of pods at four months after planting. These were more determinate types as judged by smaller increases in height between flowering and maturity stages and uniform maturity of pods.