

Establishment of Carrot at High Temperature Conditions

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Carrot crops are established by direct seeding, and poor stands may occur when sowing is done during extremely high temperatures. Thus, high temperatures (35-40°C) may delay or inhibit carrot seed germination in the field and reduce uniformity and total stand establishment, especially in tropical areas. Most commercial carrot cultivars have reduced seed germination at high temperatures and superior genetic resources are required to reduce the risk of loss from high temperature stress. Tolerance to high temperatures during germination would seem to require constitutive genetic effects, although the mother-plant environment during seed development and maturation can also affect carrot seed quality and influence thermotolerance, as observed in other species. High seed vigor is necessary for tolerance to environmental stress, including high temperatures. The role of ethylene in seed germination has been extensively studied in several species and the involvement of ethylene in carrot seed germination may be necessary especially under stress conditions. Some studies on carrot seed germination at high temperature in response to genotype, umbel order, seed maturation, vigor and priming will be discussed.

Keywords - *Daucus carota*, genotypes, thermoinhibition, thermotolerance, priming, vigor