Evaluation of Vernalization Requirement in Different Carrot Populations

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Carrot is normally classified as a biennial species requiring vernalization to induce flowering. Nevertheless, some cultivars adapted to warmer climates require less vernalization and can be classified as early-flowering or annual. Previous progeny evaluation of crosses between Criolla INTA and two biennial lines, B1 and B2, showed a single dominant gene conditioning the annual habit. The objective of the present work was to evaluate 6 annual carrots from different geographic origins (Pakistan35, India87, Japan63, Turkey60, Turkey88 and Criolla INTA), 2 biennial carrot (USA and B2) and 4 crosses (USAxJapan63, USAxTurkey60, USAxTurkey88 and B2xIndia87). A randomized block design with three repetitions was sown on 29/4/08 at La Consulta, Argentina. Each plot had 35 plants on average. Once per week each plot was evaluated. Individual plants were scored as being vegetative until the first floral internode elongated. Proportion of flowering plants and weeks from sowing to first elongated internode were calculated. Variance analysis and mean differences were carried out. Proportion of flowering plants was between 0–7% for biennial carrots, 96-100 % for annual carrots, and 82-98% for crosses. Carrots from Pakistan and India had the shortest flowering cycle, with 85% of their plants elongated in week 23, followed by Criolla INTA (47%) and B2xIndia87 (30%). Genotypes Turkey60, USAxJapan63 and USAxTurkey60 had their highest proportion of elongated plants around week 26. Dominance of annual habit was confirmed, while the variability in flowering cycle could be due to allelic differences or action of other genes.