

Experiments were conducted at the Institutes for Applied Research in Beer-Sheva, Israel between November 1992 and April 1993 to study the effects of different temperature regimes on vegetative growth of thirteen melon (*Cucumis melo*) cultigens and to identify rapid and reliable selection criteria for breeding for cold resistance. The cultigens were grown in greenhouses under high and low temperature regimes, with mean minimum and maximum temperatures of 13° and 34°C, and 8° and 33°C, respectively. The cultigens were examined for the rate and amount of vegetative growth, including length of mainstems, number of nodes, internode length and leaf chlorophyll content. Variation among the cultigens both between and within temperature regimes was significant for most of the traits. The best six cultigens for tolerance to suboptimal growing temperatures were Cinco, Midget, BsFDHK, Tal Dvash, H17 and H19. These cultigens performed better than the other cultigens in the low temperature regime for all the traits studied. Relative growth rate (RGR) was found to be the best criteria for distinguishing between cold sensitive and cold tolerant lines. It could, therefore, serve as a rapid and reliable selection criterion for breeding for cold tolerance in melons.