

Evaluation of Karyotype and Ploidy Levels in Some Endemic and Exotic Daffodils (*Narcissus* sp.) Genotypes

M. Chehrazi^{1*}, R. Naderi², A.A. Shahnejat Bushehri³, M.E. Hassani⁴, and E. Zarifi⁵

1. ***Corresponding Author:** Assistant Professor, Department of Horticultural Science, College of Agriculture, Shahid Chamran University, Ahvaz, Iran, (chehrazi_m@yahoo.com)
- 2,3,4. Associate Professor, Department of Horticultural Science, Associate Professor, Department of Plant Biotechnology, Assistant Professor, Department of Horticultural Science, College of Agriculture, Tehran University, Tehran, Iran
5. Instructor, Genetics and genetic resources research department, seed and plant improvement institute, Karaj, Iran

Received: 19 October 2010 Accepted: 2 May 2012

Abstract

Evaluation of karyotype, ploidy levels and chromosome numbers of daffodil (*Narcissus* sp.) plants was carried out on collected endemic genotypes from Southern Khorasan, Khouzestan, Kohgiluyeh – Boyer-Ahmad, Fars, Mazandaran, Golestan provinces and exotic genotypes. The mitotic study karyotype and morphological characteristics of daffodils chromosomes was conducted on the meristematic cells of root tips from bulb. Initially the root tips were pretreated comparable with 8-hydroxyquinoline and ice water. Then they were fixed in ethanol: acetic acid (3:1) solution, hydrolyzed in HCl and stained with aceto-orsein. Three metaphase plates were used to analyze karyotype parameters of each genotype. OR-banding was carried out according to conventional methods. Chromosome numbers showed ploidy levels variation between genotypes. There was a direct relationship between chromosome number and ploidy levels of genotypes. Basic chromosome numbers of endemic and exotic populations were 10 and 7, respectively. Meskinak-e-Behbahan and meskinak-e-Ahvaz varieties were diploid $2n=2x=20$ with karyotypic formula: $4m+5sm+1st$, others were triploid $2n=3x=30$ with $7m+3sm$, white Holandi's daffodil was tetraploid $2n=4x=28$ with $2m+4sm+1st$; others were triploid $2n=3x=21$ with $1m+5sm+1st$. Karyotype evaluation indicated that size and form of chromosomes were different. Also, ploidy levels were confirmed by flow cytometry method.

Keywords: *Chromosome number, Daffodil, Karyotype, Narcissus sp., Ploidy levels*