Research Article

www.ekinjournal.com

Ekin
Journal of Crop Breeding and Genetics

(2015) 1-1:33-35

"BATEM Göral": New mandarin cultivar

Senay Kurt[1] **Ertugrul Turgutoglu**[1] **Gulay Demir**[1]

[1] Batı Akdeniz Agricultural Research Institute, Antalya/TURKEY

Corresponding author e-mail: senayanilir@gmail.com

Citation:
Kurt S, Turgutoglu E and Demir G 2015. "BATEM Göral" New mandarin cultivar. Ekin J Crop Breed and Gen 1-1:33-35.

Received: 23.02.2014 ***Accepted: 09.07.2014*** ***Published Online: 15.01.2015*** ***Printed: 25.01.2015***

ABSTRACT

Citrus is the most widely produced fruit group in the world. Approximately 3 million tons of citrus fruit are produced in Turkey. With total export of one million tons, our country is ranking as the 4th Citrus exporter in the world and ranking as the 2nd among the Mediterranean countries. Mandarin production is 874.832 tons in Turkey and 8,72% of total mandarin production was Clementine mandarin in 2012. From different citrus ecological regions top selection of qualified individuals at "Citrus Budwood Selection-Certification and Variety Development Project" 7 promising types were selected from the Clementine mandarin types and BATEM Göral has been registered as new mandarin cultivar in 2011. BATEM Göral have been compared with Clementine mandarin in distinctness, uniformity and stability tests (DUS). In study results showed that 'BATEM Göral' has larger fruit weight and diameter.

***Keywords*:** mandarin, Clementine, variety, register, selection

Introduction

The citrus have major importance in the world and Turkey. Citrus is the most extensively produced tree fruit crop in the world. The increase of citrus world annual production reached more than 130 million tons (FAO 2012).

Natural mutation is very common in citrus. Many of world's most important cultivars have arisen through somatic mutation. The citrus industry of the world is highly dependent on few varieties such as 'Washington Navel', 'Valencia', 'Shamouti', 'Pera', 'Hamlin' oranges, 'Marsh Seedless' grapefruit, easy peeling mandarins such as 'Satsuma', 'Clementine' (Spiegel-Roy and Goldschmidt 2003). Most of present scion and rootstock cultivars of citrus are the progeny of chance seedlings or a mutant branch of a tree, called 'budsport'. The commercially successful cultivars now grown have resulted from the selection, propagation and advanced testing of thousands of such superior chance seedling (Khan and Kender 2007). The first formal citrus breeding programme was started by USDA in Florida in 1893 (Cooper et al. 1962). Today, there are numerous citrus breeding programmes spread in all major citrus-producing countries (Roose and Williams 2007).

Clementine first appeared at the beginning of the last century in the garden of an orphanage in Algeria as a natural cross between mandarin and sweet orange. Clementines are now the main mandarins in the Mediterranean area and also are being grown in several countries of the Americas and South Africa. Clementine (*Citrus clementina* Hort. ex Tan.) was classified as a Citrus species (Tanaka 1977). Currently, this species is one of the most important mandarin hybrid especially in the Mediterranean countries due to its good fruit quality and flavour, high yield, easy peeling (Uzun and Yesiloglu 2012). Many Clementine clones with high quality and different maturity time were obtained from clonal selection and most of them registered as new cultivars. Bud mutations often arise in Clementine, as it is the case also for orange and Satsuma mandarin, which are generally detected by the growers in branches of trees showing altered horticultural traits, such as maturity

and flowering time, or fruit characteristics (Breto et al. 2001).

Material and methods

DUS tests (UPOV 2003) were carried out at the Fruit Department in Bati Akdeniz Agricultural Research Institute. Clementine (Algerian) and KLA 69 clone were used as material. The following yield and fruit quality characteristics were studied on the cultivars: yield (kg/tree), fruit weight (g), fruit length (mm), fruit diameter (mm), rind thickness (mm), number of seeds, number of segments, Juice (%), total soluble solids % (TSS), titratable acidity % (TA) and ratio of TSS/TA.

The study was conducted in a randomized plot design. All data were analyzed statistically using analysis of variance techniques and the means were separated by LSD's test.

Results

Results regarding the fruit weight and fruit diameter revealed a significant difference between Clementine and KLA 69 clone mandarin ($p \leq 0.05$). Means for other fruit quality characteristics were not found significant (Table 1).

Table 1.Yield and pomological analysis results in mandarin cultivars

Characteristics	'BATEM Göral' (KLA 69)	Clementine (Algerian)	Significance
Fruit weight (g)	104.68 a*	85.13 b	LSD: 9,73
Fruit lenght (mm)	53.32	50.20	ns
Fruit diameter (mm)	62.18 a	56.74 b	LSD:1,24
Rind thickness (mm)	2.40	2.06	ns
Number of segments	9.30	9.10	ns
Number of seeds	6.93	6.80	ns
Juice (%)	52.21	53.20	ns
TSS %	11.70	11.80	ns
Titratable acidity(TA)%	0.82	0.88	ns
TSS/TA	14.36	13.53	ns
Yield (kg/tree)	130.10	108.00	ns

* Different letters indicate significant differences ($P<0.05$) according to the LSD tests

Discussion

Top selection of qualified individuals at "Citrus Budwood Selection - Certification and Variety Development Project" that carried out between 1979 and 1984 were selected 7 promising types from the Clementine mandarin types from different citrus ecological regions in Turkey. KLA 69 clone was compared to Clementine mandarin. Clementine mandarins of various types and varieties are grown in worldwide. Based upon several years of observation and DUS testing, it was registered as 'BATEM Göral' and released as a superior mandarin cultivar with fruit weight and fruit diameter in 2011. 7 promising types from the Clementine mandarin selections were evaluated by Turgutoglu et al. (2011). KLA 69 clone was selected using weight-ranked method. This cultivar is recommended for commercial cultivation throughout the citrus-growing areas in Turkey. Wright (2007), Uzun et al. (2011) and Georgiou (2002) studied in different Clementine mandarin varieties.

References

Breto MP, Ruiz C, Pina JA and Asins MJ (2001). The diversification of Citrus clementina Hort. ex. Tan, A vegetatively propagated crop species. Mol. Phylo. Evol.21: 285-293.

Cooper WC, Reece PC and Furr JR (1962). Citrus breeding in Florida- past, present and future. Proceedings of the Florida State Horticultural Society75:5-13.

FAOSTAT (2012) http://faostat.fao.org/site/567/default.aspx#ancor Accessed 15 September 2013.

Georgiou A (2002). Evaluation of rootstocks for 'Clementine' mandarin in Cyprus. Scientia Horticulturae ; 93(1):29-38. DOI: 10.1016/S0304-4238(01)00311-9.

Khan IA and Kender WJ (2007). Citrus Genetics, Breeding and Biotechnology. In: Citrus Breeding, Khan, I (ed.), CAB Int. Wallingford, pp:1-5. http://books.google.com.tr/

Roose ML and Williams TE (2007). Citrus Genetics, Breeding and Biotechnology. In: Mutation Breeding, Khan, I (ed.), CAB Int. Wallingford, pp: 345-350. http://books.google.com.tr/

Spiegel-Roy P and Goldschmidt EE (2003). Biology of Citrus. In: Genetic Improvement in Citrus. Cambridge University Press, pp: 190. http://books.google.com.tr/

Tanaka T (1977). Fundamental discussion of Citrus classification. Stud. Citrol. 14: 1–6.

Turgutoglu E, Tuncay M, Demirel H, Apaydın Y, Kurt S and Demir G (2011). Clementine Mandarin Variety Selection for Bati Akdeniz Region. VI. National Horticultural Congress in Turkey, Abstract Book:2.

UPOV (2003) http://www.upov.int/edocs/tgdocs/en/tg201.pdf. Accessed 20 October 2008.

Uzun A, Gulsen O, Kafa G and Seday U (2011). Determination of field performance and molecular discrimination of clementine mandarin selections. 2nd Balkan Symposium On Fruit Growing.

Uzun A and Yesiloglu T (2012). Genetic Diversity in Citrus, Genetic Diversity in Plants, Caliskan M (ed.), ISBN: 978-953-51-0185-7, http://www.intechopen.com/download/ get/type/pdfs/id/31479

Wright GC (2007). Mandarin Selection Trials in Arizona – 2006-07. Citrus rootstock and cultivar breeding and evaluation for the Arizona citrus industry – 2006-07. http://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1441-08.pdf