Introduction

There are wide range cherry rootstocks available for growers, however it is still difficult to choose the best one for the growers. Based on our previous study there are two different trends in Europe; in a wider sense North half of Europe low or medium vigor rootstocks are used, the South European cherry rootstock usage still focuses on medium or strong vigorous rootstocks mostly (Bujdosó and Kállayné 2004).

Growers prefer planting on vegetative-propagated rootstocks in order to achieve medium vigorous and homogeneous tree population in the orchard. However, the Hungarian growers still use generative-propagated Mahaleb rootstocks (Hrotkó 1999) because of its drought and lime tolerance. The new, vegetative-propagated Mahaleb rootstocks (Hrotkó and Magyar 2004) should be evaluated with the newly bred Hungarian cultivars (Apolostol 2008, Bujdosó and Hrotkó 2005, Simon et al. 2004).

Material and method

Three early sweet cherry varieties were tested in the trial: Petrus℗, Carmen℗, and Vera℗ on different Mahaleb stocks (Bogdány, Égervár, Magyar, SM 11/4, Érdi V., Körponay) bred at Department of Fruit Growing of Corvinus University of Budapest. Cerasus avium ‘C. 2493’, INRA SL 64 and ‘SM 6’ were also involved in the trial. Control of the trial was ‘Égervár’ Mahaleb rootstock, which is about 10 % less vigorous, compared to F 12/1. Number of rootstocks was different by each scion varieties because of available plant material.

The trial was planted spring of 2004 at Experimental Fields of the Research Institute on chemozem soil with high lime content (KA-40, pH-6, total lime content in the top 60 cm layer 5%, humus content 2.3-2.5 %). Site conditions are the following: average yearly sunshine hours: 1981; average yearly temperature: 10.3 °C; average yearly temperature in the vegetation period: 16.6 °C; average yearly precipitation: 515 mm. Canopy was trained to spindle, the orchard is not irrigated.

Our data base contains data on trunk diameter, estimated yield, fruit size by size fraction from 2008. Unfortunately, there was no crop on rootstock-scion combination in 2012 because of late spring frosts. Cumulated Yield Efficiency Index (cumulated yield between 2008 and 2014 / trunk cross sectional area in 2013) and Value equivalent Yield Efficiency (average fruit weight x No. of fruit by size fraction x yield x size of price fraction in EUR/kg) were calculated. Following farmer prices of different fruit size fractions were taken into consideration: 23.9 mm in diameter 0.6 EUR/kg, 24.0 to 25.9 mm in diameter 0.75 EUR/kg, 26.0 to 27.9 mm in diameter 1.1 EUR/kg, 28.0 to 29.9 EUR/kg, 1.5 EUR/kg, more than 30.0 mm in diameter 2 EUR/kg.

Results

Vigor of tested cherry rootstocks was confirmed by the trial except combination grafted on ‘SM 6’. Due to non-irrigated conditions ‘SM 6’ rootstock showed more weak vigor compared to literature data.


Petrus℗ produced too small fruit size because its average fruit size was lower than 24 mm in diameter. Carmen℗ produced too small fruit size because its average fruit size was too small in diameter. Carmen℗ grafted on ‘Érdi V’ had the best fruit size among Carmen℗ combinations because 50% of measured fruits were 28.1 mm in diameter or larger. ‘SM 6’ reached the best Cumulated Yield Efficiency related to TCSA among all rootstock-scion combinations.

Petrus℗ had the lowest Value equivalent Yield Efficiency but Vera℗ reached higher Efficiency than Carmen Patel.

Conclusions


Petrus℗ is a self fertile cultivar therefore this variety produced the best yield. Vera℗ and Carmen℗ are self fertile varieties so their yields depend among others - on the weather conditions under blooming time.

Petrus℗ produced small fruit size and rootstocks did not affect its fruit size. Vera℗ and Carmen℗ had excellent fruit size and chosen rootstocks didn’t have any negative effect on their fruit size.

Carmen Patel has the largest fruit size in the tested cherry assortment.

Since Vera℗ produced higher yield than Carmen Patel, Vera℗ reached the best Value equivalent Yield Efficiency. The larger size of Carmen Patel couldn’t compensate the difference in yield.

Literature:


GROWTH, YIELD AND FRUIT SIZE OF SOME NEW BRED PRECOCIOUS SWEET CHERRY CULTIVARS ON HUNGARIAN BRED MAHALEB ROOTSTOCKS

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