

Selection of appropriate genitors for organic peach breeding in Austria

A. Spornberger¹, M. Lieber¹, J. Locher,¹ D. Noll¹

Abstract

In 2003, an organic peach orchard was planted at the research station of BOKU with about 40 cultivars, which were tested for their suitability for organic production in Austria. In this paper we present the results from the last years with a special focus on the susceptibility of cultivars to some important diseases and pests for the potential use for breeding of new cultivars suitable for organic production.

Keywords: peach leaf curl, *Taphrina deformans*, shothole blight, *Wilsonomyces carpophilus*, peach aphid

Introduction

The organic peach production is still a developable sector in Austria and in other countries of Central Europe. According to a recent questionnaire done by the Biofruitnet project some of the main challenges for peach growers are cultivar choice, the control of fungal diseases like peach leaf curl (*Taphrina deformans*) and coryneum or shothole blight (*Wilsonomyces carpophilus*) and for pest regulation, mainly the green peach (*Myzus persicae*) and the mealy plum (*Hyalopterus pruni*) aphid. The aim of an ongoing project is to establish and conduct a special breeding program for organic peach growing.

Material and Methods

In 2003 an orchard with about 40 at that time for organic growers probably promising peach cultivars was planted in the research garden of BOKU in Vienna, due to high (14%) lime content mainly grafted on the peach-almond rootstock 'Cadaman'. The aim was to find out which cultivars are suitable for the performed organic production. Basing on these results (Spornberger et al., 2011), in the following years some further assessments were done in the orchard on the most important pests and diseases in years of visible symptoms with a rating scale (from 0=no infestation to 9=very intensive infestation) to identify the most suitable cultivars for organic breeding.


Results, conclusions and outlook

Only very few cultivars (e.g. 'Marnas', 'Vineyardpeach No.3') are showing a low susceptibility to all observed pests and diseases (table 1). Considering also the results from the previous years and some other important characteristics like yield capacity and fruit quality (Spornberger et al., 2011), crosses were made with some of the best performing white-pulp cultivars (e.g. 'Marnas', 'Mireille', 'Vineyardpeach No.3', 'Vineyardpeach Poysdorf') with the well rated yellow-pulp cultivar 'Jayhaven' and also with the highly peach leaf curl-tolerant and more early ripening cultivar 'Avalon Pride' (also yellow pulp) used as pollen donator. The offspring of this breeding project are evaluated in the next years on disease and pest susceptibility as well as on other important characteristics like frost tolerance, yield capacity and fruit quality (e.g. colour, fruit firmness, taste) to obtain new interesting varieties for organic growers.

¹ A. Spornberger, Institute of Viticulture and Pomology, University of Natural Resources and Life Sciences, A-1180 Vienna, andreas.spornberger@boku.ac.at

Table 1: Rating of the susceptibility of peach cultivars to some important pests and diseases during the observation period.

Cultivar	<i>peach leaf curl</i>	<i>shothole blight (leaves)</i>	<i>aphids</i>
	<i>Taphrina deformans</i>	<i>Wilsonomyces carpophilus</i>	<i>Myzus ssp.</i>
	Mean from 2010-2021	Mean from 2013-2021	Mean from 2020-2021
5392	2,79	2,25	2,75
Benedicte	1,54	2,48	2,17
Diamond Princess	4,68	2,73	2,18
Doris	3,33	3,00	3,75
Dugelay	2,71	3,50	4,38
Early Devil	3,74	2,90	2,13
Helene	3,71	2,38	1,50
Jayhaven*	1,14	2,25	2,25
Maria Bianca	2,44	3,29	3,21
Maria Christina	3,64	3,13	3,33
Marnas*	1,46	1,75	1,25
Mireille*	1,95	2,08	2,46
Nectared 6	3,65	2,35	3,98
Priscilla (INRA 6444)	5,08	2,75	1,56
Red Robin	3,38	2,75	2,22
Redcal	4,42	2,81	2,34
Redhaven	2,86	2,71	2,31
Royal Geem	3,92	2,38	3,83
Royal Glory	2,84	3,06	3,50
Royal Jim	5,65	2,83	0,63
Royal Lee	4,20	3,33	4,75
Royal Pride	5,20	3,00	3,25
S 3928 x GF 305 1-2	0,79	2,25	2,25
Sieger	2,33	2,13	1,75
Suncrest	3,25	2,58	2,75
Sweethaven	3,52	2,88	3,25
Symphony	5,00	2,38	3,13
Vineyardpeach Eibesthal	1,57	2,31	1,13
Vineyardpeach No.3*	0,89	1,50	1,88
Vineyardpeach Poysdorf*	2,05	2,41	1,33
Vista Rich	4,94	2,56	3,33
White Red	4,08	3,00	3,00
Winzertraum	4,17	2,04	1,00
Zee Lady	4,83	2,50	3,25
Mean	3,29	2,60	2,58

* Cultivars selected for breeding	
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References

Spornberger, A., Öhlinger, B., Skramlik, R. (2011). Power-Pfirsiche für den Bio-Anbau. *Besseres Obst*, 2, 24-28.