

## Improving Organic Production of Plums (*Prunus domestica*) in Austria

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### Abstract

The aim of the still running project (2010-2012) has been to find out, what is necessary in order to establish an economically practicable organic plum production in Eastern Austria. In terms of methodology, in 2011 a survey about farmers' experiences was done with a questionnaire and we have been conducting accompanying research on farms in order to assess important diseases and pests (e.g. *Cydia funebrana*) and other important production questions.

We want to discuss our first results with researchers from other countries.

**Keywords:** plum, cultivars, *Cydia funebrana*

### Introduction

In Austria, organic production of plums (*Prunus domestica*) is still a niche with totally about 20 ha of production area (Ama, 2011). Nevertheless, there has been a rising demand on the market. The aim of our ongoing project (from 2010-2012) in cooperation with a wholesaler, farmers and research institutes has been to find out, what is necessary in order to establish an economically practicable organic plum production in Eastern Austria.

### Material and Methods

In January 2011, a questionnaire was sent to all Austrian farmers, who were producing organic plums on at least 0.04 hectares.

The questions were about production area, experience with rootstocks and cultivars, problems in plant protection, marketing and needs for research. In some questions the farmer also had the opportunity to assess (e.g. used cultivars, plant protection methods, demands for research) with a simple evaluation system (1=very good, 5=very bad experience).

In order to rate the importance of the evaluation of the used cultivars an index mark was calculated:  $\text{index} = \sum [\text{cultivars on the farm}] + [\text{total number of assessments for this cultivar}]$ . The index was higher when a cultivar was assessed by more different farmers and also depended on how many cultivars a farmer was keeping.

From 2007 – 2011 the most important pests and diseases were monitored every year on an organic farm in Eastern Styria (farm A). The size of the more or less connected plum orchards on this farm is about 3 ha, and the method of mating disruption (Isomate OFM rosso) has been used since 2007 in the orchards. Every year during harvest season about 1000 plums of 4 different cultivars ('Katinka', 'Cacak's Schöne', 'Valjevka', 'Top') were observed on damages by *C. funebrana*.

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In 2009, we also monitored the damage caused by *C. funebrana* in the orchards of smaller size (1 ha on farm B and 0.75 ha on farm C) of two other organic farmers who were using the mating disruption method (cultivars 'Katinka', 'Cacak's Schöne') for the first time in that year.

In order to find out more about the control of *Monilia fructigena* we made some trials with two different products (Boni protect and Mycosin). Unfortunately we didn't have enough fruits to get a comparable result. Also thinning methods with lime sulphur and Electroflor were discussed.

## Results

### Questionnaire

18 questionnaires (32%) from a total of 57 were returned by farmers.

The average plum production area of the surveyed farmers is 0.51 ha (3% of their total farm area).

The most widely used rootstocks are 'Jaspi Fereley' (11 farmers), 'Waxwa' and 'St. Julien GF 655/2' (8) and 'Wawit' (5).

In the evaluations of cultivars by farmers the cultivars 'Haganta', 'Top Hit' and 'Cacak's Fruchtbare' got very good assessments, and with still very little experience also the new cultivars 'Top Taste', 'Top Giant' and 'Top Star Plus', whereas the cultivars 'Zimmers', 'Top Five', 'Jojo' and 'Hanita' showed a poor performance (figure 1).

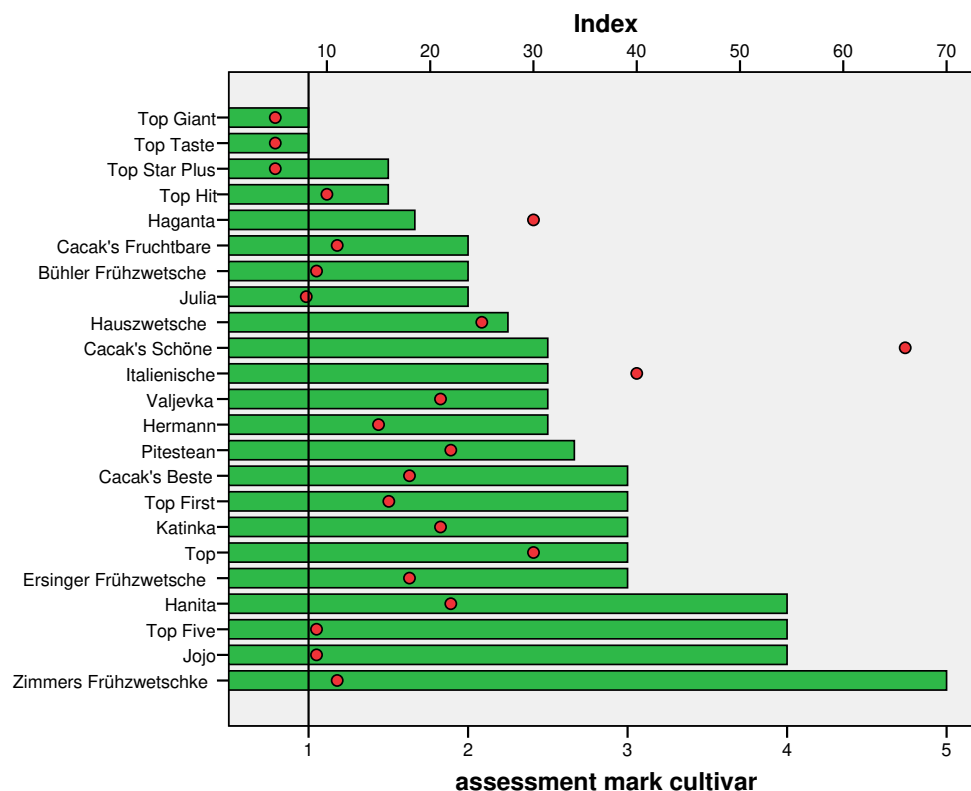


Fig. 1: Assessment of the used cultivars by the farmers (=balks) and calculated Index of the cv. (points; a high index means that the assessment is more reliable) (N=18 farmers, multiple mentions possible)

The farmers mentioned that the most important challenges in plant protection were fruit rot caused by *Monilinia fructigena*, plum sawfly (*Hoplocampa flava*) and *Cydia funebrana*, and

with some less importance also *Stigmina carpophila*, plum rust (*Tranzschelia prunispinosae*, *T. discolor*), voles (*Arvicola terrestris*), tree decline and plum pox virus.

40% of the produced plums are sold directly on the farm, 27% by grower organisations and 21% in the retail (figure 2). 21% of the plums are processed, on some farms most or even the entire harvest.

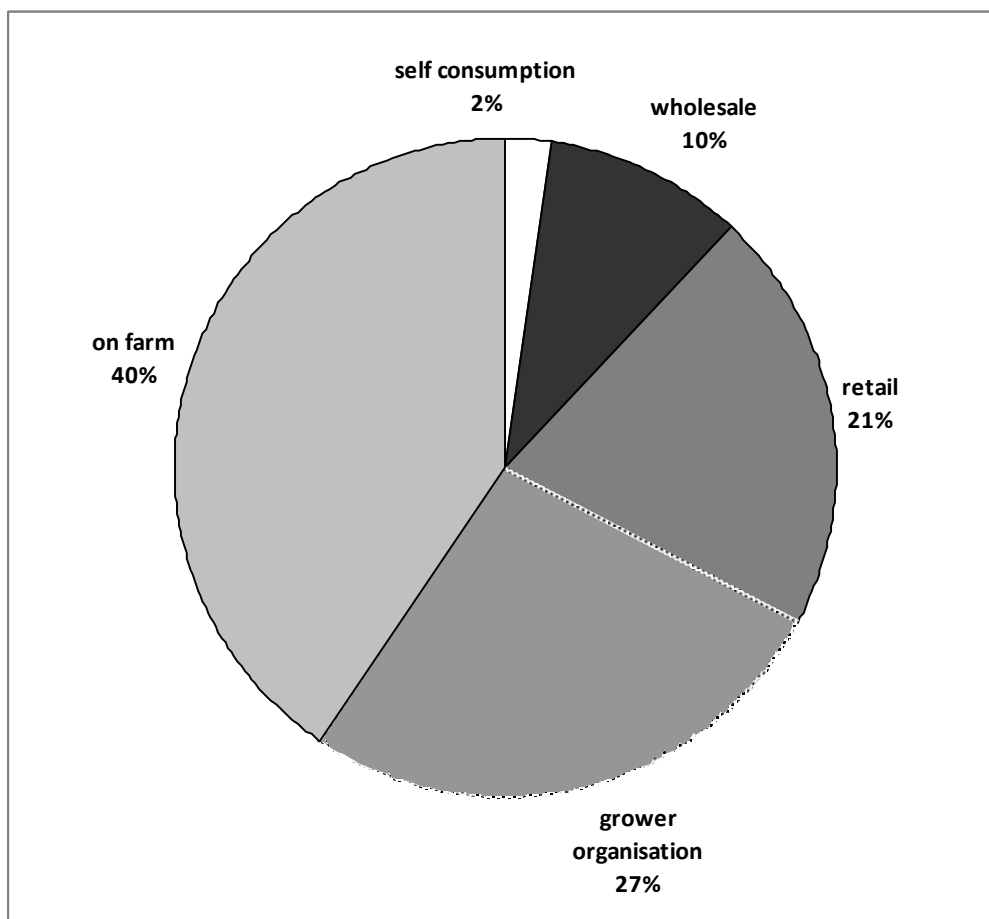


Figure 2: Ways of marketing of the produced plums (N=18 farmers; multiple mentions possible)

The main questions regarding the research for the organic growers are cultivars (13), plant protection in general (11), rootstocks (9) and plant material and nursery (7). And regarding special questions in plant protection: plum sawfly (*Hoplocampa flava*) and *Cydia funebrana* (both 9), Monilia fruit rot (7), tree decline (6), voles (*Arvicola terrestris*) (3) and plum pox virus (3) were mentioned most often.

#### On farm monitoring of *Cydia funebrana*

During the last 5 years the average damage through *Cydia funebrana* on farm A was between 0 to 2% which is an acceptable result for the market and the grower (table 1). Therefore on this farm with about 3 ha the mating disruption method was working very well.

In 2009, the damage through *C. funebrana* on the two other smaller organic orchards was about 1% infested fruits on farm B and more than 6% on farm C.

Table 1: Results of the assessment of *Cydia funebrana* on fruits during harvest from 2007-2011 on farm A

cultivar	% damaged fruits by <i>Cydia funebrana</i>				
	2007	2008	2009	2010	2011
Katinka	0.00	Hail	0.99	0.00	0.00
Cacak's Schöne	0.00	Hail	1.05	0.00	0.26
Valjevka	0.86	Hail	No monitoring	0.86	No monitoring
Top Taste	No trees	No trees	1st year	2nd year	0.00
Top	0.75	2.2	1.76	0.00	1.51

### Conclusions and outlook

As a first conclusion, we can state that the mating disruption, as the only effective method to regulate *C. funebrana* in organic production in Austria, has so far been working on the farm with about 3 ha of plum orchards.

For smaller or new orchards, the use of hail nets all around the orchard may be a good solution to control *C. funebrana*. At the moment there are two orchards where this method is tested.

In 2012 we will try to get more information about experiences with organic plum production from experts and producers from other countries through interviews. The monitoring and the accompanying research on farms will also continue.

### Acknowledgements

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### References

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