

# Investigation of agronomic value and fruit quality of some plum cultivars resistant to PPV in experiments and collection of RIH Skierniewice



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This work was performed in the frame of multiannual programme of gene bank resources financed by the Polish Ministry of Agriculture and Rural Development: Task 1.3 „Collection, preservation in *ex situ* collections, cryoconservation, evaluation, documentation and using of gene bank resources of horticultural plants

<b>Production and export</b>	<b>Plum and prune production in Poland</b>				
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Production [in thousand tons]	<b>113,6</b>	<b>120,7</b>	<b>83,8</b>	<b>91,8</b>	<b>80,0</b>
Area [in thousand hectares]	<b>21,1</b>	<b>21,0</b>	<b>17,9</b>	<b>20,2</b>	<b>20,0</b>
Export of fruits [in thousand tons]	<b>25,2</b>	<b>17,9</b>	<b>7,1</b>	<b>9,4</b>	<b>8,5</b>

- In 1992 Poland produced **155** thousand tons of plum fruit

# Problems in plum production in Poland



**Plum Pox Virus (sharka)**



**Winter and spring frosts**



**Fruit rot**



**Pests**



**Fruit cracking**





# Cultivar – important factor

- 👍 **Tolerant or resistant to PPV**
- 👍 **Ripening time**
- 👍 **High fruit quality (weight, freestone, firmness, taste)**
- 👍 **Suitability for transport and durability on the market**
- 👍 **Trees should be productive, winter hardy**



**Starting from eighties of last century, tolerant cultivars  
were introduced into cultivation**



**Katinka**

**'Ortenauer' x 'Ruth Gerstetter'**

**Kalipso**

**'Cac. Lepotica x 'Opal'**



**‘Cacanska Lepotica’ i ‘Cacanska Najbolja’  
( still popular in orchards)**





## Węgierka Wczesna (Early Prune)





**Hanita**  
**‘President’x‘Auerbacher’**

**Presenta**  
**‘Ortenauer x ‘President’**





**Sharka on the leaves of tolerant  
cultivar Cacanska Rodna**

## Sharka on the leaves of Cacanska Lepotica (tolerant cultivar)



## THE GROWTH AND YIELDING OF 'JOJO' PLUM TREES in ORGANIC ORCHARD CONDITIONS

The experiment was established in the spring of 2005 in the Experimental Ecological Orchard in Nowy Dwór-Parcela near Skierniewice, on a sandy-loam podzolic soil, IVb. The average organic matter content was 1.3-1.4%.

One-year-old trees of the cultivar 'Jojo' grafted onto Myrobalan (*Prunus cerasifera* var. *divaricata*) and 'Wangenheim Prune' seedlings were planted in a random block design, at a spacing of  $4.5 \times 3.5$  m, in four replications, with five trees per plot. The trees were irrigated with a drip system.

Ecological programme of plant protection of plum trees against diseases included: 2-3 treatments each year with a copper preparation (Miedzian 50 WG in a dose of 3 kg/ha). The programme of protection against pests included one treatment with: Treol 770 EC or Promanal 60 EC against the red spider mite (*Panonychus ulmi*) and the brown scale (*Parthenolecanium corni*). Aphids were controlled using from one to several treatments, depending on the severity of the pest, with a mixture of Bioczos and horticultural soap. In the years 2009-2012, treatments with SpinTor 240 SC bacterial preparation were performed 2-3 times against the plum fruit moth (*Laspeyresia funebrana*).



**Table1. Effect of rootstock on the growth and yielding of ‘Jojo’ plum trees in an ecological orchard**

Rootstock Seedling of:	TCSA [cm <sup>2</sup> ]	Yield [kg/tree]						Total fruit yield [kg/tree]	Producti vity index [kg/cm <sup>2</sup> ]
		2008-11	2012	2013	2014	2015	2016		
<b>Myrobalan</b>	<b>183,8 a</b>	<b>32,1 a</b>	<b>37,9 a</b>	<b>23,5 a</b>	<b>37,6 a</b>	<b>34,5 a</b>	<b>23,6 a</b>	<b>189,2 a</b>	<b>1,039 a</b>
<b>Wangenhei m Prune</b>	<b>128,7 b</b>	<b>30 a</b>	<b>33,8 a</b>	<b>12,6 b</b>	<b>21,5 b</b>	<b>24,3 b</b>	<b>12,7 b</b>	<b>134,9 b</b>	<b>1,063 a</b>

\* TCSA – trunk cross-sectional area/pole poprzecznego przekroju pnia

**Table 2. Effect of rootstock on the fruit weight of ‘Jojo’ plum trees in an ecological orchard**

	Mean fruit weight [g]						
Rootstock	2008-11	2012	2013	2014	2015	2016	Average
Myrobalan plum	55,1 a	38,1 a	26,9 a	39,3 a	38,4 a	32,9 a	42,6 a
Wangenheim Prune	54,7 a	36,7 a	28,1 a	45,5 a	37,4 a	36,6 a	43,5 a

# 13 years-old trees of 'JOJO' grafted on 2 rootstocks in organic orchard



**2018 year**



## JOJO fruit in experimental, ecological orchard, in 2018



In collection of Institute of Horticulture in Skierniewice, from spring of 2015 two new cultivars resistant to PPV, bred in Germany, are evaluated.

Each cultivar is represented by 5 trees



**Jofela**



**Joganta**



## **‘JOFELA’ (‘Jojo’ x ‘Felsina’)**

**The tree, grafted on Wangenheim Prune seedling is very productive. The fruits ripen in the same time as ‘Jojo’. Fruit smaller than ‘Jojo’, with fruit weight 30-40g, smaller than ‘Jojo’, with elongated shape . Skin dark blue, flesh and tasty and freestone**





## JOGANTA ('Jojo' x 'Haganta')

The tree, grafted on Wangenheim Prune seedling grow rather weakly. Spur type. The fruits their appearance resemble 'Haganta'. Fruit weight: 50-60g, Skin dark blue, flesh yellow/green, semi freestone. Taste is not so good, flesh is bitter near skin with wild aftertaste.



# South part of Poland – best area for plum production





# ‘TEMANO’ – a new cultivar without any symptoms of sharka





## **‘TEMANO’** – a new cultivar without any symptoms of sharka



**‘TEMANO’** – probably is a seedling of ‘Zimmer’s Prune. Te fruits in prune type with weight 25-30g, ripen in the middle of August

**Skin dark blue, flesh yellow, very well freestone, very taste**

**TEMANO** gives the chance to returns plums to grow in the regions of southern Poland

# 'TEMANO' – a new cultivar without any symptoms of sharka





# Concluussions

- **Sharka resistant cultivars are the only chance to produce plums in areas, where the disease has spread very strongly**
- **The breeding program of plum cultivars resistant to PPV should take into account different ripening time of fruit and improvement their quality (mainly taste)**





# Thank You very much



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