

PRODUCTION OF RASPBERRIES IN POLAND AND RESULTS OF STUDIES ON SEASON EXTENSION OF THE POLISH PRIMOCANE FRUITING RASPBERRY CULTIVARS



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FRUIT PRODUCTION IN POLAND GENERAL INFORMATION



- Fruit production in Poland is distributed unevenly over 16 provinces (voivodeships).
- ➤The biggest fruit production area is located in central and south-eastern part of Poland.
- Factors affecting destribution of fruit production: favorable weather conditions, good soil as well as a long tradition in cultivation of different crops.



SMALL FRUIT PRODUCTION IN POLAND (2012 – 553.000 MT)





PRODUCTION OF RASPBERRIES IN POLAND



RASPBERRY PRODUCTION IN POLAND (1990-2012)





RASPBERRY PRODUCTION IN POLAND

 Growing area: about 28 000 ha Stabile during last 4 years

 Plantation area: 1,0 ha or less – 90 % the largest plantation over 300 ha



MAIN RASPBERRY GROWING AREA





STRUCTURE OF RASPBERRY CULTIVARS (recently planted in Poland)







CULTIVATION METHODS

Open field (more than 95 %, approx.) – most of plantations are managed as free-standing (primocane) or in hedgerow system (floricane). Only some plantations are furnish with irrigation or fertigation system.







Under cover (less than 5 %, approx.) – plastic tunnels or roof type cover. The plants are grown mostly in the ground, bud in some cases in the pots.





RESULTS OF STUDIES ON SEASON EXTENSION OF THE POLISH PRIMOCANE FRUITING RASPBERRY CULTIVARS



AIM OF THE STUDIES

Extending the harvesting time of primocane fruiting raspberies in Central Poland by application of different cultural methods



MATERIALS AND METHODS

> PLANT MATERIAL (CULTIVARS):



The varieties were bred in the Experimental Orchard in Brzezna, by Dr. Jan Danek and registered into the Polish National List of Fruit Plant Varieties (PNLFPV) and the Plant Breeders' Rights (PBR) in the years 1991, 2003 and 2006.



> TYPE OF PLANTS:

1. root cuttings

> TYPES OF TREATMENTS

- 1. fiber cover (17 g/m²)
- 2. perforated plastic cover (700 holes per 1 m²)
- 3. mowing of emerging young shoots
- 4. control



- The experiment was established in the autumn 2010. Rondom block design, 4 replications with 5 plants per rep. (20 plants for each treatment), spacing of 0.5 m x 3.75 m.
- In the middle of March 2012 the plants were covered with perforated plastic cover and fiber cover, the covers were removed one month later.
- In the treatment with mowing of emerging young shoots, mowing was done in the middle of May.
- The control plants were neither covered nor moved. The total number of plants in the experiment: 3 genotypes x 4 treatments x 4 reps x 5 plants = 240 plants.



MEASUREMENTS AND OBSERVATIONS

- ripening time
- yield (kg)
- vaverage fruit weight (g)
- soluble solid content (TSS) (using a refractometer Rudolph J-157) (BRIX)
- ascorbic acid content (using a reflectometer RQ-Easy and Merck test strips) (mg/100 ml)



Old canes are removed





control





perforated plastic cover





fiber cover



mowing of emerging young shoots





RESULTS 2012



RIPENING TIME

(Pomological Orchard, Skierniewice, 2012)

CULTIVARS	FIRST HARVEST
Polesie – C*	18.07.2012
Polesie – PPC	06.07.2012
Polesie – FC	06.07.2012
Polesie – M	30.07.2012
Polka – C	18.07.2012
Polka – PPC	06.07.2012
Polka – FC	06.07.2012
Polka – M	30.07.2012
Polana – C	16.07.2012
Polana – PPC	04.07.2012
Polana – FC	06.07.2012
Polana – M	28.07.2012

Explanation: * C – control, PPC – perforated plastic cover, FC – fiber cover, M - mowing

The earliest fruits were picked from combinations with the perforated plastic cover and fiber cover, about two weeks earlier than in control combination.

YIELDING OF RASPBERRY CULTIVARS

(Pomological Orchard, Skierniewice, 2012)

CULTIVARS	YIELD (kg/plot)
Polesie – C*	14.7
Polesie – PPC	19.2
Polesie – FC	20.3
Polesie – M	13.1
Average for cultivar	16.8
Polka – C	18.2
Polka – PPC	21.9
Polka – FC	22.5
Polka – M	15.2
Average for cultivar	19.5
Polana – C	11.4
Polana – PPC	13.6
Polana – FC	14.2
Polana – M	9.0
Average for cultivar	12.1

Explanation: * C – control, PPC – perforated plastic cover, FC – fiber cover, M – mowing

The highest yield was obtained from 'Polka' cv. (22.5 kg / plot (plot with an area of 3 m²) with a combination of fiber cover and 21.9 kg / plot with a combination of perforated plastic cover).



WEIGHT OF FRUIT

(Pomological Orchard, Skierniewice, 2012)

CULTIVARS	AVERAGE FRUIT WEIGHT (g)
Polesie – C*	4.7
Polesie – PPC	5.1
Polesie – FC	5.0
Polesie – M	4.8
Average for cultivar	4.9
Polka – C	4.0
Polka – PPC	4.2
Polka – FC	4.2
Polka – M	4.1
Average for cultivar	4.1
Polana – C	2.8
Polana – PPC	3.2
Polana – FC	3.0
Polana – M	3.1
Average for cultivar	3.0

Explanation: * C – control, PPC – perforated plastic cover, FC – fiber cover, M – mowing

The biggest fruits produced 'Polesie' cv. (4.7-5.1 g), slightly smaller 'Polka' cv. (4.0-4.2 g), and the smallest 'Polana' cv. (2.8-3.2 g).





Measurement of the fruit extract (soluble solid content)



SOLUBLE SOLID CONTENT (BRIX)

(Pomological Orchard, Skierniewice, 2012)

CULTIVARS	SOLUBLE SOLID CONTENT (BRIX)
Polesie – C*	11.12
Polesie – PPC	11.35
Polesie – FC	11.17
Polesie – M	11.23
Average for cultivar	11.22
Polka – C	11.24
Polka – PPC	11.43
Polka – FC	11.33
Polka – M	11.28
Average for cultivar	11.32
Polana – C	10.91
Polana – PPC	11.11
Polana – FC	10.96
Polana – M	11.03
Average for cultivar	11.00

Explanation: * C – control, PPC – perforated plastic cover, FC – fiber cover, M – mowing

The fruits of 'Polka' cv. contained the most soluble substances from 11.24 to 11.43.







Measurement of the ascorbic acid content





ASCORBIC ACID CONTENT (mg/100 ml)

(Pomological Orchard, Skierniewice, 2012)

CULTIVARS	ASCORBIC ACID CONTENT (mg/100 ml)
Polesie – C*	82
Polesie – PPC	88
Polesie – FC	84
Polesie – M	81
Average for cultivar	84
Polka – C	71
Polka – PPC	77
Polka – FC	74
Polka – M	73
Average for cultivar	74
Polana – C	72
Polana – PPC	74
Polana – FC	75
Polana – M	72
Average for cultivar	73

Explanation: * C – control, PPC – perforated plastic cover, FC – fiber cover, M – mowing

The fruits of 'Polesie' cv. were the richest in vitamin C (81-88 mg of vitamin C in 100 ml of juice).

Instytut Ogrodnictwa





THANK YOU FOR YOUR ATTENTION