



Recent results and future prospective of blackcurrant research in Estonia

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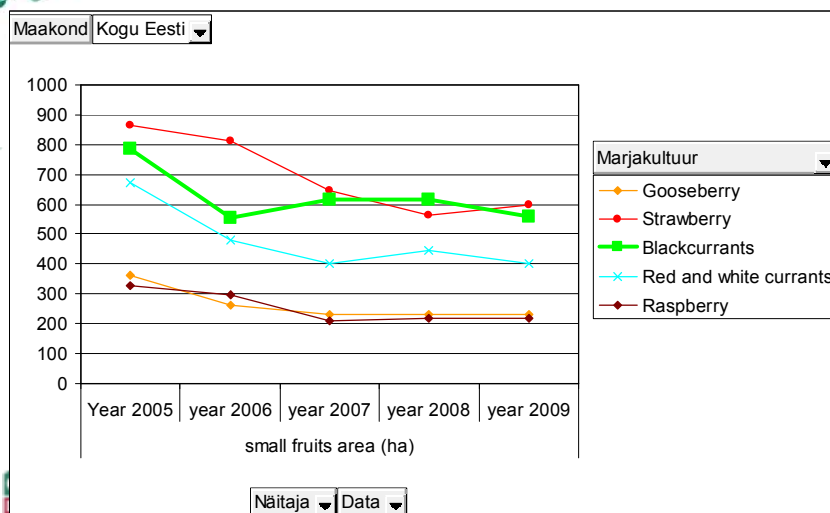


Black currants in Estonia

- land in agricultural use 907 000 ha
- horticultural crops 18 400 ha
- small fruits 2000 ha
- currants in total 960 ha
 - ✓ red and white currants 402 ha
 - ✓ **black currants 558 ha**



Small fruits production area (ha)



Black currant production

Recommended cultivars:

- 'Öjebyn'
- 'Zagadka'
- 'Pamyati Vavilova'
- 'Intercontinental'
- 'Titania'
- Varmas
- 'Lentjai
- Belorusskaja Sladkaja
- Seijanets Golubki
- Bagira
- Karri



Polli Horticultural Research Centre

- Was founded in 1945.
- Is located in South Estonia (58°N 25 °E), in the region with characteristic soil and climate conditions, location well suited for fruit growing
- since 2005: Polli Research Centre for Horticulture of the Institute of Agricultural and Environmental Sciences of the Estonian University of Life Sciences



Research at Polli Horticultural Research Centre

- Mainly applied research focused on
 - Growing technologies, cultivar evaluation
 - New berry crops and their use
 - Sustainable horticulture and integrated plant protection
 - Economical aspects of berry growing
- Breeding of limited number of cultivars,

Research focuses in blackcurrants

- Genetic resources
- **Breeding and evaluation** of cultivars:
 - for chemical composition of fruit (antocyanidins, fatty acids, vitamin C)
 - for ecological growing systems
 - for machine harvesting

Research focuses in blackcurrants

- testing self-fertility of breeding lines and new cultivars
- taste of berries has always been important



'Karri' ('Mulgi Must' x 'Kantata')

- midseason
- big fruit (average 1.6 g)
- berries in tall clusters with thick density
- bush rather high, upright
- winter hardy, good yielding, resistant to mildew and black currant gall mite



'Almo' ('Kantata' x 'Õjebyn')

- midseason.
- big fruit (average 1.5 g), berries in tall clusters with medium density
- Bush upright
- winter hardy, good yielding, resistant to mildew and gall mites



'Ats' ('Öjebyn' x 'Varmas')

- midseason.
- big fruit (average 1.2 g), berries in medium clusters with medium density
- bush: medium, upright-spreading
- winter hardy, very good yielding, resistant to mildew and gall mites
- flowers rather resistant to spring frosts.



'Elo' ('Öjebyn' x 'Kantata')

- early
- big fruit (average 1.4 g) berries in medium clusters with medium density
- bush: medium, upright
- winter hardy, good yielding, resistant to mildew and black currant gall mite



Selected seedlings

Ascorbic acid 140-150 mg/100g, good taste, large fruit
disease and pest resistant, winter resistant

- 10B (Elo x Öjebyn)
- **18B (1-90-15) (Lepaan musta x Minai Smõrjev)**
- 2-96-51 (Pamjati Vavilova x Lentjai)
- **4-96- 1 (Pamjati Vavilova x Öjebyn)**

Ascorbic acid >200mg/100g; sugar acid ratio 4,2



18B (Lepaan musta x Minai Smõrjev)

- midseason
- good self-fertility and tolerance of spring frost
- good taste.
- resistant to mildew and gall mite
- Ascorbic acid 124 mg /100g
- Berry size 1,2 g (average)



Evaluation of self fertility

Three treatments

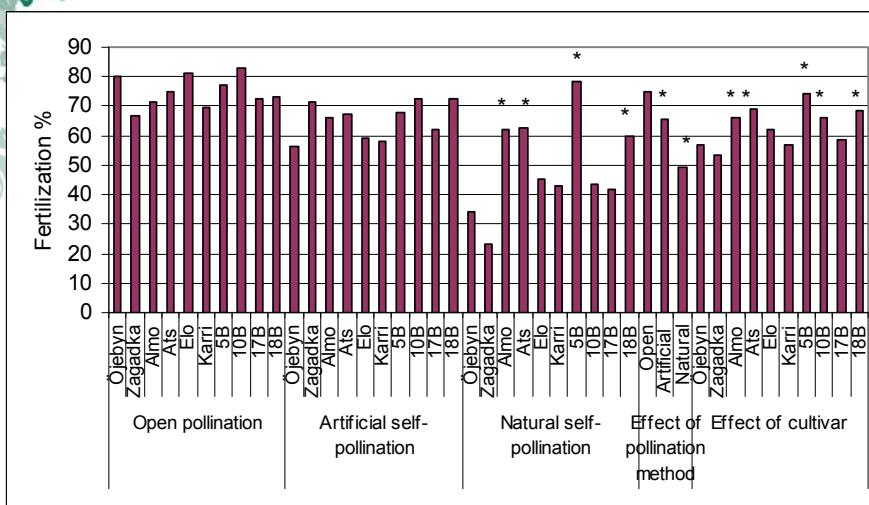
- open pollination
- Natural self pollination
- Artificial self-pollination



Berries were counted:

3 weeks after flowering and during ripening

Percentage fruit set of genotypes



Mechanical harvesting trial

- Established in 2003 on black plastic mulch
- Four repetitions, plots of 20 plants
- Cultivars:
 - Karri, Almo, Varmas,
 - Pamjati Vavilova, Titania, Intercontinental, Zagadka, Öjebyn
 - Prikarpatskaja, Polar.

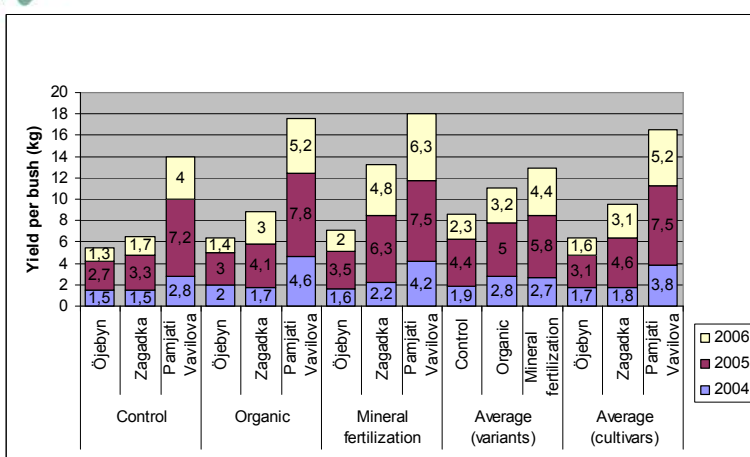
Fruit harvesting quality

Genotype	Harvesting quality
Öjebyn	medium
Zagadka	good
Polar	low
Intercontinental	medium to good
Titania	good
Varmas	good
Pamjati Vavilova	good
Prikarpatskaja	good
Karri	medium
Almo	medium

Organic cultivation trial

- Established in 2002
- Cultivars: 'Õjebyn', 'Zagadka', 'Pamyati Vavilova'
- Variants:
 - control (unfertilized)
 - Organic (spraying with 0,2%NeemAzal and 1,5% Allgrow, fertilized with Algomin (1-7-15) 4kg/100m²)
 - Conventional

Average yield of blackcurrants in 2004-2006 (kg/bush)



New trial in organic cultivation

- Established in 2006
- First harvested (by hand picking) in 2008
- Mechanical harvesting planned for next year

First results

Cultivar	Number of flowers per raceme		Drop off%		Yield kg/bush		100 fruit weight, g	
	2008	2009	2008	2009	2008	2009	2008	2009
Intercontinental	5,6	5,5	27,3	19,3	0,99	2,5	161	172
Pamjat Vavilova	8	6,6	9	17,2	1,08	2,9	88	95
Titania	7,2	6,4	31,7	25,6	0,77	2,7	114	119
Ben Arder	7,2	7,2	41,3	38	0,66	2,2	64	84
Ben Lomond	6,9	6,4	24	44,4	1,18	2,4	97	124
Karri	6,7	7,5	31	49,9		2,1		160
Almo	9	7,3	33	25,7		2,4		136
Elo	7,5	6,7	25,3	13		3		112

Genetic resources projects

- National Programme: “Collection and Conservation of Plant Genetic Resources for Food and Agriculture
- AGRI GEN RES 071 project, RIBESCO - Core collection of Northern European gene pool of *Ribes*. Project co-ordinator MTT Finland



Resources available on web page

- On-line catalogue of cultivars bred in Estonia at <http://polli.emu.ee>
- Data on observations in collections available at <http://polli.emu.ee/index.php?sub=vaatlus2>

Estonian fruit and berry cultivars



Apples



Pears



Plums



Cherries



Currants



Raspberries



Data on cultivars

The screenshot displays a web interface for cultivar data. At the top, there are navigation tabs: 'Introduction', 'Cultivar Cultures', 'Research', 'Market availability', and 'Contact'. The main content area is divided into several sections:

- Header:** 'CULTIVAR' followed by a title and a brief description.
- Image:** A photograph of dark, round berries on a branch.
- Textual Description:** A paragraph describing the cultivar's characteristics, including its origin and intended use.
- Technical Data:** A table-like structure with fields for 'Fruit weight (g)', 'Fruit yield (t/ha)', 'Fruit color', and 'Fruit shape'.
- Planting Information:** Fields for 'Planting date', 'Planting distance', and 'Planting density'.
- References:** A list of scientific or technical references related to the cultivar.

Phenological observations

Sort	Istutusaasta	Jahukaste	Pahklest	Lehevaristõbi	Sõstra klaas	Talvekahj. kevadel
Albos	2000	3	2	3	1	6
Almo	2003	1	2	1	1	5
Anneke	2000	5	2	5	1	5
Ats	2003	1	2	1	1	4
Elo	2003	1	1	1	1	4
Karri	2003	1	1	1	1	5
Moka	2000	1	1	5	1	6
Mulgi must	2000	5	1	3	1	7
Musti	2000	3	1	3	1	7
Polli pikk- kobar	2000	1	1	3	1	6
Uus must	2000	3	2	2	1	7
Varmas	2000	3	2	3	1	6

From field to processed product

- Product development centre launched in 2008
- Training, consultations and assisted use of equipment for pilot scale processing of fruit and berries
- Supported by 'Estonia-Latvia' cross border programm



