Lithuanian Reseach Centre for Agriculture and Forestry
INSTITUTE OF HORTICULTURE

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BLACKCURRANT BREEDING AND CULTIVAR EVALUATION IN LITHUANIA

International Blackcurrant Conference : "Blackcurrant: the Stress Hero", Vilnius, June 10-12, 2015

Blackcurrant breeding

The breeding program for black currants is being focused on resistance to the main pests and diseases, quality of berries, adaptation to the local climatic and soil conditions, suitability for mechanical harvesting (Trajkovski, 1996; Pluta, Zurawicz, 2002)

High priority is also given to high levels of ascorbic acid, together with low acidity and improved sensory characteristics (Brennan, Gordon, 2002)

Nutritional value is becoming more important as well, particularly in terms of high antioxidant activity (Stewart et al., 2001)

Blackcurrant breeding

These goals are being gradually fulfilled by choosing the most convenient crosses of parental cultivars from the world assortment and new hybrids carrying valuable genetical and economical characteristics (Cvopa, Cvopova, 1993)

The Lithuanian black currants breeding program was started

in 1946

Blackcurrant breeding

Between 1946-1970

In black currant breeding program were used plants of *R. nigrum* ssp. *Europaeum* Jancz.

The first raised black currant cv. 'Derliai' was included into the assortment of the Lithuanian and Russia (Kaliningrad) horticultural plants in the period of 1958-1970 and cv. 'Juodžiai' - in the period of 1958-1966 (Breeder I. Štaras)

+ good fruit quality

- not enough winter hardiness, susceptible to spring frost and fungal diseases

Blackcurrant breeding

Between 1970-1991

R. nigrum ssp. *sibiricum* Pavl. and *R. dikusha* Fisch. – resistance to frost, anthracnose (*Pseudopeziza ribis* Kleb.) and gall mite (*Cecidophyopsis ribis* Westw.)

Cultivars from Scandinavian countries – resistance to powdery mildew (*Sphaerotheca mors – uvae* Berk.)

'Svyriai' (breeder A. Ryliškis) included into the Lithuanian National List of Plant Varieties since 1979

'Kastyčiai' (breeder A. Misevičiūtė) included into the Lithuanian National List of Plant Varieties since 1991

'Vakariai' (breeder A. Misevičiūtė) - first cultivar resistance to gall mite - included into the Lithuanian National List of Plant Varieties since 1991

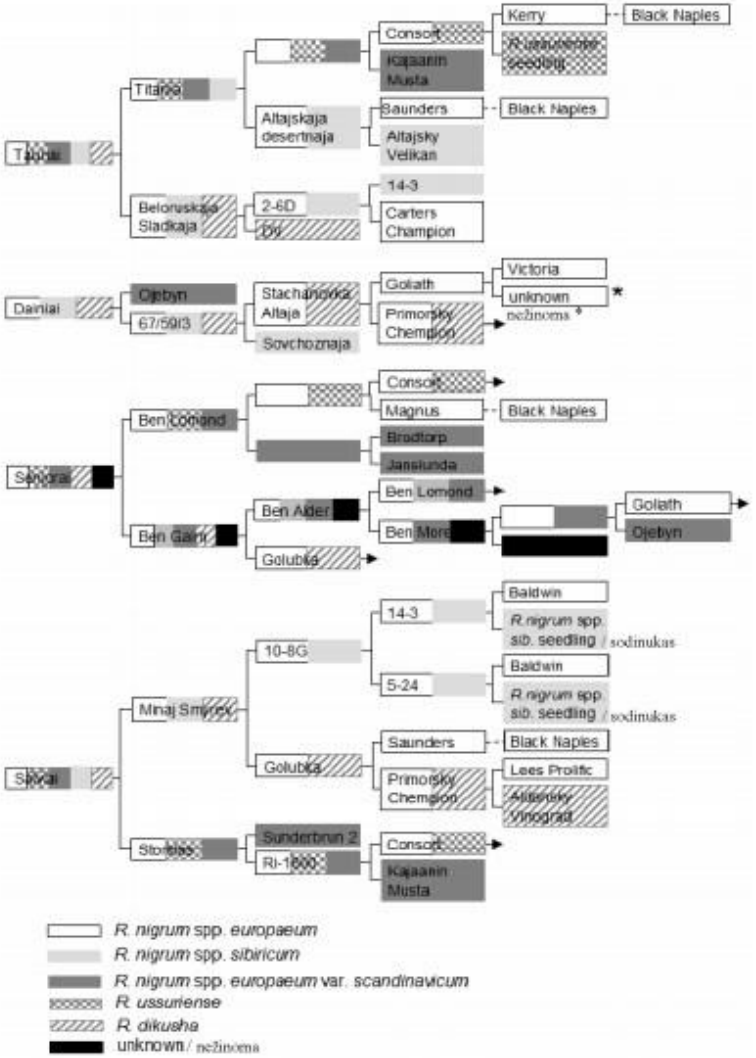

Fig. Pedigree of selected black currant cultivars developed at the IH, LRCAF.

SODININKYSTĖ IR DARŽININKYSTĖ. 2013. 32(3–4).

Orchard Plant Breeding, Genetics, and Biotechnology Research at the Institute of Horticulture, LRCAF

Danas Baniulis[1], Dalia Gelvonauskienė[1], Rytis Rugienius[1], Audrius Sasnauskas[1], Gražina Stanienė[1], Inga Stepulaitienė[1], Birute Frercks[1], Sidona Sikorskaitė[1], Vanda Lukoševičiūtė[1], Ingrida Mažeikienė[1], Jūratė Bronė Šikšnianienė[1], Šarūnė Morkūnaite-Haimi[1], Perttu Haimi[1], Vidmantas Bendokas[1], Bronislovas Gelvonauskis[2], Tadeušas Šikšnianas[1], Vidmantas Stanys[1]

Blackcurrant breeding

Between 1992-2001

Eight black currant (*R. nigrum* L.) cultivars:

early - 'Joniniai' and 'Blizgiai',

middle season - 'Almiai', 'Pilėnai', 'Vyčiai', 'Gagatai', 'Kriviai' , 'Tauriai ' and ' Smaliai'

late - ' Dainiai' (resistant to gall mite)

were released at the Institute of Horticulture, LRCAF

Breeding between 1992-2001

'JONINIAI'

EARLY RIPENING CULTIVAR

[('Minaj Shmyriov' x 67-59-3 ('Stachanovka Altaja' x 'Sovchoznaja')]

The ripening season is earlier (6 days) than in cv. 'Minaj Shmyriov'

The fruits are of large size (1.2 g). They contain 208 mg/% of ascorbic acid. Chemical composition of fruits is better than of cv. 'Minaj Shmyriov'. The taste of fruits is good (7.6 scores)

The average harvest was 5.0 t/ha

The cultivar medium resistant to powdery mildew and leaf spot and slightly affected by gall mite

Included into the Lithuanian National List of Plant Varieties since 2001.

'BLIZGIAI'

Breeding between 1992-2001

EARLY RIPENING CULTIVAR

('Öjebyn' x 'Minaj Shmyriov')
The flowering and ripening seasons are earlier than of cv. 'Minaj Shmyriov' (1-4 days)
The fruits are of large size (1.5 g). They contain 176 mg/% of ascorbic acid
The average harvest was 4.8 t/ha
The cultivar are resistant to powdery mildew and gall mite and medium resistant to leaf spot
Included into Lithuanian National List of Plant Varieties since 2002

Breeding between 1992-2001

MIDDLE SEASON RIPENING CULTIVAR

'ALMIAI'

('Minaj Shmyriov' self pollinated)
The flowering season and harvesting date are similar to standard cv. 'Minaj Shmyriov'
The average fruits are of medium size (0.9 g). They contain 141.0 mg/% of ascorbic acid. Sugar content and acidity are better than in standard cultivar. Taste of fruits is good (7.5 scores)
The average harvest was 8.2 t/ha
The cultivars is highly resistant to powdery mildew), medium resistant to leaf spot and slightly affected by gall mite
Included into the Lithuanian National List of Plant Varieties since 2001

Breeding between 1992-2001

MIDDLE SEASON RIPENING CULTIVAR

'PILĖNAI'

('Minaj Shmyriov' x 'Öjebyn')

The flowering and ripening seasons are similar to standard cultivar.

The fruits are of large size (1.0 g). They contain 153.1 mg/% of ascorbic acid.

The average harvest was 5.2 t/ha.

The cultivar is highly resistant to powdery mildew, medium resistant to leaf spot and slightly affected by gall mite.

Included into the Lithuanian National List of Plant Varieties since 2002

Breeding between 1992-2001

'VYČIAI'

MIDDLE SEASON RIPENING CULTIVAR

('Minaj Shmyriov' self pollinated)
The flowering and ripening seasons are similar to standard cultivar
The fruits are of medium size (0.9 g). They contain 137.7 mg/% of ascorbic acid. Soluble solids and sugar content are better than of cv. 'Minaj Shmyriov'
The average harvest was 6.8 t/ha
The cultivar is highly resistant to powdery mildew, medium resistant to leaf spot and slightly affected by gall mite
Included into the Lithuanian national list of plant varieties since 2001

Breeding between 1992-2001

'GAGATAI'

MIDDLE SEASON RIPENING CULTIVAR

('Minaj Shmyriov' x 'Öjebyn')
The flowering season is later than of cv. 'Minaj Shmyriov' (3 days)
The fruits are of large size (1.3 g). They are very rich in ascorbic acid (197 mg/%) and other chemical compounds
The average harvest was 3.8 t/ha
Plants are highly resistant to frost, powdery mildew and gall mite and medium resistant to leaf spot.
Included into the Lithuanian National List of Plant Varieties since 2001

Breeding between 1992-2001

MIDDLE SEASON RIPENING CULTIVAR

'TAURIAI'

('Titania' x 'Beloruskaja Sladkaja')

The flowering and ripening seasons are later than of cv. 'Minaj Shmyriov' (4 days)

The fruits are of large size (1.5 g). They contain 161 mg/% of ascorbic acid

The average harvest was 4.1 t/ha

Plants are highly resistant to powdery mildew and gall mite and medium resistant to leaf spot

Included into the Lithuanian national list of plant varieties since 2002

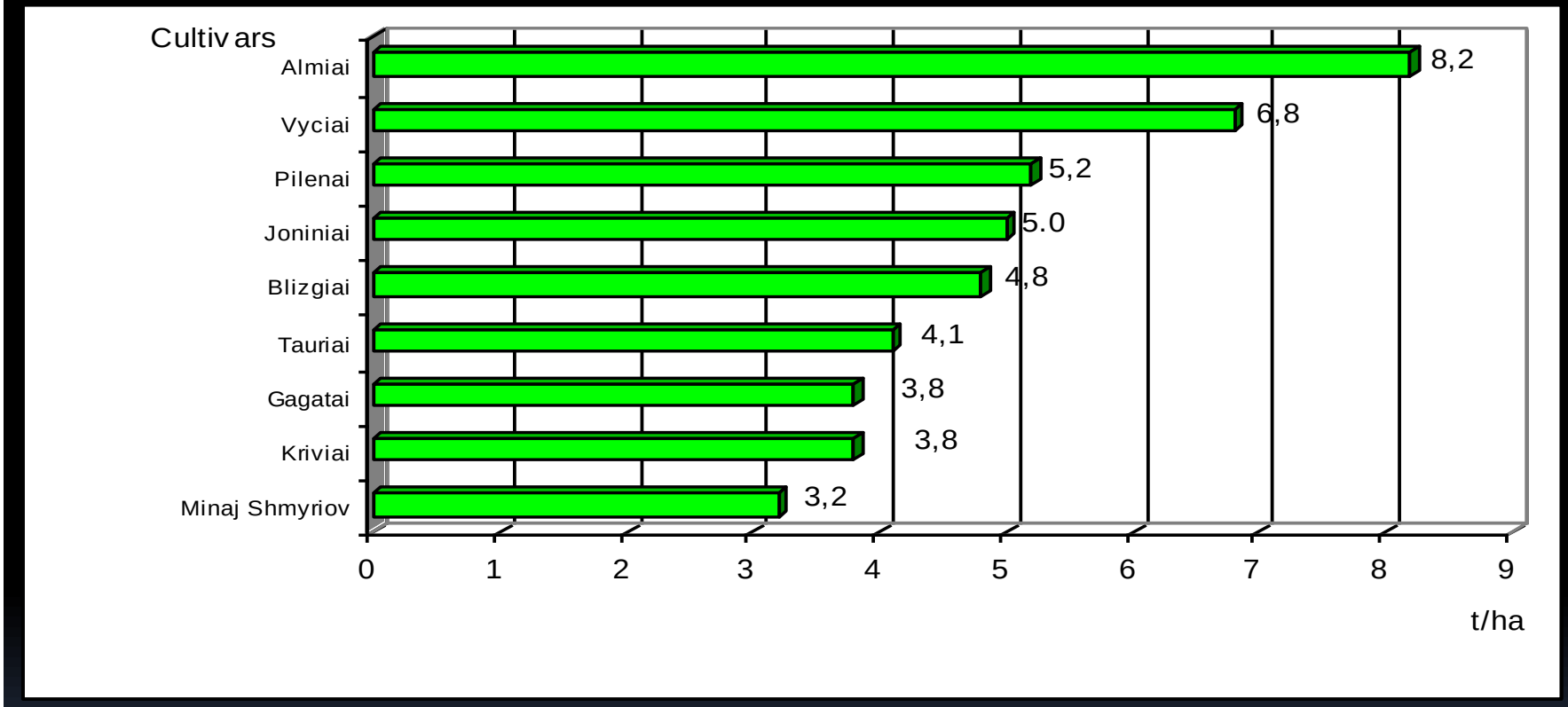

Fig. 2. Average yield of black currant cultivars, t/ha (Babtai, 1991-2001)

Table 1. Black currant resistance to fungal leaf diseases and gall mite, score

Cultivar	Powdery mildew	Septoria leaf spot	Anthracnose	Gall mite
Minaj Smyriov	0-3	2.5-3.5	1-4	1.0-1.5
Titania	0-2	**1.5-2.0**	0-3	0.5-1.0
Blizgiai	0-2.5	1.5-2.5	0-3.5	**0.3-0.5**
Smaliai	**0-1**	**1.0-2.0**	**0-1.5**	0.5-1.0
Tauriai	**0-1.5**	**1.5-2.0**	0-3.5	**0.1-0.5**
Dainiai	**0-1.5**	**0.5-1.5**	**0-0.5**	**0**

Table 2. Chemical composition of blackcurrant berries

Cultivar	Dry solubles, %	Total sugars, %	Sacharose %	Sugars, %	Acids, %	Ascorbic acid, mg 100 g^{-1}
Minaj Smyriov	14.40	6.80	1.06	5.74	2.40	**175**
Titania	14.80	6.87	1.12	5.75	**2.34**	131
Blizgiai	**15.30**	**7.36**	1.10	**6.26**	2.17	**176**
Smaliai	12.90	7.09	**1.14**	5.95	2.13	154
Tauriai	**17.10**	**7.89**	0.87	**7.02**	**2.33**	161
Dainiai	13.70	6.08	**1.22**	4.86	2.20	160

Blackcurrant breeding

Between 1992-2001

3 lentelė. ***Juodųjų serbentų uogų derlius, t/ha***
Table 3. ***Yield of berries of black currant cultivars, t/ha***

Veislė / Cultivar	1999 m.	2000 m.	2001 m.	1999-2001 m. vidurkis / Average of 1999-2001
Minaj Šmyriov	0,19	2,03	7,27	3,16
Titania	1,57	2,26	7,63	3,81
Blizgiai	0,76	3,63	10,07	4,82
Smaliai	3,49	3,57	13,07	6,71
Tauriai	1,04	2,60	8,40	4,12
Dainiai	3,10	3,63	8,69	6,06
R_{05} / LSD_{05}	1,12	1,94	5,68	1,23

4 lentelė. ***Juodųjų serbentų atsparumas grybinėms lapų ligoms ir serbentinėms erkutėms, balais***
Table 4. ***Black currant resistance to fungal leaf diseases and gall mite, score***

Veislė / Cultivar	Miltligė Powdery mildew	Šviesmargė Septoria leaf spot	Deguliai Anthracnose	Serbentinės erkutės Gall mite
Minaj Šmyriov	0-3	2,5-3,5	1-4	1,0-1,5
Titania	0-2	1,5-2,0	0-3	0,5-1,0
Blizgiai	0-2,5	1,5-2,5	0-3,5	0,3-0,5
Smaliai	0-1	1,0-2,0	0-1,5	0,5-1,0
Tauriai	0-1,5	1,5-2,0	0-3,5	0,1-0,5
Dainiai	0-1,5	0,5-1,5	0-0,5	0

SODININKYSTĖ IR DARŽININKYSTĖ. 2005. 24(1). 16-24.

PRODUKTYVIŲ, ATSPARIŲ GRYBINĖMS LIGOMS IR SERBENTINĖMS ERKUTĖMS JUODŲJŲ SERBENTŲ VEISLIŲ KŪRIMAS

Tadeušas ŠIKŠNIANAS

Table 1. Blackcurrant cultivars yield (Babtai, 2006-2008).

Cultivars	Yield (t ha^{-1})			
	2006	2007	2008	Mean (2006-
Almiai	9.2	4.2	4.5	5.9
Ben Alder	9.9	4.9	6.8	7.2
Gagatai	9.6	1.5	2.6	4.5
Joniniai	12.7	2.1	6.4	7.0
Kriviai	12.7	4.7	7.1	8.2
Kupoliniai	10.1	2.9	3.1	5.3
Laimiai	13.1	1.3	8.6	7.6
Pilėnai	9.4	1.4	4.5	5.1
Vyčiai	13.6	1.1	3.7	6.1
LSD_{05}	1.97	2.64	2.76	2.83

Table 2. Small fruit weight of blackcurrant cultivars (Babtai, 2006-2008).

Cultivars	Weight of 100 small fruits (g)			
	2006	2007	2008	Mean (2006
Almiai	134.0	105.1	133.3	124.1
Ben Alder	124.3	91.7	100.0	105.3
Gagatai	141.3	100.3	135.0	125.5
Joniniai	126.6	140.7	153.3	140.2
Kriviai	158.6	100.3	113.3	124.1
Kupoliniai	102.0	84.3	73.5	86.5
Laimiai	105.3	124.5	100.0	109.9
Pilėnai	144.3	113.8	106.7	121.5
Vyčiai	140.0	129.4	146.7	138.6
LSD_{05}	25.01	16.4	30.7	27.5

oductivity and Small Fruit Quality of Blackcurrant Cultivars

Sasnauskas, P. Viškelis, M. Rubinskienė, R. Rugienius and Č. Bobinas

rd IS on Human Health Effects of Fruits and Vegetables
B. Patil et al.
Hort. 1040, ISHS 2014

EARLY RIPENING CULTIVAR 'GOJAI'

Between 2002-2010

CHARACTERISTICS	Titania	Gojai
Ripeness of berries (month, day)	7.14	7.01
Yield, t/ha	5.4	**10.3**
Max size of berries, g	2.1	**2.9**
Powdery mildew, scores	0	**0**
Antracnose, scores	2.5	2.1
Septoria leaf spot	2.2	**1.6**
Gall mite	0.5	**1.2**
Soluble solids, %	15.5	12.5
Sugars, %	6.9	6.8
Ascorbic acid, mg/100 g	150.8	125.0
Titratable acids, %	3.5	2.7
Nectar, scores	4.3	**4.6**
Jam, scores	4.3	**4.6**

MIDDLE SEASON CULTIVAR ‘SVAJAI’ Between 2002-2010

CHARACTERISTICS	Titania	Svajai
Ripeness of berries (month, day)	7.14	7.06
Yield, t/ha	5.4	**5.8**
Max size of berries, g	2.1	**2.9**
Powdery mildew, scores	**0**	**0**
Antracnose, scores	2.5	2.6
Septoria leaf spot	2.2	**1.9**
Gall mite	0.5	2.3
Soluble solids, %	15.5	13.7
Sugars, %	6.9	**7.6**
Ascorbic acid, mg/100 g	150.8	**212.0**
Titratable acids, %	3.5	2.9
Nectar, scores	4.3	**4.5**
Jam, scores	4.3	**4.6**

MIDDLE SEASON CULTIVAR 'SENJORAI'

Between 2002-2010

CHARACTERISTICS	Titania	Senjorai
Ripeness of berries (month, day)	7.14	7.07
Yield, t/ha	5.4	**5.9**
Max size of berries, g	2.1	**2.5**
Powdery mildew, scores	0	**0**
Antracnose, scores	2.5	**1.7**
Septoria leaf spot	2.2	2.5
Gall mite	0.5	**0.5**
Soluble solids, %	15.5	13.7
Sugars, %	6.9	**7.0**
Ascorbic acid, mg/100 g	150.8	121.0
Titratable acids, %	3.5	**4.7**
Nectar, scores	4.3	4.4
Jam, scores	4.3	**4.5**

MIDDLE SEASON CULTIVAR 'DAILIAI'

Between 2002-2010

CHARACTERISTICS	Titania	Dailiai
Ripeness of berries (month, day)	7.14	7.06
Yield, t/ha	5.4	**6.7**
Max size of berries, g	2.1	**2.6**
Powdery mildew, scores	0	**0**
Antracnose, scores	2.5	**1.5**
Septoria leaf spot	2.2	2.2
Gall mite	0.5	1.5
Soluble solids, %	15.5	13.5
Sugars, %	6.9	6.3
Ascorbic acid, mg/100 g	150.8	137.0
Titratable acids, %	3.5	3.2
Nectar, scores	4.3	**4.5**
Jam, scores	4.3	**4.5**

LATE RIPENING CULTIVAR 'SALVIAI'

CHARACTERISTICS	Between 2002-2010 Titania	Salviai
Ripeness of berries (month, day)	7.14	**7.18**
Yield, t/ha	5.4	**8.7**
Max size of berries, g	2.1	**2.4**
Powdery mildew, scores	**0**	**0**
Anthracnose, scores	2.5	**1.5**
Septoria leaf spot	2.2	2.2
Gall mite	0.5	**0.5**
Soluble solids, %	15.5	14.9
Sugars, %	6.9	6.0
Ascorbic acid, mg/100 g	150.8	**230.0**
Titratable acids, %	3.5	**4.2**
Nectar, scores	4.3	**4.5**
Jam, scores	4.3	4.3

Table 1. Characteristics of selected black-currant cultivars
1 lentelė. Atrinktų juodųjų serbentų veislių savybės

Cultivar Veislė	Height of bush Krūmo aukštis (m)	Average time of ripening (day of July) Vid. sunokimo laikas, liepos mėn. diena	Resistance to mildew * Atsparumas miltligei *	Resistance to gall-mite* Atsparumas serbentinei erkutei *	Yield Derlius (t ha^{-1})	Average fruit weight Vidutinė uogos masė (g)	Ascorbic acid content Askorbo rūgšties kiekis (mg %)**	Distinct features Išskirtinės savybės
'Almiai'	1.3	6	0.1	1.4	8.2	0.9	141	high yield didelis derlius
'Dainiai'	1.5	17	1.5	0	6.1	1.1	160	resistance to gall-mite atsparumas pumpurinei erkutei
'Joniniai'	1.2	1	0.8	1.0	5.1	1.2	208	early ripening ankstyvas sunokimas
'Senjorai'	1.2	7	0	0.5	5.9	1.7	121	large-fruit didelės uogos
'Salviai'	1.3	18	0.3	1.0	8.6	1.5	230	high yield didelis derlius
'Tauriai'	1.4	12	1.5	0.6	5.5	1.2	160	compact bush kompaktiškas krūmas

* scale of damage from 0 – no visible symptoms to 5 – more than 75 % / pažeidimų vertinimo skalė nuo 0 – nėra vizualių pažeidimų iki 5 – pažeista daugiau nei 75 % augalo lapų ar pumpurų
** Milligram % (mg %) – A unit used to describe concentration. Milligrams of a specific substance contained in 100 ml of a solution or in 100 g of the analyzed material. Often used to describe vitamin content in plants and foods / Miligramų % (mg %) – vienetas naudojamas koncentracijai įvertinti. Medžiagos kiekis miligramais esantis 100 ml tirpalo arba 100 g analizuojamos medžiagos. Dažnai naudojamas įvertinti vitaminų kiekiui augaluose ir maiste.

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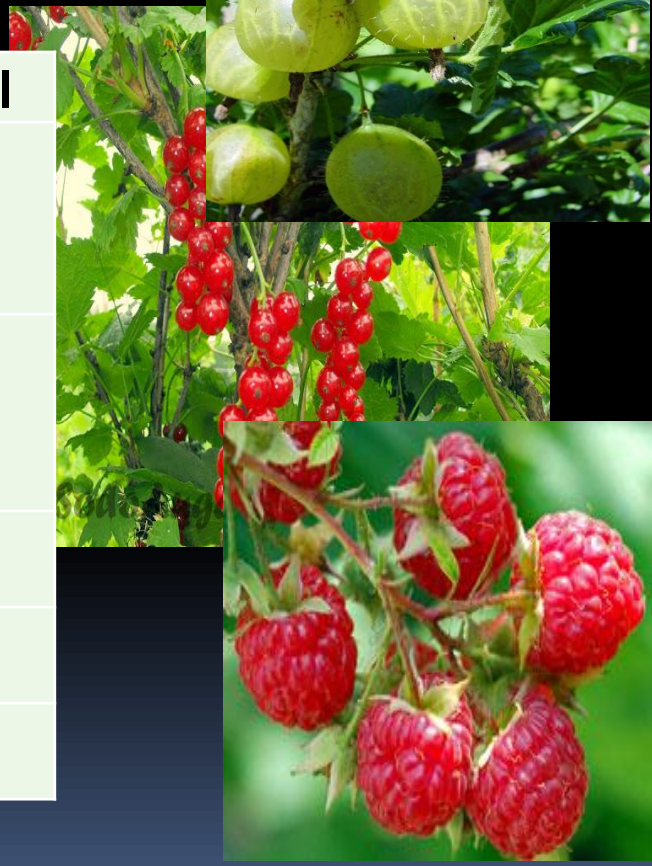
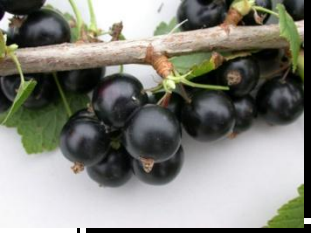
Small fruit cultivar evaluation

Species	1958	1960	1987	2014	Total
Blackcurrant	16	65	279	220	450
Redcurrant	-	6	35	15	60
Goosebery	7	75	120	30	210
Raspberry	-	15	66	40	110
Strawberry	8	110	400	200	600





Lithuanian and Ukrainian blackcurrant cultivar evaluation in Olsztyn (Poland) 2005

Cultivar	Ripening time (month, day)	Yield t/ha	Berry size, g
Titania (standard)	07.12	6.6	1.2
Alta	07.06	5.1	1.3
Sofijevskaja	07.06	7.8	1.2
Černeča	07.06	4.0	1.0
Čerešneva	07.06	3.3	1.2
Ametyst	07.06	**9.6**	1.3
Vernisaž	07.09	5.9	0.9
Jubileinaja Kopania	07.12	7.7	**1.5**
Blizgiai	07.06	6.3	1.3
Tauriai	07.12	**8.7**	1.2
Smaliai	07.06	7.0	1.3
Vyčiai	07.06	6.8	**1.8**
Almiai	07.06	7.3	**1.5**
Dainiai	07.17	5.7	0.9

Table 4. Resistance to fungal diseases and pest of blackcurrant cultivars and selections (Babtai, 2009-2010).

Cultivars and selections	Leaf spot (0-5)*		Anthracnose (0-5)*		Gall mite (0-5)**
	2009	2010	2009	2010	2010
Titania	2.6±0.60	1.5±0.29	1.3±0.08	2.2±0.18	0.5±0.40
Ores	2.7±0.41	2.5±0.29	1.8±0.02	1.9±0.07	0.6±0.47
Tines	1.5±0.27	1.0±0.17	1.0±0.08	1.2±0.17	0.3±0.14
Tiben	1.7±0.12	1.0±0.32	1.3±0.05	2.5±0.17	1.6±0.17
Tisel	2.3±0.20	1.2±0.17	2.1±0.08	1.8±0.15	0.5±0.01
Bona	1.1±0.10	1.6±0.60	1.4±0.05	2.7±0.15	4.4±0.19
Ceres	1.6±0.38	1.2±0.17	2.4±0.06	2.4±0.03	0.5±0.26
Ruben	1.5±0.01	1.0±0.03	1.6±0.08	2.3±0.17	2.6±0.47
Dailiai	1.3±0.12	1.0±0.01	0.6±0.05	3.0±0.05	2.5±0.01
93-149-3	1.0±0.01	1.3±0.15	0.8±0.28	2.4±0.23	2.0±0.29
93-157-1	1.3±0.11	1.5±0.33	1.3±0.08	2.2±0.06	1.8±0.17
98-279-25	1.2±0.12	1.5±0.29	1.4±0.15	2.6±0.13	2.0±0.58

Mean±SD; n-4 Explanation: *Ranking scale 0-5 (0 – no disease symptoms, 5 – infected more than 75% of leave area; **Ranking scale 0-5 (where 0 – healthy plant, 5 – infected more than 75% buds of plant).

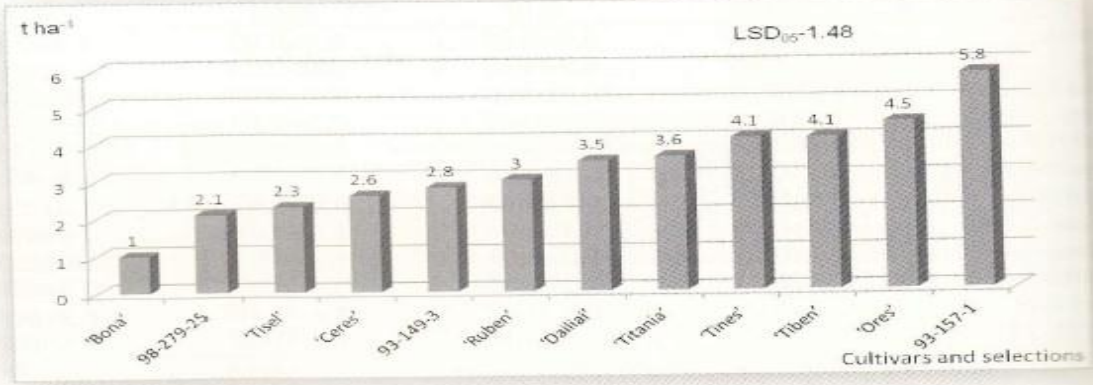


Fig. 1. Average fruit yield (t ha^{-1}) of blackcurrant cultivars and selections (Babtai, 2009-2010).

Evaluation of Agronomical Characters of Blackcurrant Cultivars and Selections in Lithuania

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Xth Intl. Rubus and Ribes Symp.
S. Tanović
Acta Hort. 946, ISHS 2012

Blackcurrant cultivar evaluation in Europe, (yield t/ha)

Cultivar	Lithuania	Latvia	Estonia	Norway	Denmark	Romania
Titania	8.9	6.9	3.6	14.8	5.6	1.0
Ben Alder	**10.9**	**8.2**	-	11.5	**13.2**	-
Ben Gairn	3.3	-	-	4.0	5.6	0.3
Ben Hope	4.0	-	-	8.6	**11.2**	0.7
Gagatai	6.9	4.0	-	-	**9.6**	-
Intercontinental	6.6	**7.6**	**4.6**	8.6	-	-
Polar	5.0	4.3	**5.0**	9.2	-	-
Ruben	**9.6**	-	-	-	9.2	**5.9**
Tiben	8.2			13.9	8.6	**8.2**

Sasnauskas, A., Rugienius , R., Bobinas, C., Strautina, S., Kaldmäe, H., Nes, A., Pedersen, H.L., Mladin , P. and Coman, M. 2012. EUROPEAN NETWORK FOR BLACKCURRANT (*RIBES NIGRUM* L.) CULTIVAR EVALUATION. Acta Hort. (ISHS) 926:125-131

Blackcurrant cultivar evaluation in Europe,(resistance to gall mite scores)

Cultivar	Lithuania	Latvia	Estonia	Norway	Denmark	Romania
Titania	1	1	2	1	1	1
Ben Alder	2	3	1	1	1	-
Ben Gairn	1	1	-	1	1	1
Ben Hope	1	1	-	1	1	1
Gagatai	1	2	2	-	1	-
Intercontinental	3	3	2	1	-	-
Polar	2	1	2	1	-	-
Ruben	1	1	1	-	1	1
Tiben	1	-	-	1	1	1

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YIELD AND FRUIT WEIGHT OF BLACKCURRANT CULTIVARS

Cultivars	Yield (kg/bush)			Weight of 100 fruits (g)		Weight of the largest fruit (g)	
	2011	2012	Sum of two years	2011	2012	2011	2012
Ben Tirran	0.34	1.60	1.94	56	72	1.0	0.9
Abanos	0.41	1.06	1.47	81	84	1.7	1.7
Almo	0.45	1.07	1.52	95	76	2.0	1.5
Deea	0.61	1.20	1.81	88	70	1.4	1.2
Geo	0.14	0.78	0.92	73	80	1.7	1.5
Mikael	0.29	0.73	1.02	94	68	1.2	1.6
Narve Viking	0.57	0.96	1.53	95	61	1.0	1.3
Ronix	0.78	1.54	2.32	90	80	1.4	1.7
Varde Viking	0.34	0.80	1.14	92	61	1.7	1.0
LSD_{05}	0.26	0.54		0.86	1.35	0.11	0.12

BIOCHEMICAL COMPOSITION OF BLACKCURRANT CULTIVARS (2012)

Cultivars	Soluble solids (Brix, %)	Titrable acidity (%)	Ascorbic acid (mg 100 g^{-1})	Antho-cyanins (mg 100 g^{-1})	Phenols (mg 100 g^{-1})
Ben Tirran	20.8	3.33	229	381.2	1155.1
Abanos	23.8	2.68	218	374.3	1100.0
Almo	22.6	2.73	167	514.2	1089.3
Deea	22.0	2.69	239	352.0	1054.2
Geo	23.1	2.60	239	373.3	1098.1
Mikael	21.0	2.53	149	336.0	925.2
Narve Viking	20.5	2.55	243	461.1	1131.2
Ronix	22.7	2.68	242	391.2	997.2
Varde Viking	20.4	2.82	179	726.1	1151.1
LSD_{05}	1.09	0.03	1.96	1.19	0.29

Agronomical Characters Of Introduced New Blackcurrant Cultivars

A. Sasnauskas, T. Šikšnianas, V. Stanys, P. Viškelis, R. Bobinaitė, M. Rubinskienė, Č. Bobinas

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NEW ‘Karina’ (BRi 9502-1A)

CHARACTERISTICS	‘Gagatai‘ (Standard)	‘Karina‘
Ripeness of berries (month, day)	06.30	07.02
Average yield, t/ha	3.55	3.91
Powdery mildew, scores	0	0
Anthracnose, scores	2.03	2.93
Septoria leaf spot, scores	2.40	2.73
Gall mite, scores	0.36	0.36
Average weight of 100 berry, g	113.6	165.9
Max size of berries, g	1.84	2.63
Sugars, %	5.86	6.55
Ascorbic acid, mg100g^{-1}	111	115
Anthocyanins, mg100g^{-1}	442.2	204.8

NEW

'Viktor' (BRi 9504-5)

CHARACTERISTICS	'Gagatai' (Standard)	'Viktor'
Ripeness of berries (month, day)	06.30	07.04
Average yield, t/ha	3.55	5.48
Powdery mildew, scores	0	0
Anthracnose, scores	2.03	2.55
Septoria leaf spot, scores	2.40	2.40
Gall mite, scores	0.36	0.06
Average weight of 100 berry, g	113.6	168.9
Max size of berries, g	1.84	2.59
Sugars, %	5.86	7.03
Organic acid, proc.	2.34	3.65
Ascorbic acid, mg100g^{-1}	111	151
Anthocyanins, mg100g^{-1}	442.2	265.7
Nectar taste, scores	4.6	4.3
Jam taste, scores	4.4	4.6

NJF seminar 422

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Focus on Nordic-Baltic Region
International Scientific Conference
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CHARACTERISTICS	'Gagatai' (Standard)	'Domino' BRi 9508-3A
Ripeness of berries (month, day)	06.30	07.02
Average yield, t/ha	3.55	5.22
Powdery mildew, scores	0	0
Anthracnose, scores	2.03	2.85
Septoria leaf spot, scores	2.40	2.38
Gall mite, scores	0.36	0.26
Average weight of 100 berry, g	113.6	159.7
Max size of berries, g	1.84	2.60
Sugars, %	5.86	6.25
Organic acid, proc.	2.34	2.50
Ascorbic acid, mg100g^{-1}	111	72
Anthocyanins, mg100g^{-1}	442.2	286.8
Nectar taste, scores	4.6	4.5
Jam taste, scores	4.4	4.6

NEW

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CHARACTERISTICS	'Gagatai' (Standard)	'Ritmo' BRi 9508-3B
Ripeness of berries (month, day)	06.30	07.04
Average yield, t/ha	3.55	5.11
Powdery mildew, scores	0	0
Anthracnose, scores	2.03	2.96
Septoria leaf spot, scores	2.40	3.04
Gall mite, scores	0.36	0.69
Average weight of 100 berry, g	113.6	173.6
Max size of berries, g	1.84	2.53
Sugars, %	5.86	7.53
Organic acid, proc.	2.34	2.68
Ascorbic acid, mg100g^{-1}	111	67
Anthocyanins, mg100g^{-1}	442.2	497.9

NEW

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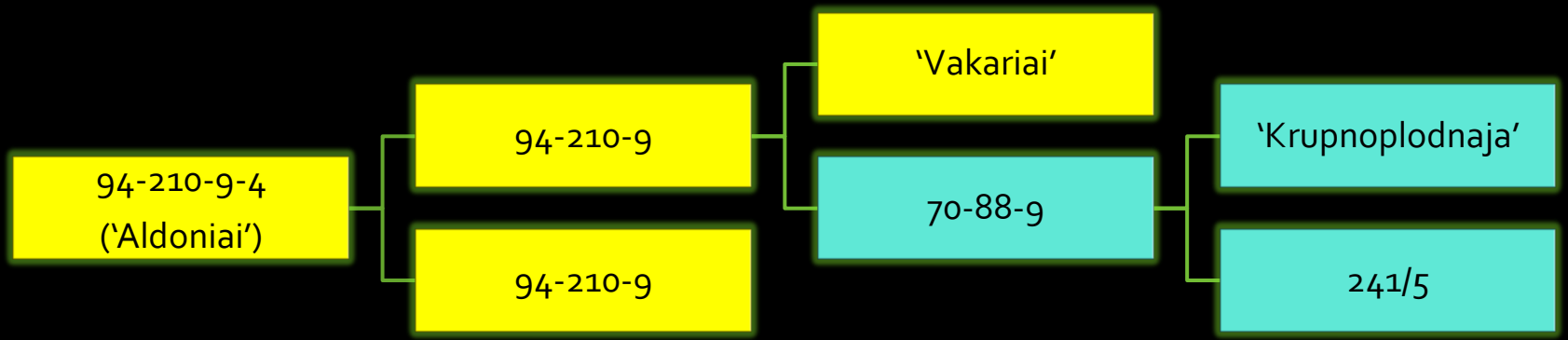
Future perspectives in blackcurrant breeding

- Use of wild germplasm
- Interspecific hybridization
- Use molecular markers
- Phenotyping value
- International cooperation

New pedigree of cultivar ‘Aldoniai’

NEW

Now at trial evaluation



With resistant to gall mite gene P

Without gene P

Mazeikiene I., Bendokas V., Stanys V., Siksnianas T. 2012. Molecular markers linked to resistance to the gall mite in blackcurrant. Plant Breeding. 131(6): 762—766.

- *R. nigrum* and *R. americanum* hybrids in F2 - F3 progenies and *R.* janczewskii, *R. pauciflorum*, *R. ussuriensis*, *R. petiolare* hybrids in F1 are winterhardy.

Berry characteristic in the *Eucoreosma section*

Pedigree	Berry weight, g	Seed unit in berry
R.nigrum x R.nigrum	1.40±0.1	40.8
R. nigrum x R.janczewski	0.70±0,1	14.6
R.nigrum x R.pauciflorum	0.67±0,1	41.0
R.nigrum x R. usuriensis	0.45±0,1	17.4
R.nigrum x R. americanum	0.87±0,1	28.1
R.americanum x R. nigrum	0.91±0,1	32.1

Healthy hybrids to fungal diseases in procent

Pedigree	Powdery mildew	Septoria leaf spot	Anthracnose
R.nigrum x R.nigrum	20.1	0	0
R.nigrum x R. petraeum	50.0	0	0
R.nigrum x R.uva-crispa	36.0	30.0	29.0
R.nigrum x R.aureum	45.0	0	0

Healthy hybrids to fungal diseases in procent

Pedigree	Powdery mildew	Septoria leaf spot	Anthracnose
*R.nigrum x R.nigrum**	20.1	0	0
R. nigrum x R.janczewski	20.0	5.0	0
R.nigrum x R.pauciflorum	52.3	2.0	0
R.nigrum x R. usuriensis	43.3	0	0
R.nigrum x R. americanum	54.5	15.1	12.1
R.americanum x R. nigrum	100.0	41.7	58.3

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THANK YOU !