

THE PERFORMANCE OF LUCERNE VARIETIES AND ACCESSIONS OF ESTONIAN ORIGIN IN LITHUANIAN AGROCLIMATICAL CONDITIONS

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Abstract

Lucerne is the highest yielding and most valuable of all perennial legume species grown in Baltic countries on fertile calcareous soils. Since the very beginning a special focus has been placed on winterhardiness and seed production improvement under region's conditions. Most registered varieties were bred for growing in crop rotations. Now, when Lithuanian farmers are raising more cattle for meat production by using pastures, the demand for lucerne varieties more suitable for grazing has increased.

The Estonian natural lucerne populations growing on the northern and western coast and on the Baltic sea islands have very good winterhardiness. In the case of suitable growing place and utilisation regime, they persist in the stand for a long time. There are plants of these populations that have vegetative spreading ability.

Two international expeditions were arranged in 2002 and 2003 where collections of indigenous accessions of lucerne were gathered, which contain besides yellow-flowering lucerne, several interesting and valuable accessions of blue-flowering lucerne.

Two trials (in 2003 and 2004) with 3 Estonian varieties and 20 accessions of lucerne were established at the Lithuanian Institute of Agriculture. According to average data of 4 years' trials the majority of the tested varieties and accessions produced lower dry matter and seed yield than the standard variety 'Žydrūnė'. However some of the accessions from the islands and settlements of Orjaku, Vormsi-Hullo, Kassari, Kuusnemme, Eeriksaare in separate years showed rather high yielding capacity, had good leafiness, resistance to leaf and stem diseases similar to that of the registered varieties and other useful morphobiological characters. They are promising material for breeding new varieties of lucerne, especially for pasture type varieties.

Key words: lucerne, accessions, yield, winterhardiness, longevity.

Introduction

Lucerne is the highest yielding and most valuable of all perennial legume species grown in Baltic countries on fertile calcareous soils. Its breeding was started in Lithuania 85 years ago. Since the very beginning a special focus has been placed on winterhardiness and seed production improvement under the country's conditions by using local initial material and promising varieties and accessions from various regions. First Lithuanian variety 'Augūnė II' was registered in 1962 /Svirskis, 1995/.

Since 1967 we have started testing the numerous lucerne collections and expanded the breeding volume. The use of greenhouses added a great impetus to the

breeding of valuable material. If during the period 1939–1967 there were investigated 313 lucerne varieties and lines, in 1990 the catalogue included 2.220, and in 2006 2.460 lucerne varieties and breeding lines /Švirskis, 1995/. Most research was done on varieties and accessions from *Medicago sativa* L. and *M. varia* Mart. species.

In 1986 variety ‘Žydrūnė’ (*M. varia* Mart.), in 1998 variety ‘Birutė’ (*M. varia* Mart.) and in 2006 variety ‘Malvina’ (*M. sativa* L.) were registered in Lithuania. All those varieties have passed DUS testing and are included in the EU Varietys List. The seed company “Dotnuvos Projektai” are successfully multiplying lucerne variety ‘Birutė’ in France and are importing into Lithuania 20–30 tons of seed of this high yielding variety annually. Since 2007 the variety ‘Malvina’ has been registered in Belarus. The new lucerne variety ‘Antanė’ (*M. sativa* L.) was transferred to the State Variety Testing in 2005. Lithuanian lucerne varieties exhibit good winterhardiness, are well adapted to our agroclimatic conditions and are suited for growing in both conventional and organic farming systems. All registered Lithuanian lucerne varieties were bred not specially for pastures.

The most relevant objectives in the nearest future are to select or develop a lucerne variety more suitable for pastures. For that purpose most suitable are natural biotypes or accessions from *M. falcata* L. and *M. varia* Mart. species of lucerne which include plants capable of vegetative propagation. Such plants are available in Estonia where natural lucerne populations grow on the northern and western coast and on the islands of the Baltic sea. They exhibit very good winterhardiness, and in the case of suitable growing place and utilisation regime, they persist in the stand for a long time. Estonia has many islands with calcareous soils and stony subsoil. In Soviet times on some of them land reclamation and agroamelioration were performed with the aim of setting up sheep and goat farms there. Many plots were sown with seeds of various imported lucerne varieties. After collapse of the Soviet Union and collectivisation those fields were neglected, but in many places lucerne survived and has been growing normally till now /Bender, 2006/.

In spring and autumn there are lots of migrating and resting birds, especially geese. They eat vegetative mass and fertilise soil, which helps lucerne to recover and ripen seed.

Two international expeditions were arranged in 2002 and 2003 during which collections of indigenous accessions of lucerne were gathered and which include besides yellow-flowering lucerne, several interesting and valuable accessions of blue-flowering lucerne.

Materials and methods

Lucerne breeding, as well as breeding of other perennial legumes, is conducted at the Lithuanian Institute of Agriculture’s experimental department in the field of a six course crop rotation of forage grasses. The soil of experimental site is *Endocalcare-Endohypogleyic Cambisol* CMg-n-w-can (pH – 7.3, P₂O₅ – 201–270 mg kg⁻¹ and K₂O – 101–175 mg kg⁻¹, humus – 2.46 %. Lucerne is sown after black fallow without a cover crop. Breeding nurseries and variety testing trials of perennial legumes are used for two years. NPK fertilizers and pesticides are applied only to the cereals grown in the crop rotation, therefore the developed varieties are also well-suited for organic agriculture.

The Lithuanian climate varies between maritime and continental. The warm period in Lithuania (mean daily temperature above 0 °C) lasts from 230 to 270 days, and the period with a mean temperature of +5 °C lasts for 187–198 days. The weather conditions during the 2002–2006 period were diverse and had a different impact on lucerne growth and yield.

The following methods are used in lucerne breeding: mass, individual and family selection, polycross, topcross, intravarietal crossing, recurrent selection and others /Svirskis, 1995; Kilčevskij, Chotylova, 1997; Bender, 2005; 2006/.

Two trials (in 2003 and 2004) with 3 Estonian varieties and 20 accessions of lucerne were set up at the Lithuanian Institute of Agriculture (for vegetative mass and seed yield separately). Accessions collected in 2003 and repeatedly all varieties and 6 accessions were included in the 2004 sowing year trials.

The size of experimental plots was 5 m². The plots were replicated 4 times.

The experimental data were processed by statistical methods, using a software package “Selekcija” (Tarakanovas, 1999).

Results and discussions

The Estonian natural populations of lucerne growing in the northern and western coast and on islands exhibit very good winterhardiness. In the case of a suitable growing place and utilisation regime, they persist in the stand for a long time. However the re-growth of the natural lucerne populations is poor, therefore dry matter yield per growing period is lower than that of bred varieties. There are plants of these populations that propagate vegetatively. The occurrence of this characteristic (plus good winterhardiness and persistence) makes the Estonian natural lucerne populations a valuable breeding material for pasture type varieties. In Estonia there is registered an old variety of variegated lucerne ‘Jogeva 119’. The rhizomatous growing type lucerne variety ‘Karlu’ has been on the Estonian Variety List since 1993. Besides Estonia, promising trial results have been obtained with this variety also in Finland, Germany, Lithuania and other countries. Since 2002 the creeping-rooted grazing type variety ‘Juurlu’ has been included in the Variety List /Bender, 2005/.

In 2004 the winter temperatures were not stable, the spring was early, dry and with severe frosts, as a result, lucerne was slightly weakened. The summer was changeable in terms of temperature and rainfall distribution, the autumn was warm and wet. Regardless of all these factors the yield of both vegetative mass and seed yield was very satisfactory in the trials sown in 2003. All the Estonian lucerne varieties and wild accessions tested significantly lagged behind the Lithuanian lucerne varieties (Table 1). However, the highest seed yield in the first year of use (2004) was produced by No. 2422 and varieties ‘Birutė’, ‘Karlu’ and ‘Jogeva 118’ (Table 2).

The winter of the year 2005 was mild, the spring was early, dry and prolonged. The summer was warm, droughty, the autumn was dry and long. The herbage and dry matter yield of lucerne in the second year of use (2005) was satisfactory, whereas the seed yield was twice as low as in the first year of use. Like in the first year of use, most of the Estonian varieties and wild accessions lagged behind the standard variety ‘Žydrūnė’ in vegetative mass yield (Table 1). In terms of the seed yield, in the year

adverse for lucerne seed production the highest yielding turned to be No. 2422, 2421 and the varieties ‘Karlu’ and ‘Jogeva 118’ (Table 2).

Table 1. Yield data of the registered Lithuanian and Estonian varieties and wild accessions of lucerne from Estonia’s islands

1 lentelė. Registruotų lietuviškų ir estiškų liucernų veislių ir natūralių populiacijų iš Estijos salų derliaus duomenys

2003 sowing year, I and II year of use / 2003 sėjos metai, I ir II naudojimo metai
Dotnuva, 2004–2005

No. of catal. LIA LŽI kata- logo Nr.	Variety or accession origin <i>Veislė ar populiacijos vieta</i>	Green matter t ha ⁻¹ <i>Žalia masė t ha⁻¹</i>					DM t ha ⁻¹ <i>SM t ha⁻¹</i>				
		1 cut	2 cut	3 cut	Total		1st cut	2nd cut	3rd cut	Total	
		<i>1 pjū- tis</i>	<i>2 pjū- tis</i>	<i>3 pjū- tis</i>	<i>Iš viso</i>		<i>1 pjū- tis</i>	<i>2 pjū- tis</i>	<i>3 pjū- tis</i>	<i>Iš viso</i>	
1	2	3	4	5	6	7	8	9	10	11	12
I year of use / I naudojimo metai											
407	Žydrūnė, st., Lithuania	31.5	20.6	11.1	63.2	100.0	8.4	5.6	2.6	16.6	100.0
2439	Jogeva 118, Estonia	25.9	13.3	9.1	48.3	76.4	7.2	3.7	2.5	13.4	80.6
2440	Jurlu, -, -, -	25.5	13.5	8.5	47.5	75.1	6.7	3.6	2.0	12.3	74.3
2441	Karlu, -, -, -	26.1	17.1	9.6	52.8	83.5	7.1	4.5	2.3	14.0	84.1
2421	Kardla, -, -, -	25.2	14.3	8.7	48.3	76.4	6.6	3.9	1.7	12.1	72.8
2422	Pühalepa, -, -, -	24.7	16.5	9.3	50.5	79.9	6.1	4.7	1.8	12.6	76.1
2423	Kassari, -, -, -	22.1	18.6	10.0	50.7	80.3	6.1	5.5	2.9	14.5	87.3
2424	Reigi, -, -, -	28.7	18.5	11.7	58.9	93.2	6.6	4.4	2.8	13.8	83.3
2425	Orjaku, -, -, -	30.8	20.4	11.9	63.1	99.8	7.0	5.2	2.7	14.9	89.7
2426	Vormsi- Falena, -, -, -	23.1	14.7	8.7	46.5	73.6	6.2	4.1	1.8	12.1	72.8
2427	Vormsi- Saxby, -, -, -	24.7	15.7	9.9	50.3	79.5	6.4	4.0	1.9	12.3	74.3
2428	Vormsi- Hullo, -, -, -	23.4	18.6	10.3	52.3	82.7	6.9	5.5	2.2	14.6	88.1
2429	Ridala, -, -, -	20.5	14.9	8.9	44.3	70.1	5.0	3.9	2.1	11.0	66.3
2429	Ridala II, -, -, -	12.1	9.0	7.5	28.6	45.3	3.2	2.6	1.3	7.1	42.6
	LSD ₀₅ / R ₀₅	2.1	1.31	1.19	2.58		0.55	0.37	0.28	0.68	
II year of use / II naudojimo metai											
407	Žydrūnė, st., Lithuania	30.0	19.4	4.0	53.4	100.0	7.1	5.0	1.2	13.3	100.0
2439	Jogeva 118, Estonia	33.9	11.2	4.3	49.3	92.3	7.0	2.8	1.3	11.1	83.1
2440	Jurlu, -, -, -	29.3	11.4	3.9	44.5	83.3	5.9	2.7	1.2	9.8	73.4
2441	Karlu, -, -, -	29.9	16.3	2.7	48.9	91.6	6.4	3.8	0.8	11.0	82.9
2421	Kardla, -, -, -	27.2	13.5	6.3	46.9	87.8	5.9	3.0	1.8	10.7	81.1
2422	Pühalepa, -, -, -	28.3	15.9	4.6	48.8	91.4	5.9	4.3	1.4	11.6	87.4

Table 1 continued
1 lentelės tęsinys

1	2	3	4	5	6	7	8	9	10	11	12
2423	Kassari, - ,, -	31.1	13.8	3.9	48.7	91.2	7.1	3.5	1.0	11.6	87.5
2424	Reigi, - ,, -	27.5	13.7	5.7	46.9	87.8	5.5	3.8	1.6	10.9	82.1
2425	Orjaku, - ,, -	29.9	16.5	7.9	54.3	101.7	6.9	4.5	2.6	14.0	105.3
2426	Vormsi-Falena, -, -, -	29.8	17.3	5.3	52.4	98.1	6.4	4.6	1.7	12.7	96.0
2427	Vormsi-Saxby, -, -, -	32.5	15.9	3.4	51.8	97.0	7.2	3.8	1.2	12.2	92.0
2428	Vormsi-Hullo, -, -, -	29.2	15.1	3.5	47.8	89.5	7.1	4.2	1.2	12.5	93.9
2429	Ridala, - ,, -	29.1	13.1	6.4	48.5	90.8	6.5	3.1	1.9	11.5	86.9
2429	Ridala II, -, -, -	25.5	9.3	4.7	39.5	73.9	5.1	2.4	1.4	8.9	67.2
	LSD ₀₅ / R ₀₅	1.91	0.95	0.58	2.63		0.42	0.24	0.17	0.61	

Table 2. Seed yield of the registered varieties and accessions of lucerne collected on Estonia's islands

2 lentelē. *Registruotų liucernų veislių ir populiacijų, surinktų Estijos salose, sėklų derlius*

2003 sowing year / 2003 sėjos metai
Dotnuva, 2004–2005

No. of catalogue LIA LŽI kata- logo Nr.	Variety or accession origin <i>Veislės ar populiacijos pavadinimas</i>	Flowering date <i>Žydėjimas</i>		Seed yield / <i>Sėklų derlius</i>			
				Year of use / <i>Naudojimo metai</i>			
		I	II	I		II	
				kg ha ⁻¹	%	kg ha ⁻¹	%
407	Žydrūnė, st., Lithuania	06 20	06 28	300	100.0	145	100.0
2439	Jogeva 118, Estonia	06 20	06 30	314	104.7	181	124.8
2440	Jurlu, - ,, -	06 22	06 29	245	81.7	94	64.8
2441	Karlu, - ,, -	06 17	06 30	325	108.3	231	159.3
2421	Kardla, - ,, -	06 22	06 28	269	89.7	167	115.2
2422	Pūhalepa, - ,, -	06 20	06 26	396	132.0	242	166.9
2423	Kassari, - ,, -	06 20	06 28	154	51.3	50	34.5
2424	Reigi, - ,, -	06 20	06 27	152	50.7	82	56.6
2425	Orjaku, - ,, -	06 18	06 28	155	51.7	116	75.9
2426	Vormsi-Falena, - ,, -	06 19	06 26	296	98.7	93	64.1
2427	Vormsi-Saxby, -, -, -	06 20	06 30	225	75.0	135	93.1
2428	Vormsi-Hullo, -, -, -	06 22	06 27	117	39.0	98	67.6
2429	Ridala, - ,, -	06 19	06 25	251	83.7	81	55.9
2429	Ridala II, - ,, -	06 18	06 26	174	58.0	85	58.6
	LSD ₀₅ / R ₀₅			24.4		37.2	

In the lucerne trials sown in 2004, in the first year of use (2005) green and dry matter yield was rather low, since prolonged spring and droughty summer had a negative effect on the growth of lucerne in the first year, as a result of which only two cuts were

taken. All the tested varieties and breeding lines significantly lagged behind the standard 'Žydrūnė' (Table 3). However, for seed yield such growing season was favourable and resulted in a record seed yield. The highest yield was produced by the varieties 'Jogeva 118', 'Antanė' and No. 2424 which significantly outyielded the standard variety 'Žydrūnė' (Table 4).

Table 3. The data of yield of the registered varieties and accessions of lucerne from Estonia's islands

3 lentelė. *Registruotų veislių ir liucernų populiacijų iš Estijos salų derliaus duomenys 2004 sowing year, I and II year of use / 2004 sėjos metai, I ir II naudojimo metai*
Dotnuva, 2005–2006

No of catal. LIA LŽI kata- logo Nr.	Variety or accession origin <i>Veislės pavadinimas ir kilmė</i>	Green matter t ha ⁻¹ / <i>Žalia masė t ha⁻¹</i>					DM t ha ⁻¹ / <i>SM t ha⁻¹</i>				
		1 cut	2 cut	3 cut	Total		1 cut	2 cut	3 cut	Total	
		<i>1 pjū- tis</i>	<i>2 pjū- tis</i>	<i>3 pjū- tis</i>	<i>Iš viso</i>	<i>%</i>	<i>1 pjū- tis</i>	<i>2 pjū- tis</i>	<i>3 pjū- tis</i>	<i>Iš viso</i>	<i>%</i>
1	2	3	4	5	6	7	8	9	10	11	12
I year of use / I naudojimo metai											
407	Žydrūnė, st., Lithuania	26.4	16.5	-	42.7	100.0	6.9	3.9	-	10.8	100.0
2439	Jogeva 118, Estonia	28.4	13.8	-	42.2	98.8	7.1	3.2	-	10.3	95.4
2440	Jurlu, -, -, -	19.9	9.9	-	29.8	69.6	4.8	2.0	-	6.8	63.0
2441	Karlu, -, -, -	30.1	14.3	-	44.4	104.0	6.4	3.1	-	9.5	88.0
2421	Kardla, -, -, -	21.0	12.5	-	33.5	78.4	4.6	3.0	-	7.6	70.4
2422	Pühalepa, -, -, -	20.1	11.7	-	31.8	78.5	4.3	2.6	-	6.9	63.9
2424	Reigi, -, -, -	15.9	12.6	-	28.5	66.7	3.2	2.8	-	6.0	55.5
2426	Vormsi-Falena, -, -, -	18.0	11.5	-	29.5	69.1	3.9	2.4	-	6.3	58.3
2428	Vormsi-Hullo, -, -, -	14.4	9.8	-	24.2	56.6	3.0	2.3	-	5.3	49.1
2446	Undva, -, -, -	15.7	10.5	-	26.2	61.3	3.4	2.4	-	5.8	53.7
2447	Loona, -, -, -	23.9	15.2	-	39.1	91.2	5.4	3.2	-	8.6	79.6
2448	Kuusnsmme, -, -, -	14.4	11.7	-	26.1	61.1	3.1	2.7	-	5.8	53.9
2449	Kuusnsmme, II-, -, -	25.1	14.9	-	40.0	93.7	5.5	3.2	-	8.7	80.5
2450	EERIksaare, -, -, -	22.0	15.0	-	37.0	86.6	4.9	3.4	-	8.3	76.8
2451	Elda, -, -, -	15.0	14.6	-	29.6	69.3	3.2	3.2	-	6.4	59.2
2452	Saantepola, -, -, -	22.2	16.1	-	38.3	89.7	4.8	3.6	-	8.4	77.8
2453	Tagamorsa, -, -, -	16.0	13.5	-	29.5	69.0	3.4	3.1	-	6.5	60.2
2454	Vilsandi, -, -, -	25.0	15.6	-	40.6	95.0	5.7	3.9	-	9.6	88.9
2455	Abruka, -, -, -	20.7	14.7	-	35.4	82.8	4.6	3.4	-	8.0	74.1
2456	Abruka port, -, -, -	17.9	12.2	-	30.1	70.5	3.6	3.0	-	6.6	61.1
	LSD ₀₅ / R ₀₅	2.31	1.0		2.74		0.51	0.23		0.64	
II year of use / II naudojimo metai											
407	Žydrūnė, st., Lithuania	31.9	14.5	15.2	61.6	100.0	8.2	3.7	3.0	14.9	100.0
2439	Jogeva 118, Estonia	30.6	12.0	11.4	54.0	87.6	8.3	2.8	2.5	13.6	91.3
2440	Jurlu, -, -, -	28.1	9.3	11.2	48.6	78.9	7.2	2.1	2.3	11.6	77.8

Table 3 continued
3 lentelės tęsinys

1	2	3	4	5	6	7	8	9	10	11	12
2441	Karlu, - ,, -	30.2	12.5	10.2	52.9	85.9	8.4	2.6	2.3	13.3	89.3
2421	Kardla, - ,, -	30.8	10.4	13.8	55.0	89.3	8.6	2.5	3.0	14.1	94.6
2422	Pühalepa, -, -	32.8	12.4	13.0	58.2	94.5	8.4	2.9	2.8	14.1	94.6
2424	Reigi, - ,, -	22.8	12.5	12.6	48.0	77.8	5.6	3.1	2.8	11.5	77.2
2426	Vormsi-Falena, -, -	34.7	10.6	11.2	56.5	91.7	9.2	2.6	2.2	14.0	93.9
2428	Vormsi-Hullo, -, -a	27.2	10.8	13.2	51.4	83.4	7.4	2.3	2.6	12.3	82.5
2446	Undva, - ,, -	26.0	12.8	14.0	52.8	85.7	6.9	3.3	2.8	13.0	87.2
2447	Loona, - ,, -	32.4	14.1	13.8	60.3	97.9	7.9	3.1	3.0	14.0	93.9
2448	Kuusnsmme, - ,, -	32.2	12.8	14.5	59.5	96.6	8.4	3.0	3.0	14.4	96.6
2449	Kuusnsmme, II- ,, -	34.4	15.0	15.4	64.8	105.2	9.7	3.4	3.1	16.2	108.7
2450	Eeriksaare, - ,, -	34.4	14.2	12.8	61.4	99.7	9.5	3.6	2.7	15.8	106.0
2451	Elda, - ,, -	30.2	12.8	13.6	56.6	91.9	8.4	3.2	2.7	14.3	96.0
2452	Saantepola, - ,, -	32.0	12.0	12.2	56.2	91.2	7.9	2.5	2.4	12.8	85.9
2453	Tagamorsa, - ,, -	31.2	12.4	14.8	58.4	94.8	8.2	2.9	3.1	14.2	95.3
2454	Vilsandi, Estonia	32.2	12.1	13.0	57.3	93.0	9.2	2.9	2.6	14.7	98.6
2455	Abruka, - ,, -	30.9	14.9	14.3	60.1	97.6	8.4	3.3	3.3	15.0	100.7
2456	Abruka port, -, -	27.6	13.8	14.3	55.7	90.4	6.9	3.0	2.9	12.8	85.9
LSD ₀₅ / R ₀₅		4.52	2.41	1.83	6.27		1.24	0.53	0.41	1.62	

Table 4. The seed yield, plant height and flowering data of the registered lucerne varieties and accessions collected on Estonia's islands

4 lentelė. Registruotų veislių ir liucernų populiacijų iš Estijos salų sėklų derliaus, augalų aukščio, žydėjimo datos duomenys

2004 sowing year, I year of use / 2004 sėjos, I naud. metai
Dotnuva, 2004–2005

No. of catalogue LIA LŽI kata- logo Nr.	Variety or accession origin Veislės ar populiacijos kilmė	Plant height cm* Aukštis cm		Flowering date Žydėjimo data	Seed yield Sėklų derlius	
		I cut	II cut		kg ha ⁻¹	%
		1 pjūtis	2 pjūtis			
1	2	3	4	5	6	7
407	Žydrūnė, st., Lithuania	116	46	06 24	649	100.0
2439	Jogeva 118, Estonia	112	36	06 26	806	124.2
2440	Jurlu, - ,, -	85	20	06 26	359	55.3
2441	Karlu, - ,, -	90	20	06 24	579	89.2
2421	Kardla, - ,, -	99	32	06 25	630	97.1
2422	Pühalepa, -, -	104	48	06 25	395	60.9
2424	Reigi, - ,, -	113	33	06 26	703	108.3
2426	Vormsi-Falena, -, -	100	30	06 26	484	74.6
2428	Vormsi-Hullo, - ,, -	92	30	06 26	341	52.5
2446	Undva, - ,, -	108	32	06 24	325	50.1
2447	Loona, - ,, -	107	43	06 23	600	92.4

Table 4 continued
4 lentelės tęsinys

1	2	3	4	5	6	7
2448	Kuusnsmme, - „, -	104	43	06 23	457	70.4
2449	Kuusnsmme, II- „,-	111	50	06 26	515	79.4
2450	EERIksaare, - „, -	128	50	06 24	560	86.3
2451	Elda, - „, -	103	52	06 24	165	25.4
2452	Saantepola, - „, -	101	36	06 25	437	67.3
2453	Tagamorsa, - „, -	89	40	06 25	309	47.6
2454	Vilsandi, - „, -	110	40	06 23	409	63.0
2455	Abruka, - „, -	112	40	06 26	276	42.5
2456	Abruka port, „,-	108	43	06 26	347	53.5
LSD ₀₅ / R ₀₅					63.4	

* Plant height data are from parallel trials for vegetative mass yield / *Augalų aukščio duomenys paimti iš analogiškų vegetatyvinės masės derliaus bandymų*

The seed of the selected promising material, such as accessions from islands and settlements of Orjaku, Vormsi-Hullo, Kassari, Kuusnsmme, EERIksaare and some others, was sown in 2005 and 2006 breeding nurseries, and using the above mentioned methods of lucerne breeding there will be created hybrids and populations for establishing pasture type lucerne varieties.

Conclusion

Most of the tested Estonian varieties and accessions of lucerne produced lower dry matter and seed yield than the standard variety 'Žydrūnē'. However, some accessions from the islands and settlements of Orjaku, Vormsi-Hullo, Kassari, Kuusnsmme, EERIksaare and some others in separate years showed rather high yielding capacity. They are promising material for breeding pasture type lucerne varieties.

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ESTIŠKŲ LIUCERNŲ VEISLIŲ IR POPULIACIJŲ ĮVERTINIMAS LIETUVOS AGROKLIMATINĖMIS SĄLYGOMIS

A. Svirskis

Santrauka

Liucernos – derlingiausios daugiamečių ankštinės žolės auginamos derlinguose Baltijos šalių dirvožemiuose.

Liucernų selekcija Lietuvoje pradėta prieš 85 metus. Nuo pat selekcijos pradžios svarbiausias dėmesys buvo skiriamas liucernų atsparumui nepalankioms agroklimatinėms sąlygoms ir sėklingumui padidinti. Tam plačiai naudota vietinė selekcinė medžiaga, taip pat perspektyvi selekcinė medžiaga ir vertingos veislės iš įvairių pasaulio šalių. Sukurtos ir registruotos liucernų veislės ‘Žydrūnė’, ‘Birutė’ ir ‘Malvina’, kurios teigiamai įvertintos DUS tyrimuose Lenkijoje. Veislė ‘Antanė’ tirama Valstybiniuose veislių tyrimuose. Šios veislės buvo selekcionuojamos auginimui sėjomainose. Dabar svarbiausias uždavinys yra sukurti ganyklinio tipo veisles. Tuo tikslu dalyvauta 2 tarptautinėse ekspedicijose Estijos salose ir priekrantės zonoje, kur surinkta perspektyvi selekcinė medžiaga. Natūralios estiškų liucernų populiacijos pasižymi aukštu ištvermingumu žiemojimui, ilgaamžiškumu ir dažnai sugebėjimu daugintis šaknų atžalomis ir šakniastiebiais, t. y. vegetatyviniu būdu. Tai labai svarbu ganyklinio tipo liucernoms.

2003 ir 2004 m. Lietuvos žemdirbystės institute įrengti veislių bandymai, kuriuose tirta 3 estiškos liucernų veislės ir 20 populiacijų, surinktų Estijoje. Dviejų bandymų duomenimis, dauguma tirtų veislių ir populiacijų davė mažesnę sausųjų medžiagų ir sėklų derlių nei standartinė veislė ‘Žydrūnė’. Tačiau kai kurios populiacijos, kaip antai Orjaku, Vormsi-Hullo, Kassari, Kuusneme, EEriksaare ir kitos, išsiskyrė dideliu derlingumo potencialu, geru lapuotumu, atsparumu lapų ir stiebų ligoms bei kitomis vertingomis ūkinėmis savybėmis. Jos yra vertinga selekcinė medžiaga ir intensyviai naudojama ganyklinio tipo liucernų veislėms kurti.

Reikšminiai žodžiai: liucernos, pirminė selekcinė medžiaga, derlius, atsparumas žiemojimui, ilgaamžiškumas.