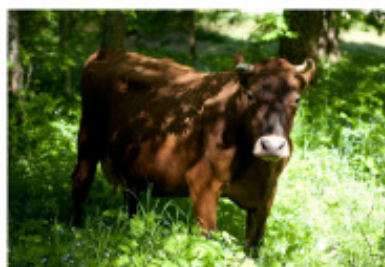
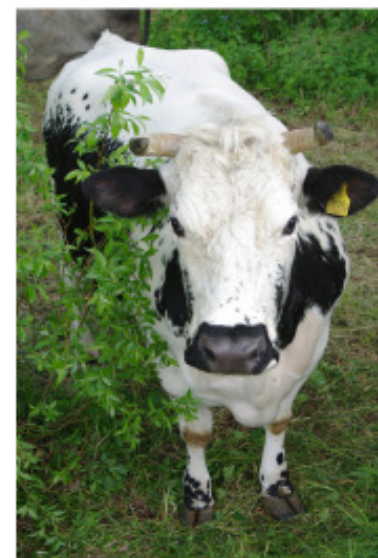




In-situ conservation of farm animal genetic resources in Lithuania



R.Sveistiene
Bonn, 2018-05-08

Data on livestock population, thous. heads

Year	Dairy cattle	Non-dairy cattle	Sheep	Goats	Horses	Swine	Rabbits	Poultry
1991	842.0	1.479.5	56.5	5.2	79.9	2435.9	73.4	16815.0
1995	614.9	537.5	40.0	12.4	78.2	1259.8	88.0	8848.8
2000	494.3	403.5	13.8	24.7	74.9	936.1	85.4	6372.6
2005	433.9	358.0	22.1	26.9	63.6	1073.3	96.6	8419.4
2010	374.6	384.7	52.5	14.7	49.0	928.2	107.5	9308.7
2015	314.0	422.6	123.9	13.0	18.2	714.2	120.5	10218
2016	300.6	416.3	146.9	12.7	17.9	642.9	121.0	10690
2017	285.4	406.6	163.9	13.8	16.4	622.8	121.9	11125

Number of breeds kept in Lithuania

Species	Approval Associations	Breed		Breeding goal defined	
		Local or Locally adapted	Exotic	Local or Locally adapted	Exotic
Dairy cattle	4	4(2)	25	4(2)	1
Beef cattle	1	0	12	0	9
Sheep	1	2	29	2	8
Goats	1	1	14		4
Pigs	2	2	4	2	3
Horses	9	4+2	31	4+2	5
Geese	1	1	1	1	0

National Programme for the conservation of the native farm animal genetic resources (1996 and renewal in 2008).

Lithuanian farm animal genetic resources include: old breeds (6)

Žemaitukai



Lithuanian Ash-grey



Lithuanian White-Backed



Lithuanian Coarse-Wooled



Lithuania indigenous (Wattle)



„Vištinės“ geese



and breeds that were developed in the 20th century (6)

Large type Žemaitukai



Lithuanian Heavy Draught



Lithuanian Red
(old genotype)



Lithuanian Black-and-White
(old gen.)



Lithuanian Blackface



Lithuanian White
(old genotype)

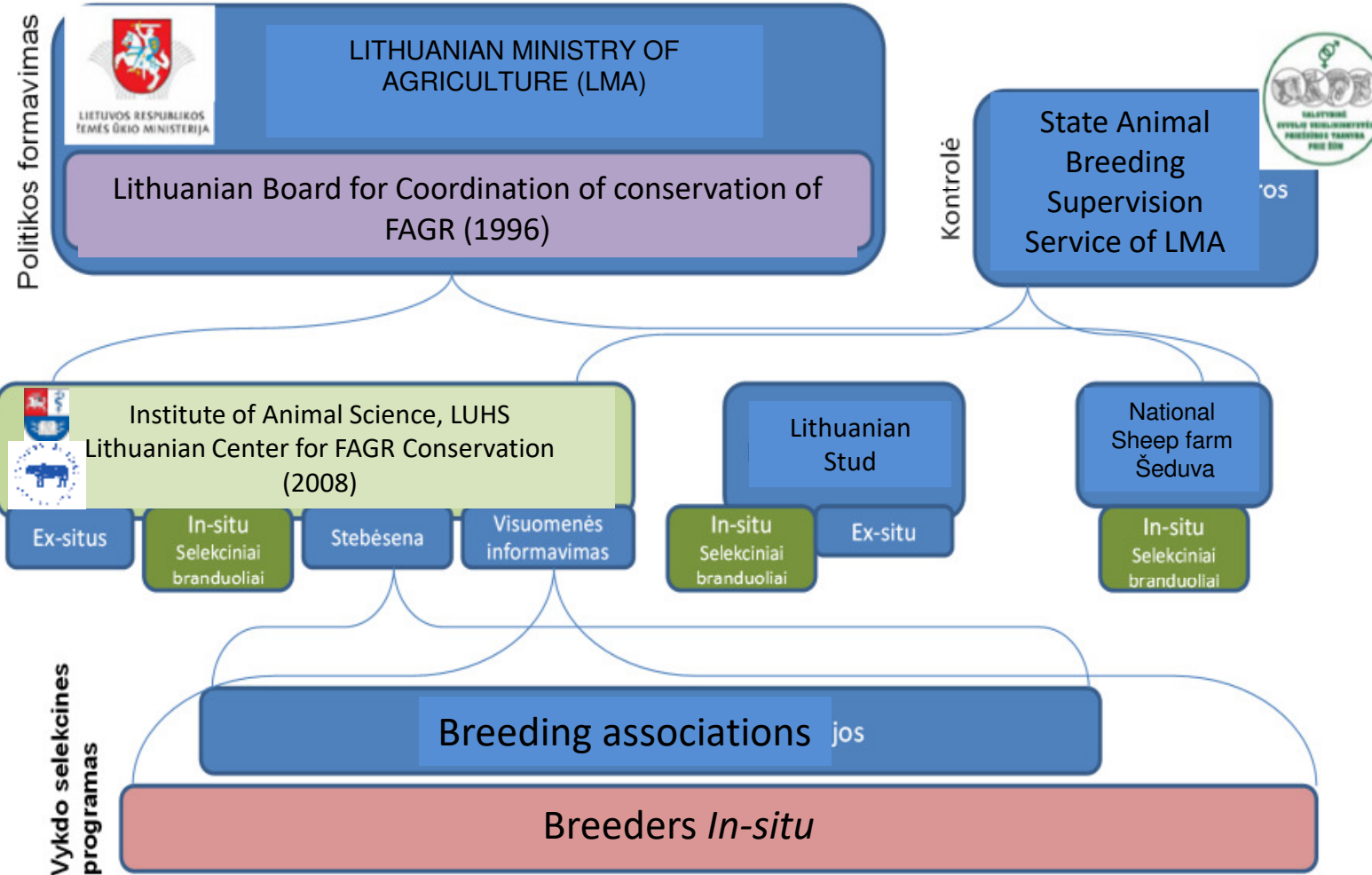


Transboundary (1):

Trakehnen



THE MANAGEMENT OF FARM ANIMAL GENETIC RESOURCES



SCHEME OF THE CENTER

INSTITUTE OF ANIMAL SCIENCE of LUHS

Lithuanian Center for Farm Animal Genetic Resources Conservation

Conservation **Ex – situ**

Sperm
DNR
Embrious
Ovocitai
Tissue
Blood

Conservation **In – situ** (IAS LUHS selection nucleous)

LAG cattle	1994
LWB cattle	1994
LR (old genotipe)	2011
Ž Horses	1994
LCW sheep	1995
LN pigs	1993
LW old genotype pigs	1999
V geese	1995
LBW cattle (old genotype)	2017
L Goat	2017

Monitoring of animal genetic resources (13 breeds)

Evaluation Population status
Expeditions (inventorization,
characterization, DNR
samples collection
Aprobation of selection
programs
Data manegement and
analysis

Dissemination of knowledge

Seminars
Field days
Lectures
www.gic.lsmuni.lt
www.facebook.com

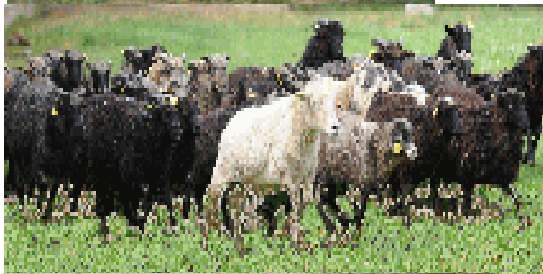
Restoration of populations (1993-2017):



Žemaitukai were restored from **30** horses at Lithuanian Institute of Animal Science (now is IAS of LUHS) and Vilniaus National stud (now is Lithuanian stud). Therefore the genealogy structure is narrow.



Lithuanian indigenous pig herd were restored from **19** animals (5-not related boars and 14 sow -5 families at Lithuanian Institute of Animal Science (now is IAS of LUHS).



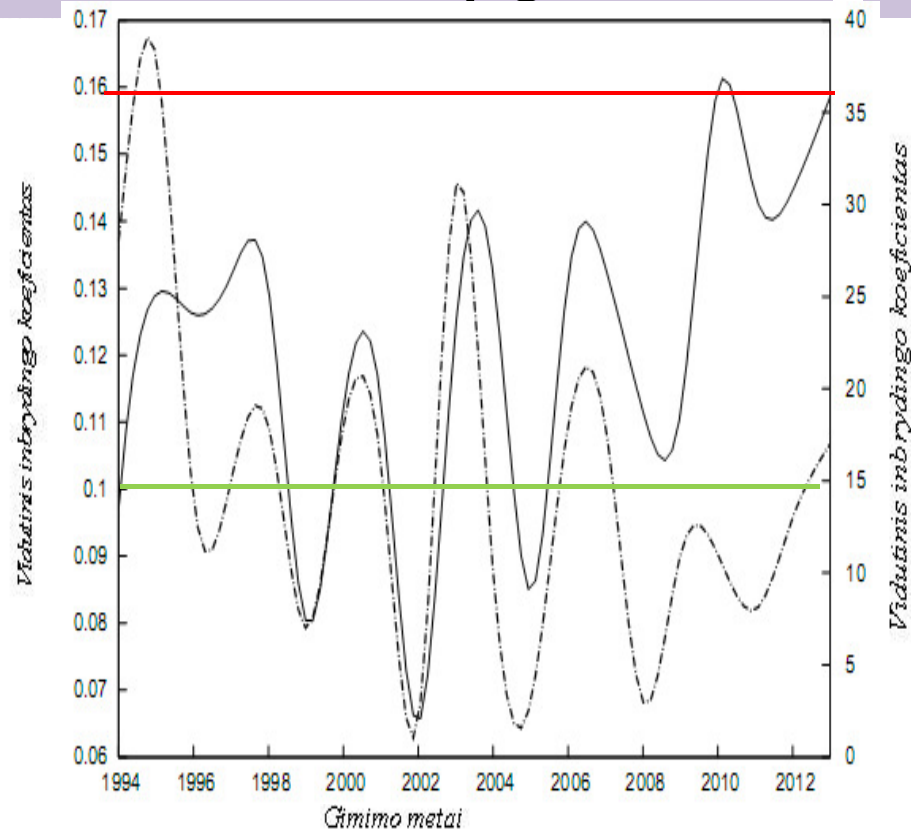
Lithuanian Coars woolen sheep population were restored from **6** animals at the Lithuanian Institute of Animal Science (now is IAS of LUHS).



“Vištinės” geese population were restored from **100** eggs at Lithuanian Institute of Animal Science (now is IAS of LUHS)

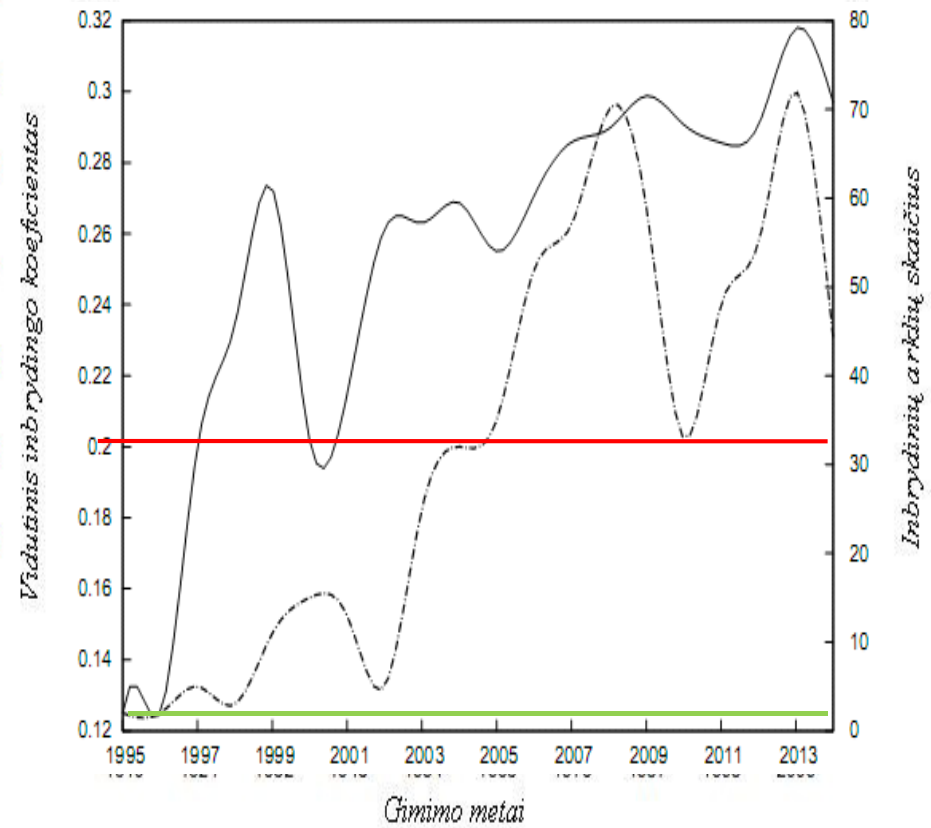
Average of Inbreeding Coefficient

Native pig

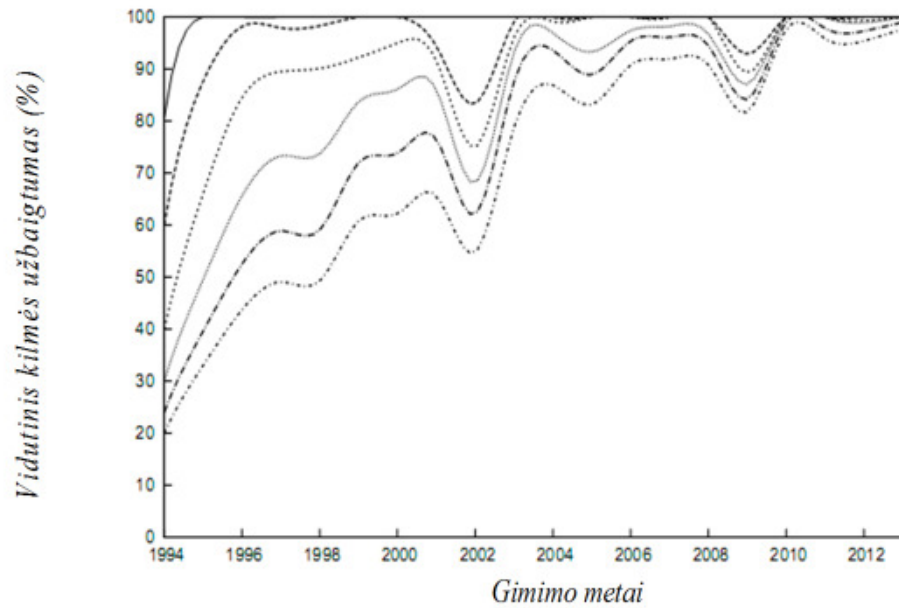


Vid. inbridingo koef. — Inbridingų arklų sk. - - -

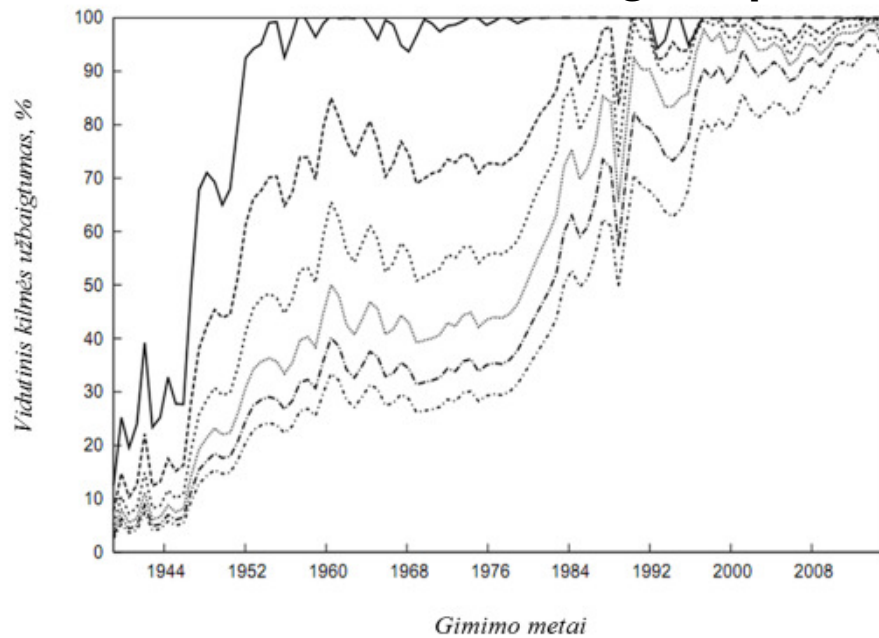
Coarse wooled sheep



Vid. inbridingo koef. — Inbridingų arklų sk. - - -



Average of parentage completeness 1 - 6 generation



Selection nucleus

1. Structure of National selection nucleus – minimum 4 lines and 4 families.
2. If in genealogical structure of breed left less than 4 genealogical is needed to create new lines.

Initial generation	Not related groups							
	1		2		3		4	
	♀	♂	♀	♂	♀	♂	♀	♂
Pradiné generation, Tévai	A x B		C x D		E x F		G x H	
Daughters, sons	A1	B1	C1	D1	E1	F1	G1	H1
I generation, tévai	A1 x H1		C1 x B1		E1 x D1		G1 x F1	
Daughters, sons	A2	H2	C2	B2	E2	D2	G2	F2
II generation, tévai	A2 x F2		C2 x H2		E2 x B2		G2 x D2	
Daughters, sons	A3	F3	C3	H3	E3	B3	G3	D3
III generation, tévai	A3 x D3		C3 x F3		E3 x H3		G3 x B3	
Daughters, sons	A4	D4	C4	F4	E4	H4	G4	B4
IV generation, tévai	A4 x B4		C4 x D4		E4 x F4		G4 x H4	
Daughters, sons	A5	B5	C5	D5	E5	F5	G5	H5

- The first decision in setting up conservation schemes is to carry forward the existing variability in the breeds.



Distribution of animals of critical and endangered breeds at farms of different stakeholders

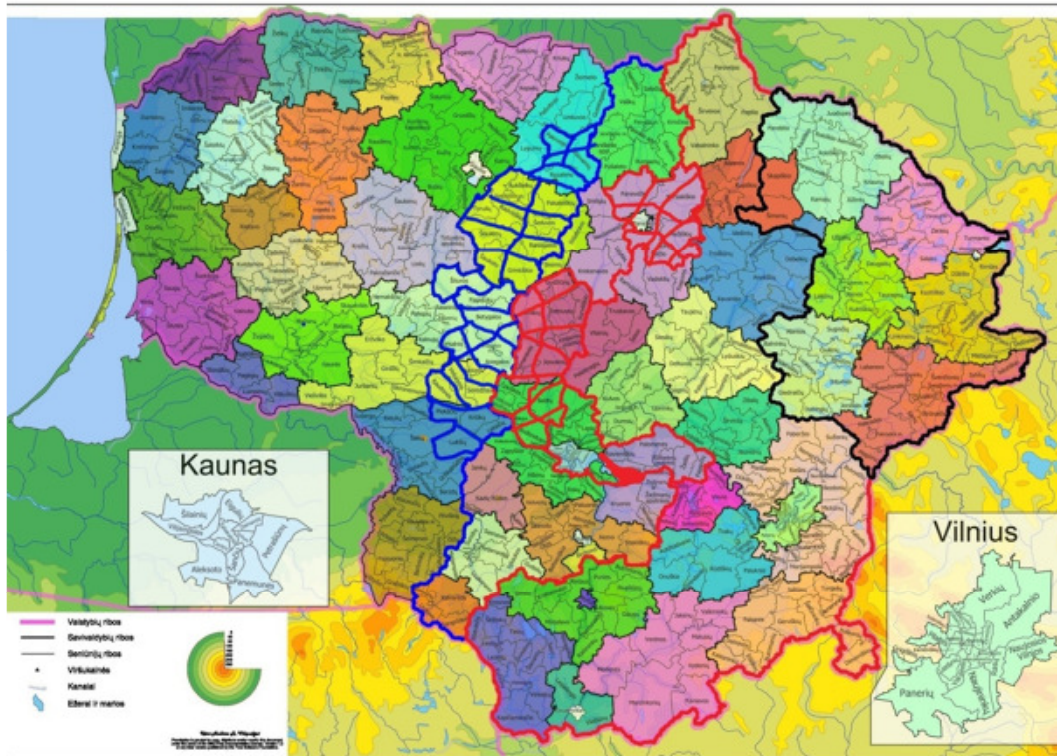
Breed	Distribution of National animals						Private farmers	No	Risk status	Keeper						
	National stud		National sheep farms of special purpose		Lithuanian Centre of Farm Animal Genetic Resource Conservation					No. of animals	% of total population	No. of animals	% of total population	Breeds	Territories	Critical breeds
	No. of animals	% of total population	No. of animals	% of total population	No. of animals	% of total population										
Horses																
Zemaitukai	101	15.8	-	-	42	6.5	505	77.7	76	Endangered-maintained	⊕	-	⊕			
Large type Zemaitukai	222	36.9	-	-	-	-	441	61.1	45	Critical-maintained	⊕	-	⊕			
Lithuanian Blue Draught	29	3.2	-	-	-	-	1796	26.3	179	Vulnerable	⊕	-	⊕			
Taliskiai	423	54.6	-	-	-	-	276	43.2	48	Endangered	⊕	-	⊕			
Cattle																
Lithuanian White-headed	-	-	-	-	21	1.7	1334	98.3	12	Critical	-	⊕	⊕			
Lithuanian Pale grey	-	-	-	-	35	2	1364	98	26	Critical	-	⊕	⊕			
Lithuanian Black-and-White (old genotype)	-	-	-	-	-	-	1432	100	26	Critical	-	-	⊕			
Lithuanian Red (old genotype)	-	-	-	-	18	21.42857	45	54.2857	14	Critical	-	⊕	⊕			
Sheep																
Lithuanian White (old genotype)	-	-	-	-	224	88.7	9	4.1	28	Critical-maintained	⊕	-	⊕			
Lithuanian Redgenous (White)	-	-	-	-	187	88.5	26	12.5	26	Critical-maintained	⊕	-	⊕			
Goats																
Lithuanian Cheviot-headed	-	-	-	-	121	12.2	888	10.7	91	Critical-maintained	⊕	-	⊕			
Lithuanian Blackhead	-	-	140	16	-	-	788	91	225	Vulnerable	⊕	-	⊕			
Swine																
Lithuanian grey	-	-	-	-	127	14.1	214	24.2	-	Critical-maintained	-	-	-			

Geographical distribution within country

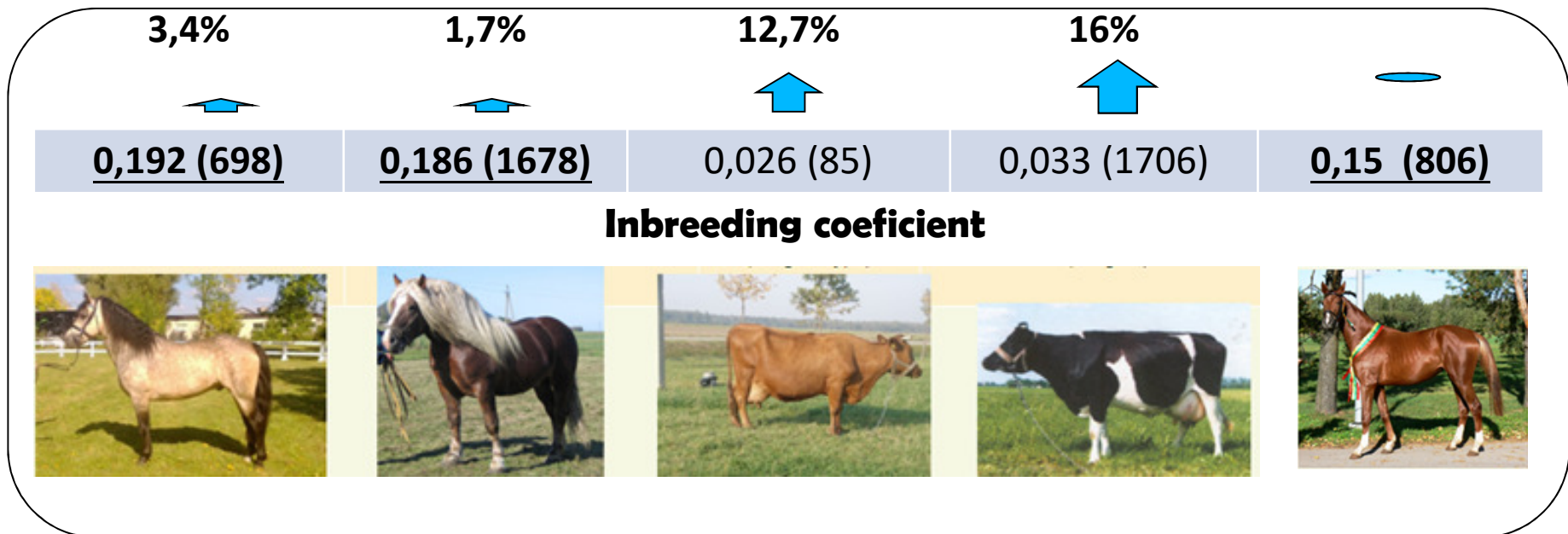
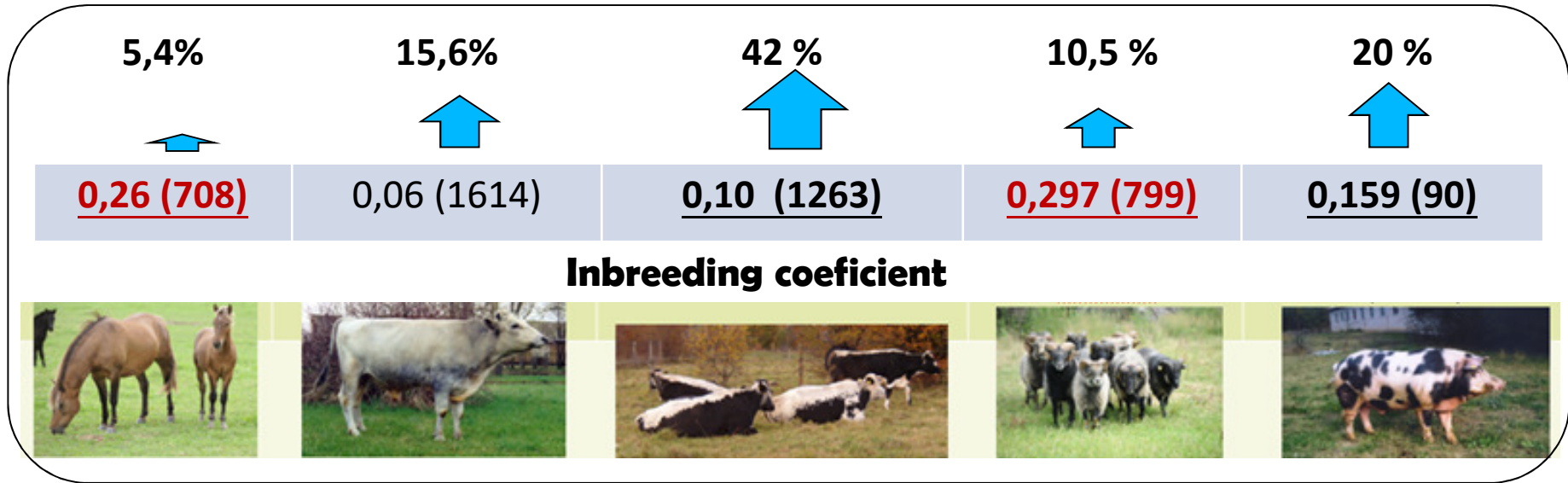


Geographic isolation of the population or its concentration in one or a few locations that would place it at risk as a result of climatic, economic or political changes or disease outbreak.

African wild boar disease



Changes of inbreeding coefficient per generation (during 10 year period)

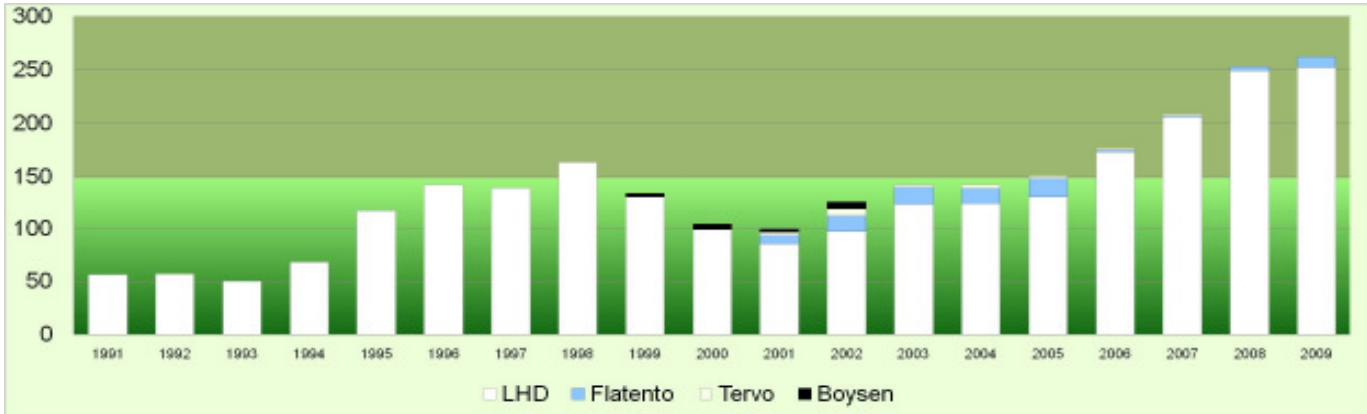




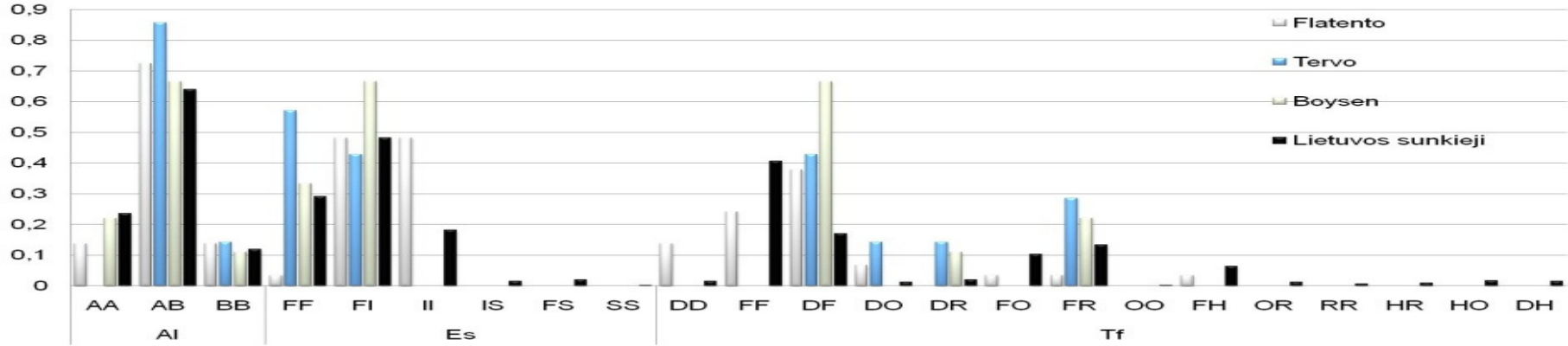
Changes in the Lithuanian Heavy Draught horse population after the introduction foreign stallions

R. Šveistienė, V. Jatkauskienė

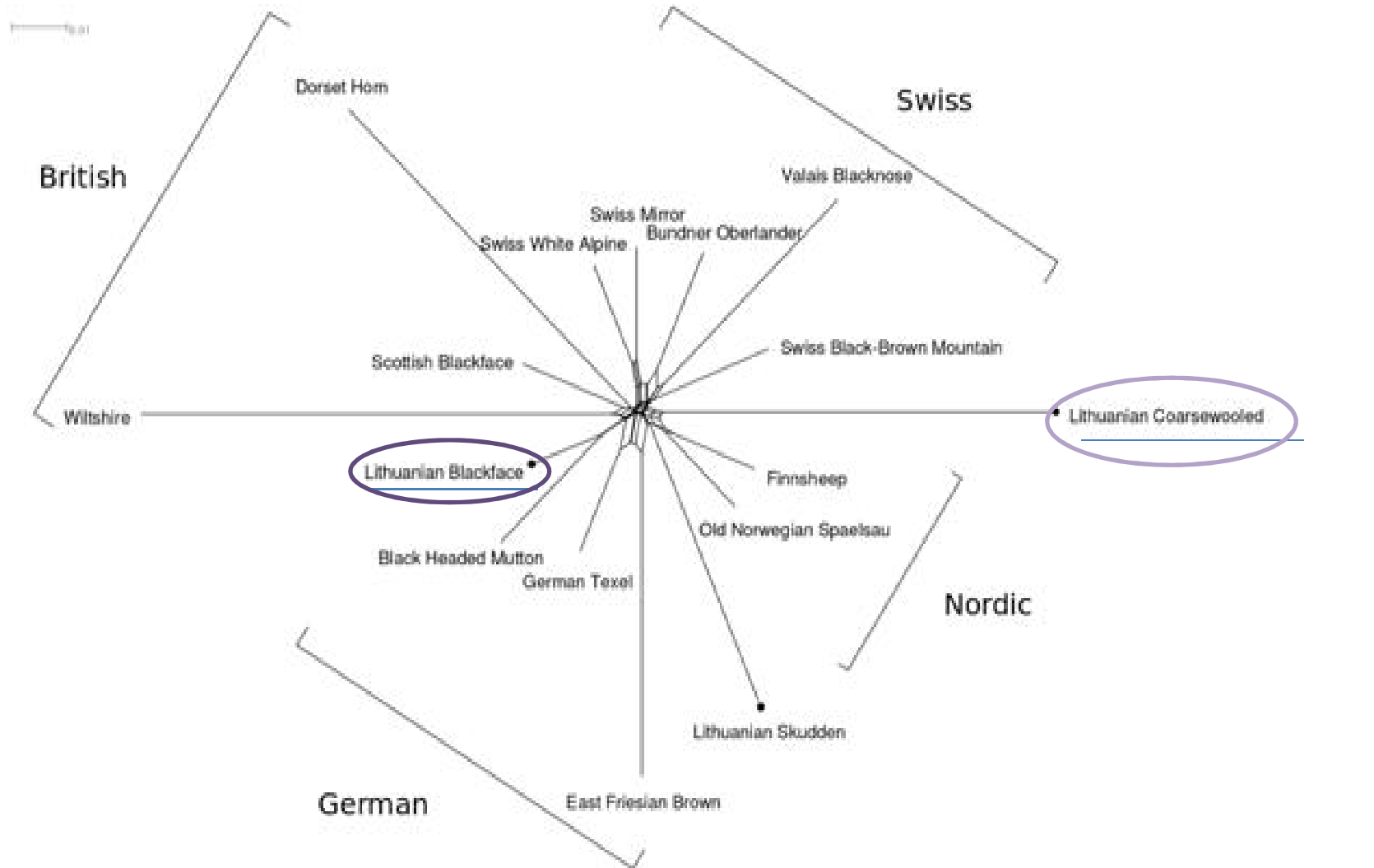
The aim of our investigation was to evaluate the changes in the population after introduction foreign stallions chosen for the development of the breed in order to stop the disappearing of the genealogical structure of the LHD breed.



Analysis of protein polymorphism in the different LHD horse genotypes.

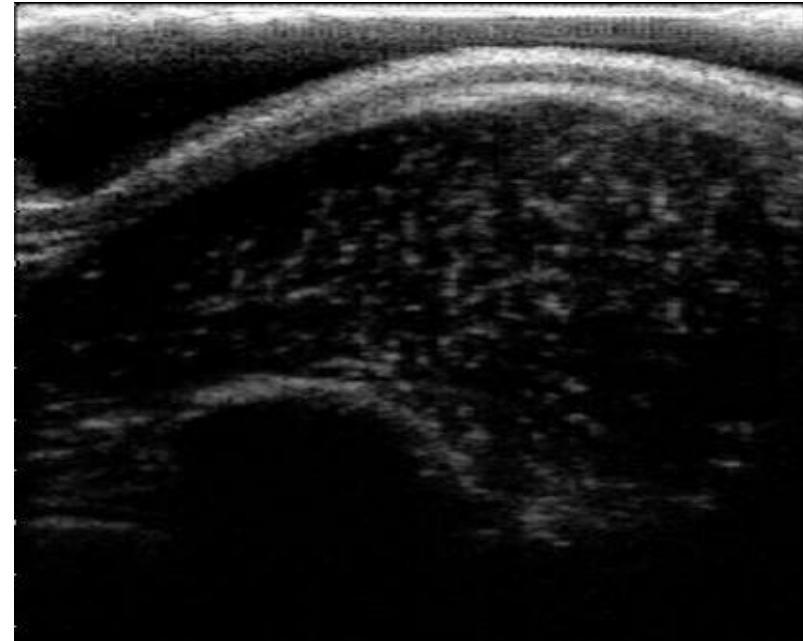


Neighbour net-network describing the relatedness structure among the sheep breeds.



Muscle development as characteristic for beef production in 4 dual purpose breeds of cattle (COST FAIM - 2015)

- The aim of the investigation was to judge possibility of 4 breeds of cattle from central Europe currently used in dairy system for beef production in cow – calf system.
- Muscle and fat thickness were measured by Aloka PS 2, with probe UST-5044-3.5 MHz, 172 mm on back on last thoraces vertebra and on rump on os ischii.



- Average daily gain 730 g LR, 740 g LWB and 751 g LAG.
- Total layer of muscle was LR 166.50 mm, 162.21 LAG, 155.47 LWB.
- The highest score for linear evaluation of muscularity was 14.07 points LAG, 14.00 LR and 13.05 LWB.



The project **DIVERSITY OF LOCAL PIG BREEDS AND PRODUCTION SYSTEMS FOR HIGH QUALITY TRADITIONAL PRODUCTS AND SUSTAINABLE PORK CHAINS (TREASURE)** is a Research and Innovation Action under the Horizon 2020

V. Razmaite, R. Šveistienė

Lithuanian University of Health Sciences, Animal Science Institute
R. Žebenkos 12, LT-82317 Baisogala, Radviliškis distr., Lietuva e-mail: gencentras@lgi.lt



The aim of the project is to improve the knowledge, skills and competences necessary to develop existing and create new sustainable pork chains based on European local pig genetic resources (local breeds), which correspond to the highest consumer demands for quality and healthiness of pork products, and to the societal demands regarding animal welfare, environment and rural development.

The project involves a consortium of 25 partners with 12 their third parties from 9 countries. The research is conducted on 20 local European pig breeds. Animal Science Institute of Lithuanian University of Health Sciences with third party Lithuanian Endangered Farm Animal Breeders Association represents Lithuania in the project (<http://gi.lsmuni.lt/>).



Lithuanian Indigenous Wattle pigs



Old genotype Lithuanian White

Local pig breeds and their respective production systems meet high criteria and expectations of society in regard to the environment, animal welfare and food quality. Local pig breeds are adapted to specific local environment. Besides their genetic merit for agrobiodiversity, they represent the basis for sustainable local pork chains.



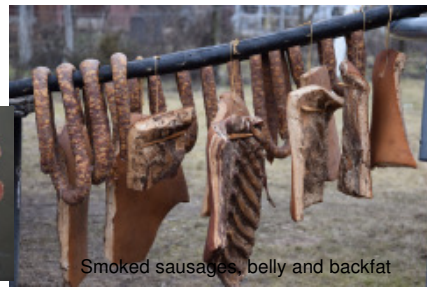
Traditional pork products represent culinary heritage of the regions and have an excellent image by consumers due to typical quality attributes, which cannot be assured with pigs from conventional intensive husbandry. In terms of scientific substantiation, their performances and products are practically untapped and market potential of their products unexploited.



Belly



Tenderloin



Smoked sausages, belly and backfat



Dried sausages



Lašiniuotis, a kind of lard sausages



Native goat (n=11):

Color: 37% - white, 18% - black with white hair, 18% -black and white,18% - grey, 9% - black.

Structure of color: 45% - even, 55% - uneven.

Skin pigmentation: 64% - yes, 36% - no.

Structure of hair: 82% - long, 18% - not long.

Average horns: male-69,5 cm; female -35 cm



Dissemination
of knowledge
of AnGR to
childrens and
farmers



Organizing of seminars, conferences and exhibitions



Seminaras - lauko diena, 2015



Seminaras - lauko diena, 2015



Seminaras - lauko diena, 2015



Seminaras - lauko diena, 2015



Seminaras - lauko diena, 2015



Seminaras - lauko diena, 2015



Seminaras - lauko diena, 2015



Seminaras - lauko diena, 2015



Seminaras - lauko diena, 2015



Thank you for your attention

