

# NITO TAD. SYN

## Management of farm animal genetic resources in Lithuania















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## 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

	Approval	Breed		Breeding goal defined			
Species	Associations	Localy adapted	Exotic	Localy 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	6	31	6	5		
Geese	1	1	1	1	0		

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





#### Conservation of AnGR is orentated to the small family farms



Investment in developing local breeds of livestock will benefit small-scale and will often contribute to the sustainable development of the poorest regions of a country.



#### THE MANAGEMENT OF FARM ANIMAL GENETIC RESOURSES



Lithuanian Law for animal breeding 08-02-1994 - Nr.I-384

## 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 LWB cattle LR (old genotipe) Ž Horses LCW sheep LN pigs

LW old genotype pigs V geese Monitoring of animal genetic resources (13 breeds)

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

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

	Distribution of National nucleous										Ex-situ		
Breed	National stud National sheep farm of special purpose		Lithuanian Centre of Farm Animal Genetic Resource Coordination		Private farmers		Ne	Risk status	Sper	Embri	Gene		
	No. of animmals	% of total population	No. of animmals	% of total population	No. of animmals	% of total population	No. of animmals	% of total population			m	ous	nial .
					Hors	es		li -					
Žemaitukai	103	15,8	272	1322	42	6,5	505	77.7	78	Endangered- maintened	3		9
Large type Žemaitukai	282	38,9		2. <b>.</b>	× 1	( <b>*</b> )	444	61,1	45	Critical-maintained	0	-	•
Lithuanian Heavy Draught	59	3,2	-	1.4		1	1796	96,8	178	Vulnerable	٢		
Trakehnen	473	34.8	•	1051		(#C)	796	65,2	45	Endangered	0	•	0
					Catt	le							
Lithuanian White-Backed	•			275	21	1,7	1224	98,3	12	Critical	:		0
Lithuanian Ash-grey	2.1		-	12	35	2	1564	98	28	Critical	32	0	0
Lithuanian Black-and-White (old genotype)	•			25 <b>7</b> 6	-	172	1652	100	28	Critical	67		Ð
Lithuanian Red (old genotype)		2	-	14	18	25,4/62*	53	74,6/38*	16	Critical	34	0	٢
				-	Pigs			0	$\mathbf{\nabla}$				
Lithuanian White (old genotype)	•	-	•		209	95,9	9	4,1	38	Critical-maintained	0		0
Lithuania indigenous (Wattle)		2	3 <b>1</b> 3	124	107	80,5	26	19,5	30	Critical-maintained	(j)		٢
					Shee	P			$\sim$				
Lithuanian Coarse-Wooled			-	•	121	15,3	668	84,7	49	Critical-maintained	۲		٢
Lithuanian Blackface	-	22	1481	16		1942) 1942	7306	84	225	Vulnerable	٢		0
					Gees	e		_					
"Vištinės" geese	-				177	16,2	914	83,8	-	Critical-maintained	÷.		

### MONITORING OF FARM ANIMAL GENETIC RESOURCES

## Strengths?

## Weaknesses? Opportunities? Threats?

Adaptation

Genetic uniqueness



- Population size
- •Age of owners
- Number of farms

- •Nature management
- Ecological farming



•Focus on a few breeds for high input systems with high tech genetics / genomics









Exotics
Socio economic factors
Disasters/climate change

## Geografical 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







Gimimo metai

100



#### Average of parentage completeness 1 - 6 generation



## Average of Inbreeding Coefficient



## 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.



SNPs characterization of Lithuanian sheep populations (Grant from the Ministry of Agriculture, 2014)







#### Genetic uniqueness



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.

## TREASURE

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. Razmaitė, 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 conduct 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/). pig





Lithuanian Indigenous Wattle pigs



Old genotype Lithuanian White

Local

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

### 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, conferencies and exibitions



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

