



Status and performance of Lithuanian pig breeds in their production system

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Population size of Lithuanian pig breeds

- Lithuanian Indigenous Wattle <50 adult animals
- Lithuanian White <100 adult animals
- Effective population size of both breeds < 50

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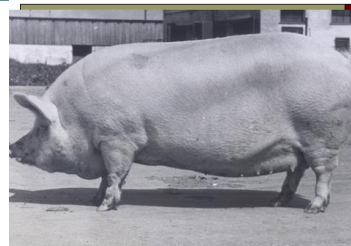
Main reasons for loss of Lithuanian White pig breed

- Changing market requirements
- Introduction of foreign breeds
- Poor agricultural and animal breeding policies
- Outbreak of infectious diseases (ASF) in wild boar population

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Lithuanian White



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Share of Lithuanian pigs in slaughter pig population

In total 800000 slaughter pigs/year, pigs of both Lithuanian breeds do not exceed 0.2%



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Population size for selection programme (Whittemore, 1998)

- Dam breed (line)-1000-2500 sows
- Sire-line-500-1000 sows
- Lines for cross-bred meat production-250-750 sows
- Zoo-50-250 sows

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Value of pig breeds

- Traits of cultural, historical and scientific value
- Adaptation to a specific environment conditions
- Unique traits
- Traits of current social and economic value

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Success in pig production

- Conventional production (main international breeds)
- Alternative (diferentiated) production (in many cases old rare breeds)

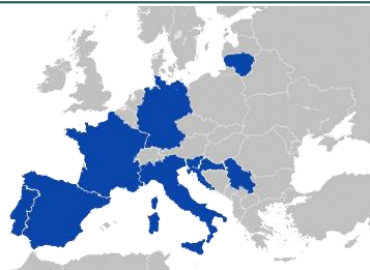
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Consortium of TREASURE



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Objective of project TREASURE

- To improve the knowledge, skills and competences necessary to develop existing and create new sustainable pork chains based on European local pig 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.

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- The research is conducted on 20 local European pig breeds, including Lithuanian breeds
- Animal Science Institute of Lithuanian University of Health Sciences with third party Lithuanian Endangered Farm Animal Breeders Association represents Lithuania in the project.

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Brief structure of the project

- WP1 Phenotypic and genetic characterization of autochthonous pig populations in Europe;
- WP2 Management and performance of local pig breeds in their production systems;
- WP3 Traditional and new high quality pork products with regional identity;
- WP4 Consumer preferences and market research for sustainable pork chains;
- WP5 Measures to maximise impact;
- WP6 Coordination and Management

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Phenotypic and genetic characterization of Lithuanian pig breeds WP1 (V. Razmaitė, R. Šveistienė, V. Jatkauskienė, A. Šiukščius)

- Collection data from previous studies;
- Physical measurements of adult animals (FAO checklist for phenotypic characterization of pigs);
- Collection of blood samples for genetic analyses with High Density SNP chips (INIA together with UNIBO and INRA). 27 SNPs were successfully genotyped

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Management and performance of local pig breeds in their production systems WP2 (V. Razmaitė, R. Juška, R. Leikus, V. Jatkauskienė)

- Task 2.1 Collection of data for evaluation and comparative analysis of productive traits in local pig breeds with the aim to evaluate productivity of different local pig breeds held in production systems with varying intensity and geo-climatic conditions and locally available feeding resources

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Previous research activities in Lithuanian pig genetic resources

- The studies of pig breeding in small populations;
- Biological qualities, performance and production quality
- Studies of search for possibilities of wider use (regional crossbreeding schemes for production of leaner pork, slaughtering purebred pigs at a lower weight Lithuanian wattle pig and wild boar intercross)

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Evaluation of Lithuanian pigs under conditions with varying intensity and available feeding resources

- The aim of the present study-to examine the effect of breed, energy-restricted feeding and pig gender on carcass measurements, meat and lipid quality parameters

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Evaluation of Lithuanian pigs under conditions with varying intensity and available feeding resources

Fresh grass, outdoor keeping of pigs due ASF are prohibited

The feed for all pigs was provided according to a scale of standard feeding up to 60 kg of live pig body weight and then restricted in amount of feed for the experimental pigs and accounted for the difference 20% compared with control group.

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Statistical analysis

- The data were subjected to the analysis of variance in general linear (GLM) procedure in SPSS 17 with LSD.
- The models included the fixed effect of breed, feeding type and gender.

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Slaughtered animals

Variables	Breed		Group		Gender		SED
	LW	LIW	Standard	Restricted	Male	Female	
Age at slaughter	202.7	202.3	202.3	202.8	202.2	202.9	6.06
Body weight	107.9	95.5***	104.2	99.1	102.2	101.0	2.98

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Fatness of pigs

Backfat	Breed		Group		Gender		SED
	LW	LIW	Standard	Restricted	Male	Female	
Last rib	30.3	34.9**	34.2	30.9*	35.4	29.7***	1.61
Lumbar	30.8	37.2**	37.1	30.9**	36.1	31.9†	2.11
Flare fat	2.06	2.11	2.36	1.81***	2.30	1.87**	0.15
Loin area	32.74	29.45*	31.56	30.63	30.38	31.81	1.54

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pH of longissimus dorsi and semimembranosus muscles

Variables	Breed		Group		Gender		SED
	LW	LIW	Standard	Restricted	Male	Female	
pH _{LD1}	6.23	6.32	6.26	6.28	6.33	6.21	0.06
pH _{LD24}	5.43	5.46	5.43	5.46	5.46	5.43	0.03
pH _{SM1}	6.25	6.60***	6.40	6.45	6.47	6.37	0.08
pH _{SM24}	5.55	5.55	5.53	5.56	5.57	5.53	0.04

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Colour of Longissimus dorsi muscle

Variables	Breed		Group		Gender		SED
	LW	LIW	Standard	Restricted	Male	Female	
L*	54.48	55.53	55.22	54.79	55.10	54.91	0.75
a*	15.66	14.91*	15.37	15.20	15.33	15.24	0.33
b*	7.13	7.39	7.49	7.03	7.32	7.20	0.33
C	17.24	16.66†	17.13	16.77	17.03	16.87	0.33
h	24.58	26.30	26.01	24.87	25.50	25.37	1.07

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Colour of semimembranosus muscle

Variables	Breed		Group		Gender		SED
	LW	LIW	Standard	Restricted	Male	Female	
L*	46.93	49.10†	48.61	47.42	48.29	47.74	1.22
a*	18.16	17.01**	17.41	17.77	17.44	17.74	0.40
b*	6.73	6.89	6.86	6.76	6.97	6.64	0.35
C	19.35	18.39*	18.75	18.99	18.77	18.97	0.40
h	20.39	22.10	21.65	20.84	21.94	20.55	1.08

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Contents and quality of intramuscular lipids in LD

Variables	Breed		Group		Gender		SED
	LW	LIW	Standard	Restricted	Male	Female	
IMF	2.12	2.26	2.12	2.26	2.24	2.14	0.27
SFA	36.30	36.24	36.61	35.93	36.93	35.61*	0.62
MUFA	51.92	52.34	51.57	52.69	52.62	51.63	1.19
PUFA	9.08	8.69	9.05	8.73	8.01	9.76	1.12
n-6/n-3	7.72	8.33**	8.04	8.01	8.03	8.03	0.23
Cholesterol	37.77	38.40	37.17	39.01	37.67	38.51	1.88

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Contents and quality of intramuscular lipids in SM

Variables	Breed		Group		Gender		SED
	LW	LIW	Standard	Restricted	Male	Female	
IMF	2.63	1.34*	2.11	1.86	2.04	1.93	0.51
SFA	32.64	35.28	34.47	33.45	35.46	32.46***	0.65
MUFA	48.02	51.24	50.69	48.57	52.14	47.11**	1.81
PUFA	14.66	10.38*	11.38	13.67	9.62	15.43***	1.62
n-6/n-3	8.73	8.45	8.55	8.63	8.21	8.97**	0.26
Cholesterol	39.65	40.22	38.36	41.50	37.76	42.10*	2.09

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Contents of fatty acids and cholesterol in backfat

Variables	Breed		Group		Gender		SED
	LW	LIW	Standard	Restricted	Male	Female	
SFA	42.62	43.34	43.43	42.53	43.95	42.01*	0.74
MUFA	49.06	48.99	48.79	49.27	48.68	49.37	0.59
PUFA	7.97	7.37	7.47	7.87	7.04	8.29*	0.47
n-6/n-3	6.36	7.37***	6.82	6.91	6.91	6.81	0.16
Cholesterol	32.98	29.90*	30.91	31.96	30.75	32.12	1.21

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Traditional and new high quality pork products with regional identity (WP3)

- Task 3.1 Evaluation of qualities of pork from local pig breeds
- Task 3.3 Consumer sensory studies

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Consumer preferences and market research for sustainable pork chains (WP4)

- Task 4.1 Cost benefit analysis at farm and product level considering the private component of benefits;
- Task 4.2 Cost-benefit analysis for the society considering the public component of benefits (under data collection from 300 respondents) ;
- Task 4.3 Consumer Preferences and willingness to pay for Traditional pork products and New Traditional pork products (will be carried out together with a session of sensory test with 120 consumers (Task 3.3).

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More information about the project

- <http://gi.lsmuni.it/>

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Thank you for your attention



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