Prolificacy of old genotype Lithuanian White sows in small closed population

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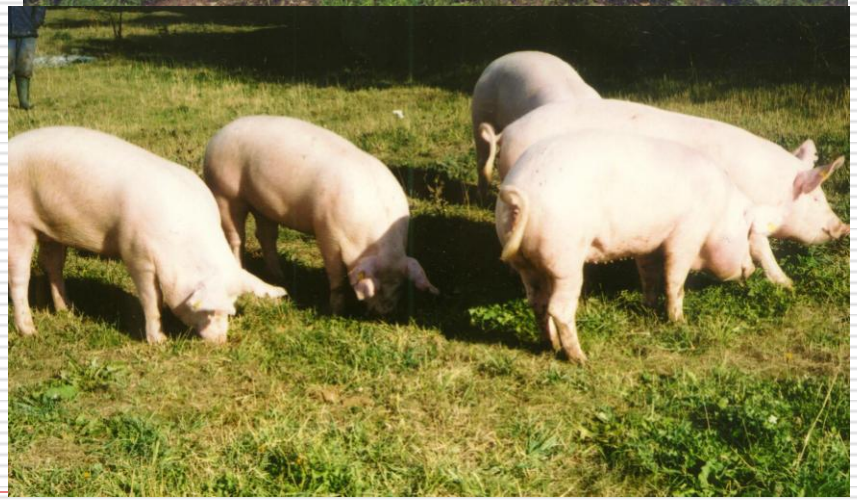
Lithuanian pig breeds

- Lithuanian native (wattle) pigs

- Lithuanian White pigs



Development of Lithuanian White breed

- Crossbreeding of Native piggs with Berkshire, local Danish pigs, large and middle-sized White and Edelsweine-in the beginning of XX century
- Importations of Large White and Edelsweine from England, Sweden and Germany in 1924-1932
- Official recognition of breed in 1967

Strains of Lithuanian White pigs

- Old genotype Lithuanian White pigs
- Modern type of Lithuanian White pigs improved by absorptive crossbreeding with Large White since 2003

Data of ultrasonic measurements old genotype pigs by Piglog 105

Variables	Mean	SD
Live weight (kg)	97.0	1.25
Age (days)	186.9	20.06
Fat1 (mm)	19.0	2.59
Fat2 (mm)	18.1	3.25
Muscle depth (mm)	41.3	3.29
Lean meat content (%)	51.4	2.82

Size of old genotype Lithuanian White pig population

- Nucleus herd-9 boars and 56 sows
- AI station-1 boar
- Total number of whole population lower than 100 adult animals

The objective of present analysis

- Examination of the reproductive performance and analyse the influence of some factors like generation, parity number and year in the nucleus herd of closed old genotype Lithuanian White population

Animals used for analysis

- The experiment took place in the established herd for conservation of critical old genotype Lithuanian White pigs at the Institute of Animal Science (nucleus herd)

Circular breeding scheme adopted for conserved small population

Generation		Disconnected pedigree animal groups (genealogical lines)							
		1		2		3		4	
		♀	♂	♀	♂	♀	♂	♀	♂
Founder	Parents	AxB		CxD		ExF		GxH	
	Progeny	A_1	B_1	C_1	D_1	E_1	F_1	G_1	H_1
I	Parents	A_1xH_1		C_1xB_1		E_1xD_1		G_1xF_1	
	Progeny	A_2	H_2	C_2	B_2	E_2	D_2	G_2	F_2
II	Parents	A_2xF_2		C_2xH_2		E_2xB_2		G_2xD_2	
	Progeny	A_3	F_3	C_3	H_3	E_3	B_3	G_3	D_3
III	Parents	A_3xD_3		C_3xF_3		E_3xH_3		G_3xB_3	
	Progeny	A_4	D_4	C_4	F_4	E_4	H_4	G_4	B_4
IV	Parents	A_4xB_4		C_4xD_4		E_4xH_4		G_4xH_4	
	Progeny	A_5	B_5	C_5	D_5	E_5	H_5	G_5	H_5

Culling reasons

- The sows were culled for the following reasons:
- failure to conceive,
- poor health or injury problems,
- absence of right sire
- change of generation

The material used

- The material comprised 5478 piglets.
- The piglets came from 395 litters (104 dams and 28 sires) of five generations
- Unsuccessful farrowings in Lithuanian practice named as emergency farrowings with 1-6 piglets was not excluded from the analysis

The general linear model (GLM) procedure in Minitab

- The model included the fixed effects of generation, parity, sex and year.
- Tukey`s HSD significance test was used

The numbers (and percent surviving in each parity) of females that produced litters by generation and parity

Generation	Parity						
	1	2	3	4	5	6	7
Founder	7	9	1	-	-	-	-
I	17 (100)	15 (88.2)	13 (76.5)	10 (58.8)	5 (29.4)	3 (17.6)	2 (11.8)
II	23 (100)	18 (78.3)	17 (73.9)	12 (52.2)	9 (39.1)	6 (26.1)	3 (13.0)
III	29 (100)	25 (86.2)	19 (65.5)	16 (55.2)	11 (37.9)	9 (31.0)	5 (17.2)
IV	28 (100)	24 (85.7)	19 (67.9)	15 (53.6)	5 (17.9)	4 (14.3)	-

The numbers of born piglets per litter by generation

Generation	Number of litters	Total born	Born alive	Stillborn
Founder	17	11.71	11.00	1.50
I	70	12.24a	11.34a	1.80
II	92	10.96b	9.97b	1.94
III	121	11.07	9.92b	2.32
IV	95	10.61b	9.78b	1.76
p		0.009	0.003	0.117

Sex of piglets born alive

Generation	Males	Females
Founder	5.18	5.82
I	6.06a	5.29
II	4.91b	5.05
III	4.98b	4.93
IV	5.16	4.62
p	0.009	0.111

The numbers of born piglets by parity

Parity	n	Total born	Born alive	Stillborn
1	104	10.22a	9.44	1.69a
2	91	11.34	10.51	1.77a
3	69	11.67	10.77	1.82b
4	53	11.23	10.38	1.96
5	30	12.43b	10.33	3.00c
6	22	11.41	10.41	1.83
7	10	10.20	9.50	1.75
8	8	12.25	10.88	2.75
9	6	10.83	8.83	3.00
10	2	13.50	11.00	2.50
p		0.010	0.158	0.007

The numbers of born piglets per litter by year

Year	n	Total born	Born alive	Stillborn
2000	14	12.43	11.71	1.67
2001	17	9.65t	9.12t	1.13
2002	28	12.32	11.86a,t	1.08a
2003	16	12.88t	11.75t	2.25
2004	44	10.61	9.71	1.74
2005	37	11.76	10.89	2.00
2006	41	11.90	10.66	2.68b
2007	29	11.10	10.07	2.14
2008	38	10.47	9.11b	2.36
2009	41	11.27	9.85	2.07
2010	60	10.47	9.62b	1.76
2011	30	10.73	10.07	2.00
p		0.003	<0.0001	0.043

Thank you for your atention