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HISTORY, STATE AND PROSPECTS OF PIG PRODUCTION DEVELOPMENT IN UKRAINE AND IN ITS REGIONS

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Analysis of pigs population in the years dynamics shows a clear influence of socio-economic conditions, historical periods and state of pig industry in Ukraine. Taking into account the biological characteristics of pigs, available production capacity of pig industry is a priority to create balance of meat production in the country. Indicators analysis of pigs performance in practice at the Ukrainian agricultural enterprises and in Odesa region shows the field's strategy by the time and by the quantity and quality of existing stock, their own strong breeding base.

Domestic pig producers begin to follow principles of organization production: breeding pigs of foreign selection, with the possibility to create appropriate conditions of maintenance and feeding, to use the boars of foreign selection on the domestic breeding sows in order to produce commercial hybrid young animals or selection material cross origin in pig breeding when creating animals an appropriate (improved) conditions of maintenance and feeding with scientific support of pig industry.

Keywords: *the field of pig breeding, pig population dynamics, productivity, breeding base, production, current state, prospects of development.*

Introduction. The food problem is the greatest problem for humanity. Scientists attribute it to long term and the most complicated, not only in Ukraine but also in the world economy.

Scientific works of many local scientists and practitioners are devoted to the problem of effective functioning pig industry, meat market [1, 2, 6, 7]. However, despite the value of conducted researches, some important issues related to the increased efficiency of the domestic pig enterprises and require their further study regionally. These issues had special value after Ukraine's accession to the WTO, EU integration and deepening of competition in the world meat market. Therefore, there is no doubt in further expediency of researches and developing proposals to the effective functioning of domestic pig industry, and hence to the domestic pig meat market [3, 5].

Organizational and economic changes in the country largely influence on the state of pig industry development. Meat production is decreased due to reduction of animals population up to 2000 in all categories of farms. The main reasons for this are the lack of agricultural producers interest to further increase of production in the disparity between the prices of raw materials and industrial products, reducing the supply of commodity material and technical resources, deterioration of fodder. Therefore, further development of pig industry as precocious and traditional livestock industry in Ukraine's market is very important and it is virtually impossible to solve the problem of providing animal protein to the population of our state without its development.

The purpose of work was to conduct the analysis of history, condition and development for the period 1913-2013, and to assess the current state pig industry and to identify the main directions of future development.

Materials and methods of researches. The data on pigs population in Ukraine and in Odesa region in the years dynamics of pig breeding products were materials for researches. During the studies it was used economic and statistical methods of processing data published in the open printing additionally from 1990 to 2013 [1-8].

Results of researches. Dynamics of pigs population in Ukraine in 1913-2013 is presented in Table 1.

The table shows that there is clear influence historical periods of our country, socio-economic conditions: The Great Patriotic War in 1941-1945, the post-war reconstruction with the government decree about transferring precocious pig breeding industry on the industrial basis, which was able to have stock in 1970 - 20746.2 thousand heads, in 1985 - 20087.8 thousand heads, in 1990 - 19426.9 thousand heads, on the number of livestock in the years dynamics. Further, due to the economic crisis in our country it was a clear trend to reduce the number of pigs (1991-1998) and a slight tendency to increase it in recent years (2010-2013). In our country, in 1990 total production of pork was 1576.3 thousand tons, that was 36.17% in total meat balance. Later pork production was marked by the decreased gross production to 493.7 thousand tons in 2005 (the low indicator for the analyzed period) with a tendency to increase it further.

Table 1

Dynamics of pigs population in Ukraine during 1913-2013

Years	Number of pigs at the end of the year, thousand of herds	Years	Number of pigs at the end of the year, thousand of herds	Years	Number of pigs at the end of the year, thousand of herds
1913	8500,0	1990	19426,9	2002	9203,7
1916	6500,0	1991	17838,7	2003	7321,5
1940	9185,8	1992	16174,9	2004	6466,1
1945	2888,6	1993	15298,0	2005	7052,8
1950	7765,7	1994	13945,5	2006	8055,0
1955	11735,8	1995	13144,4	2007	7019,9
1960	18193,6	1996	11235,6	2008	6526,0
1965	18920,2	1997	9478,7	2009	7576,6
1970	20746,2	1998	10083,4	2010	7960,4
1975	16847,1	1999	10072,9	2011	7373,2
1980	19782,7	2000	7652,3	2012	7576,7
1985	20087,8	2001	8369,5	2013	7518,8

Thus, in 2011-2012 this indicator was already 704.4 thousand tons and 700.8 thousand tons respectively.

As for the percentages indicator in the total meat balance sheet it was the largest in 2000 - 40.64%. The next years this indicator was decreasing in different years and had ranged from 27.46% in 2009 to 32, 86% in 2011.

Dynamics of gross production different types of meat in absolute and relative values, meat production per person and indicators of the pig production intensity in Ukraine in 1990-2012 was given in table. 2.

Pork production for 1 head of pigs at the beginning of the year in slaughter weight in 1990 amounted to 79 kg and 96-95 kg in 2011-2012, that indicating the positive trends in the industry performance. The average weight of one head, which sold for processing of agricultural enterprises amounted to 127 kg (1990) against 101-109 kg (1995-2012), indicating the market demand of pork meat. The output of offspring per 100 sows in 1990 reached 1422 heads; in 1995 and in 2000 951 and 756 heads respectively. In 2005 there has been a tendency to increase this figure to 1348 heads of further growth and achievement of 1805 heads in 2012 per 100 sows. However, it should be noted that even the current level of this index in recent years is insufficient in comparison with the EU countries (2200-2500 heads or more / 100 sows).

Table 2

Dynamics of pork production in Ukraine in 1990-2012

Indicator	Years							
	1990	1995	2000	2005	2009	2010	2011	2012
Pork production for one head, at the beginning of the year in slaughter weight, kg	79	58	67	76	81	83	96	95
The average weight of one head, which is sold to processing companies, kg	All categories of farms							
	127	105	101	112	109	109	108	108
	Agricultural enterprises							
	127	102	91	110	108	108	108	108
	Farmers farms							
	157	147	116	138	131	132	117	125
The output of offspring per 100 sows, h.	1422	951	756	1348	1571	1530	1509	1805
Fodder expenses of per unit of gain, feed units	9,85	15,81	17,90	8,97	6,59	5,98	5,37	5,39
including concentrates feed units.	7,73	14,66	13,43	7,92	6,26	5,71	5,15	5,19
Pork weight of concentrates,%	78,47	92,72	75,02	88,29	94,99	95,48	95,90	96,28

Expenses of fodder per growth unit accounted 9.85 feed units with 78.47% of concentrates (1990). Expenses of fodder per growth unit had decreased to 5.39 feed units in the proportion of concentrates 96.28% (2012). So positive trends in pig breeding industry are observed due to the use of high levels of concentrates in animal nutrition.

However, the achieved level of this index in recent years is still insufficient in comparison with the EU countries (3.0 feed. units / kg gain).

In Ukraine to the overall pig population reduction in recent years almost in three times compared with 1990 due to large agricultural companies it was observed an increase of pig production, but progress indicators in our state were lower in comparison with the developed economies of the EU excluded individual enterprises. This suggests

the revival and further development of pig industry through the development of large-scale production and technical equipment of pig enterprises in different capacities.

In pork production that takes one third in the meat balance of our country such regions: Donetsk, Kiev, Dnipropetrovsk, Cherkasy, Poltava, Odesa play a significant role.

Dynamics of pork production in Odesa region is given in Table. 3, which shows that the pig farms of all categories with the live weight of 116.6 thousand tons in 1990, when the percentage of pigs raising in agricultural enterprises was 50,94%.

In 2012 pig production of all farm categories with live weight was only 34.5 thousand tons (reduction in 3.38 times in comparison with the corresponding indicator in 1990) with the pork weight in agricultural enterprises 33.33%.

Table 3

Dynamics of pork production in Odesa region

Indicators	Years						
	1990	1995	2000	2005	2010	2011	2012
Pig raising in all categories of enterprises at the live weight, thousand tons	116,6	51,5	52,3	25,3	36,2	33,7	34,5
Pig raising in enterprises at the live weight, thousand tons	59,4	10,7	7,2	9,0	10,1	10,9	11,5
Pig raising in enterprises, %	50,94	20,77	13,76	35,57	27,90	32,34	33,33
Numbers of litters from 100 main sows in agricultural enterprises, heads	1233	711	643	1202	1052	1079	1136
Pigs daily gains during raising and fattening in agricultural enterprises, g.	195	98	113	218	258	275	291
Realization of pigs slaughtering in all categories of enterprises at the live weight, thousand tons	114,4	53,6	54,5	26,9	32,0	34,3	33,6
Realization of pigs slaughtering in agricultural enterprises at the live weight, thousand tons	71,0	10,4	8,4	6,3	8,5	9,7	8,1
Pig production in all categories of agricultural enterprises with slaughter weight, thousand tons	89,6	38,8	39,9	19,9	24,4	26,1	25,6
Pig production in agricultural enterprises with slaughter weight, thousand tons	55,6	7,6	6,2	4,7	6,5	7,4	6,2
Pig production on one head of pigs which was at the beginning of the year in all categories of agricultural enterprises with slaughter weight, kg	85	75	84	50	68	66	64
Meat production of all kinds per one person in slaughter weight, kg	88,3	37,8	35,4	21,2	19,1	19,8	19,4
Feed expenses on one cwt pig's gain in agricultural enterprises, cwt feed unit	-	-	-	11,06	10,33	8,82	7,73
Among them concentrates, feed unit	-	-	-	10,03	9,93	8,41	7,41
Among them concentrates, %				90,69	96,12	95,35	95,86

Yield offspring per 100 sows in 1990 had reached 1233 heads; in 1995 and in 2000 711 and 643 heads respectively. The next years this figure ranged from 643 to 1202 heads per 100 sows, so the current level of the indicator in recent years is insufficient compared

to the average rates in Ukraine and especially in the EU. Average daily gain of pigs feeding and breeding in agricultural enterprises in 1990 accounted 195 grams in 2012 the corresponding indicator was 291 g, but achieved level is insufficient compared to the average rates in Ukraine (449 g) and especially in the EU (623 g).

Pork production for 1 head of pigs that were on the beginning of the year in all categories of farms in slaughter weight in 1990 was 85 kg in 2012 - 64 kg.

Meat production of all types per person in slaughter weight in 1990 amounted 88.3 kg (corresponding to physiological norm of consumption), in 2012 - 19.4 kg, below the physiological norm.

Expenses of fodder per 1 kg increase in pigs agricultural enterprises in 2005 accounted 11.06 kg feed units, including 90.69% concentrated feed. The next years the analyzed period there is a clear downward trend in this indicator, which in 2012 amounted to 7.73 kg feed units, including 95.86% concentrated feed. However, the achieved level of this index in recent years is still insufficient in comparison with the EU countries (3.0 feed units / kg gain).

All mentioned are reserves for increasing pork production as in the Odesa region and in Ukraine as a whole through the development of industrial pig with clear organization of breeding, feeding all age-sex groups of pigs, the introduction of modern technology maintenance, prevention of infectious and other diseases, training of existing staff .

Analysis of agricultural enterprises due to the pigs presence in 01.01.13 showed that only 9 enterprises or 4% had population 1000-1999 heads and 12 enterprises or 5,3% had population more than 2000 heads. Most of the scientists consider that enterprises with simultaneous population more than 1000 heads have an opportunity to use modern leading production technology that is allowed to have an optimal rentable levels in pig breeding products production (more than 30%).

Analysis of agricultural enterprises due to the pigs average daily gain during raising and fattening in 2012 shows that only 17 enterprises had population more than 1000 heads of pigs or 6,7% had an average daily gain more than 450 g., that is the main indicator of pork production.

As to the analysis of agricultural enterprises due to the indicators of offspring's output from 100 main sows , only 31 enterprises or 15,9% had the maximum indicators in Odesa Oblast more than 1400 heads. That's why pork production can highly increase in region due to the introduction of modern technological methods of improving indicators, due to the heterotic vigor effect of crossbred young pigs, feeding conditions, maintenance and other factors in existing farms without increasing numbers of farms.

In addition, to increase significantly pork production in the region is to improve at least in twice the output rate of pigs offspring of per 100 major sows in 130 enterprises, that make up 66.5%.

Ukraine and Odesa Oblast particularly in the past were the major producers of pork and they provided this type of meat their home market. Taking to account achieved level and examples of leading farm the potential of pork production in Ukraine can not be less than 2 million ton. in order to meet the needs of the domestic market and to export these products.

To achieve such quantity of pork production is possible with improvement of existing gene pool of pigs. The presence of major sows of different breeds in breeding enterprises and breeding facility in Ukraine and in Odesa Oblast is given in table 4.

Table 4.

The existence of main different breed sows at the purebred enterprises in Ukraine and in Odesa Oblast

Breeds	Ukraine					
	The end of 2002			The end of 2012		
	Total amount, heads	%	place	Total amount, heads	%	place
LW	22543	84,02	I	24391	64,03	I
L	530	1,97	V	9658	25,35	II
UM	879	3,28	II	1263	3,31	III
PM	801	2,98	III	539	1,41	V
M	320	1,19	VIII	383	1,01	VII
USW	722	2,69	IV	414	1,09	VI
USBW	52	0,19	XI	26	0,07	XII
D	174	0,65	IX	267	0,70	VIII
W	100	0,37	X	119	0,31	XI
RWBB	358	1,33	VI	568	1,49	IV
P	-	-	-	236	0,62	IX
LB	350	1,30	VII	230	0,60	X
Odesa Oblast at the end of 2012						
Breeds		Total amount, heads	Pork weight, %	place		
LW		874	60,52	I		
Included domestic selection*		614	70,25	-		
L		180	12,46	II		
UM		150	10,38	III		
PM		150	10,38	III		
RWBB		40	2,77	V		
P		50	3,46	IV		
Total		1444	100,00	-		
Includes						
- domestic selection		954	66,02	-		
- foreign selection		490	33,98	-		

Notes: * – from the total number of stock LW breed region in Ukraine).

From this table we can see that 12 different pigs breed are bred in Ukraine, among them the largest part is constituted by the sows of LWB - 64.03% and L breed - 25.35%. Other 10 genotypes accounts from 0.07% (USWB) to 3.31% (UM). Breed composition of pigs in Odessa region represented by 6 genotypes: LWB, L, UM, PM, RWBB, P, which is sufficient for effective use of commodity production of hybrids with different possible combinations of genotypes. 70% of pig population LWB belong to national selection, but with improved meat quality by increasing the heredity of LWB foreign selection meat type that meets the requirements of the time.

Breeding stock of all breeds pigs of domestic selection in Odesa Oblast at the beginning of 2012 accounted 66.02%, and foreign breeding pigs -33.98% respectively.

Breeding base of pig industry in Odesa Oblast included by 1990 about 30 breeding farms and breeding reproducers for all breeds and nowadays- to 20enterprises, among them - 3 breeding and 7 breeding reproducers, one breeding farm UM. PM, L, and 7 breeding reproducers on meat breeds, including RWBB breed and Peitrain.

This indicates a significant genetic genotypes diversity of pigs herds and the opportunity to lead pig commodity to obtain hybrid origin of young animals for fattening, and due to the effect of hybrid vigor to accelerate the growth of young, to reduce food expenses for growth in good conditions of animals feeding and maintaining.

One of the leading reproducers in oblast for the recent years mainly domestic breeding LWB is herd of AC "Shabolat" B.Dnistrovskiy region.

Established reproduction system in this herd for lines and families, hybrid vigor interbreeding selection was supported with sows multifetation at 12.0 piglets, prolonged economic performance of sows – more than 6-7 farrows, high piglets survival tab. 5.

Table 5.

Reproductive indicators of sows leading herd group which belong to the different lines of breeding

Line of breeding	n	Average year, farrows	Increased fecundity, heads	At 2 months				CIRQ, points
				Number of piglets, heads	Maintenance, %	Weight of nest, kg	Average weight of one head, kg	
Herani	5	4,00±1,14	11,42±0,47	10,17±0,32	89,1	176,20±3,85	17,42±0,18	126
Yasochky	8	3,62±0,77	11,57±0,27	10,31±0,32	89,1	179,75±3,38	17,58±0,33	128
Volshebnytsi	3	1,67±0,67	13,22±0,77	11,67±0,67	88,3	200,00 ±12,76	17,60±0,88	145
Ch. Ptychky	5	2,40±0,67	11,84±0,35	10,70±0,49	90,4	178,00±6,35	16,02±0,27	130
Taihy	4	4,50±1,32	12,09±1,30	9,70±0,18	80,2	178,75±2,65	18,55±0,57	128
Reklamy	4	2,75±0,48	11,06±0,15	10,56±0,29	95,5	177,75±2,17	17,03±0,31	128
Total	29	3,27±0,38	11,76±0,23	10,44±0,17	88,8	180,51±2,26	17,34±0,20	129

Farrowing age is $3,27 \pm 0,38$ with multifetation at least 11 heads of piglets (average - $11,76 \pm 0,23$ heads) and good preservation to weaning ($10,44 \pm 0,17$ heads or 88.77%) that the average live weight of 1 head $17,34 \pm 0,20$ kg, makes it possible to

have a live weight of the nest in 2 month - $180,51 \pm 2,26$ kg. Each year the farm raises to 50 heads of replacement gilts, then about 35 farrows from first-litter sows were received, which is introduced into the main herd about 30 heads, that is fully consistent with technological standards. After the third farrowing it was carried out a significant sows reduction for age except highly productivity up to VIIIth , and some of them -to the Xth farrowing.

Sows of leading group the most genealogical families (Yasochka, Chorna Ptychka, Taiha, Reklama) for a comprehensive indicator of reproductive qualities (CIRQ) are close to the average indicator in the group - 129 points. At the same time sows of leading genealogical family Volshebnytsi exceed the average indicator by 6 points, and sows of leading genealogical family Herani were inferior to 3 points. These differences between genealogy families of sows by CIRQ were caused mainly due to the multifetation's indicators and the weight of nests in 60-days.

The main composition of sows lineage for their derivatives was marked by crosses from 5 to 8 lines. During the period of herd creation the genealogical lines changed by systematical bought in boars from different breed plants. Recently it was observed the tendency of stabilization in growing boars from sows and breeder of own herd with its great genealogical varieties. Now it is important to preserve the main part of LWB domestic selection in pigs herd formatting plant lines and families.

The formation of plant type ULW-3 "Prychornomorskyi" with increased meat qualities was put in this herd. Mating the herd sows with breeders of French selection from breeding plant "Agropraim Holdynh" have the positive results in strong constitution, reproductive qualities, sows milk ability, pigs live ability. The formation of plant type "Prychornomorskyi" are spread in breeding plant a/f "Dnistrovska" Artsyz region, "Mayak" Shyriaev region and in some others by crossing lines of domestic and foreign (mainly French) selections with increased meat qualities.

It was spread the using UM, L, RWBB, P breeds in two-way or multiple crossing (hybridization) in farmers and collective agricultural enterprises for pigs production.

Modern state of animal husbandry needs to identify the priority of field development and mechanisms of its state support with taking into account the specific of market economy and WTO requirements, the main provisions are presented in the "Conception of complex state programme reforms and development of agriculture". The complex programme are provided to fulfillment systematical reforms, oriented on the gradually achieved economic independency by agrarian business from state subsidy at the expense of reformation and development of system formation agrarian branches (pig breeding) and reformation of providing branches (system of agrarian science, agrarian education, state management- Minagropolicy), as well as the priority changes in supporting the technical modern equipment.

At the same time it was provided the mainly orientation on the industry production with simultaneous stimulation increasing effectiveness of production and products qualities in small and cooperative formation of countries and transition to the beef organic production.

Conclusions:

1. The analysis of pigs' population in Ukraine in the years dynamics of last and new centuries shows the influence of socio economical conditions, historical periods of our country's development on the state and development of pig industry.

2. Ukraine's transition to the market farming conditions, property's form changes on the main production means and price correlations on energy since 1993, led to the level decrease organization and management of production, qualification of leaders and experts of agricultural enterprises, to the low feed payment, labour production, increasing the products cost price, and as consequence to the unstable economical situation in the pigs industry.

3. Taking into account biological features of pigs, available productive power, pig industry has a priority for formation meat balance of Ukraine and Odesa region. The analysis of pigs' productivity indicators among agricultural enterprises in Odesa Oblast shows improvement of breed and quality composition available pigs population.

4. It was established expedience of using pigs foreign selection for improving domestic animals through creating plant types which will have increased fattening and meat qualities and keep high level of reached reproductive features and high adoptive ability to the conditions of maintenance and feeding on the domestic enterprises.

5. In future the orientation on the huge pig industry production with simultaneous stimulation increasing effectiveness of production and products qualities in small and cooperative formation of country will be provided.

6. The prior pig breeding development in Odesa Oblast must be provided by formation and further enlarged modern existing (LTD "Agropraim Holdynh", a/f "Dnistrovska", LTD "Artsyz meat company", LTD "Tarutynska meat company", APC "Druzhba") and reconstruction new fattening complexes (LTD "Vladiivske podvirya") using progressive technologies.

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Агапова Є. М. Сусол Р. Л. Ткаченко І.Є. Історія, стан і перспективи розвитку галузі свинарства в Україні та її регіонах

Аналіз динаміки поголів'я свиней свідчить про чітке вплив соціально-економічних умов, історичних періодів розвитку України. З урахуванням біологічних особливостей свиней, наявних виробничих потужностей, галузь свинарства є пріоритетним для формування м'ясного балансу України. Аналіз показників продуктивності свиней на прикладі сільськогосподарських підприємств Одеського регіону свідчить про стратегічність галузі кількісного та якісного складу поголів'я наявності власної племінної бази галузі.

Ключові слова: галузь свинарства, динаміка поголів'я свиней, продуктивність, племінная база, виробництво, сучасний стан, перспективи розвитку.

Агапова Е.М. Сусол Р.Л. Ткаченко И.Е. История, состояние и перспективы развития отрасли свиноводства в Украине и ее регионах

Анализ динамики поголовья свиней свидетельствует, о четком влиянии социально-экономических условий, исторических периодов развития Украины. С учетом биологических особенностей свиней, имеющихся производственных мощностей, отрасль свиноводства является приоритетной для формирования мясного баланса Украины. Анализ показателей продуктивности свиней на примере сельскохозяйственных предприятий Одесского региона свидетельствует о стратегичности отрасли по количественному и качественному составу поголовья наличия собственной племенной базы отрасли.

Ключевые слова: отрасль свиноводства, динамика поголовья свиней, продуктивность, племенная база, производство, современное состояние, перспективы развития.